Abstract

In today's competitive and globalized market, merger and acquisition (M&A) has become a strategy for the company to gain competitive advantage by expanding the pie (market share), entering new market, exploiting economies of scale, diversifying business risk and so on. This study has aimed to analyze the financial characteristics of the non financial merger and acquisition firms that had taken place from 2000 to 2008. The explanatory variables of this study were taken to signify profitability, liquidity, size and capital structure of the firms. Results of the t-test show that only firms' size can be used to differentiate between the acquirers and target firms. The result of the logit analysis shows that only price earnings ratio support it hypothesis while profitability and capital structure proxy variables are partially supported in predicting the likelihood of the firms to become the target firms.

Chapter 1: Introduction

1.1 Merger and Acquisition

Mergers and Acquisitions (M&A) activities have increased as part of a worldwide trend in corporate restructuring. A common trend all over the world is the acquisition waves that go together with strong economic growth in the nations or regions concerned. In such situation, firms with ample financial slack acquire other firms to timely grab the external opportunities provided by the economic environment. By acquiring their competitors or counterparts, firms expect to improve shareholders wealth through ways which would not be possible otherwise (Abdul Samad, 2007). The motives of the merger and acquisition for some firms including of cutting costs, expanding growth opportunity, accessing into new market and new technology. By merging with the other firms, the acquirers will increase their exposure in high-growth markets and gain benefits of the economy of scale. Besides, the growing threat of the competitive market has caused the firms to strengthen their market position and competitive advantage against their rivals. Merger and acquisition is one of the strategies that enable the firms to broaden their patron as well as expand their pie. The main strong points like technological management and superior quality must be well kept in spite of the intensive challenges posed by up-and-coming players. Firms can maintain these competitive advantages by introducing new innovations for the purpose of meeting the specific market requirements. Below are the cross border merger and acquisition overview from 1990's to 2007. The number of cross border merger and acquisition had increased gradually from year to year. It becomes a market trend in other countries like China, Indonesia, South-East Asia, and some other developing economies.

Table 1.1 Cross-border mergers and acquisition overview, 1990-2007 (Millions dollars)

Region/economy	Sales				Purchases			
	1990-2000 (Annual average)	2005	2006	2007	1990-2000 (Annual average)	2005	2006	2007
Malaysia	387	2 212	2 813	4 582	545	2 724	2 833	5 610
Memorandum								
China	558	10 131	11 452	12 185	297	5 599	15 384	4 529
Indonesia	739	7 430	981	4 027	223	5 836	374	1 389
South-East Asia	2 544	23 173	18 967	27 769	1 906	23 367	21 892	35 653
Asia and Oceania	7 136	81 094	94 868	109 747	6 965	71 286	89 229	117 728
Developing economies	16 531	122 473	171 811	179 221	12 806	90 479	151 605	178 438
World	159 269	929 362	1 118 068	1 637 107	159 269	929 362	1 118 068	1 637 107

Source: UNCTAD, *World Investment Report 2008*; **www.unctad.org/wir** or **www.unctad.org/fdistatistics**
For details, see "definitions and sources" in annex B and annex tables B. 4 and B. 6 in *WIR08*.

1.2. Problem Statement

Mergers and Acquisitions (M&As) are part of a business strategy implemented by many firms in order to achieve various long-term objectives and goals. However, many misunderstood and managed in a disappointing performance, and regarded as generally unsuccessful (Kim, 1998). It is found that shareholder value maximization is one motive of most of the corporate strategy decision (Kim, 1998).

The subject matter of business expansion and growth, through mergers and acquisitions is of great interest among researchers from early 1980's (e.g. Palepu, 1986; Mat Nor, 1998; Won and Abel, 1998; Ruhani and Pillay, 2000; Sorensen, 2000; Marimuthu, 2008). There are several benefits to encourage business growth by M&A than by using internal expansion. Business growth by using M&A could reduce the cost of developing new products, establishing new distribution channels, spending on R&D and advertising and on training of managers as the present companies (target firms) already have the needed technology, skilled labors, customer base, distribution channel and brand name.

According to Misra (2009), the result of his study suggests that those corporate control inefficient firms will become target to be acquired by those highly efficient firms. However, there are some authors who are against with this principle (Chatterjee, 2000; Weir and Laing, 2003; Siriopoulos, Georgopoulos and Tsagkanos, 2006). In the other way, they found that efficient firm with good and beneficial business also will have the possibility to become the acquisition targets. To be exact, based on their studies, inefficient firms are not necessarily to be the main identifying characteristic of takeover targets in the market.

Having to know both the firms' financial characteristics that enhance the likelihood of a takeover activity, and the acquisition targets prediction models according to that distinctiveness could be of great concentration to the policy developers. These models could not only be able to help them in identifying probable targets ahead but also at the same time developing the regulations for the purpose of shielding the community wellbeing. Additionally, the capability to foresee targets proceeding to the publication of the takeover could appear to be the foundation of an investment approach. As shown in many studies, the share price of the target takeover will increase proceeding to the announcement. Investors who are holding a portfolio of target firms' shares will generally gain an abnormal return.

The merger decision for the management is comparable to any classic investment judgment that the company has to make as there are several obstacles that the company has to face, for example the companies will need to struggle for inadequate resources, it is inhibited by the limited fund and it has to make sure that the action taken must be align

with the goal of shareholders' wealth maximization. Hence, it is practical to suggest that the analysis of the monetary characteristics of the target firm play a vital role in judgment making (Won et al, 1998).

The motivation behind the endeavor to predict takeover targets is twofold (Barai, 2008). One of it is to test hypotheses regarding the characteristics of a firm that render it to be attractive to a raider, and thus, prone to takeover attempts. These hypotheses stem from various motives that have been proposed in the literature to explain takeovers (Barai, 2008).

The financial crisis that happened in July 1997 had caused many companies in Asia and Malaysia in particular faced serious financial downturn. In the case of Malaysia, many point of views made for the collapse of those companies and one of the big arguments was on the issue of over-diversification thru mergers and acquisitions. However, to what extent M&A activity had caused poor performance of those companies remains debatable.

Weston and Mansingka (1971) have found that the earnings rates of the merging firms are significantly underperformed than those in the control group (non-target companies). However, there was no significant difference being observed in term of the company performance between the merging firms and the control groups after 10 years time. The development of the conglomerate firms' financial performance was explained as evidence for flourishing achievement of protective diversification. Ghosh (2001) studied the performance of the operating cash flow before and after corporate acquisitions. He had

studied the performance of the firms for pre-acquisition and found that there is no operating performance improvement even after the acquisitions.

Mat Nor (1998)'s studies predict takeover targets based on a profile of the past financial performance of target firms in Malaysia. As given in the context, not all the mergers and acquisitions activities will bring about a better financial performance to the companies. According to Marimuthu (2008), many arguments about the downfall of the non financial institutions after the financial crisis 1997 was on the issue of over diversification by merger and acquisition. While an enormous merger studies subsist, most of these academic studies are related to merger and acquisition of the banking system in Malaysia. Prediction of the corporate takeover targets in the Malaysian context has been few and far between. We had quite a number of researches regarding the merger and acquisition of Malaysian banking context but seldom on the non-financial companies. Given this context, the present study has attempted to examine the financial characteristics of non financial firms that have gone through mergers in Malaysia and at the same time extent the studies of Mat Nor and Sheikh Hussin (1998) to predict the target firms, in the pre merger period in order to better identify the potential firms to be merged.

1.3. Research Objectives

According to Brooks, Feils and Sahoo (2000), on average, acquiring firm shareholders did not show any wealth maximizing in local acquisitions, but it did show in global acquisitions. It is necessary to know the main determinants of target firms in a merger and acquisition. The research objectives of the study are:

1. To examine the financial characteristics of non financial merged (acquirer and target) companies in Malaysia.
2. To examine the financial characteristics of the target firms and non target firms in predicting which non-financial firms are more likely to be merger targets.

1.4. Research Questions

This study aims at answering the questions below:

- What financial characteristics that differentiate the acquirers and target merger companies?
- What financial characteristics that predict the likelihood that the firms would become the target merger companies?

1.5 Significant of Study

This study could add to the evidence and provide some insights to the previous studies on company takeover, particularly on corporate takeover (Mat Nor, 1998). The study discusses about the quantitative characteristics of the merging companies in which provides a clearer picture of the acquirers and target firms. It should benefit both acquirers and target firms by analyzing the financial characteristics for both parties and also help to shed light on the indication of the potential for being acquired. The prediction of acquisition targets is to outline an investment strategy to exploit potential takeover

candidate. Besides, prediction of target merger plays as a form of investment strategy; it provides the ability of firms to develop defensive measure of takeover. The results of the this study would also help corporate in Malaysia to be easier to identify the right targets for mergers and acquisitions in the future through which they could strategize for boosting their global competitiveness (Misra, 2009).

1.6 Scope of Study

This study empirically investigates the financial characteristics of non financial merging public listed firms in Malaysia. This study also predicts the target companies against non target companies in non financial firm industry. In this paper, the target merger will be matched with non target according to the similar size in the industry to determine the likelihood of the companies to be the target merger in Malaysia within 2000 to 2008.

1.7 Organization of the Report

The present study contains of 5 chapters. It is organized as follows:

Chapter 1: Chapter 1 provides the preface of the M&A activities, the problem statement and the objective of the study. Then, significance of the study and scope of the study are presented.

Chapter 2: This chapter provides the literature review about the M&A activities. Chapter 2 begins with the meaning of mergers and acquisitions. It is then provided a snapshot of M&A in Malaysia. Next, the motivations of M&A of a company to increase their

competitive advantage are discussed based on the previous studies. Subsequently, a discussion on the prediction model used by the scholars to estimate the merging activities is discussed.

Chapter 3: Chapter 3 provides the research framework and methodology used in this study. This chapter begins with the analysis of the research framework. Then it present how the hypotheses are developed and the selection of the proxy variables that used to assess the financial characteristics of the merging companies and the data collection procedure are being used to carry out the study. Lastly, the conclusion of the methodology selected.

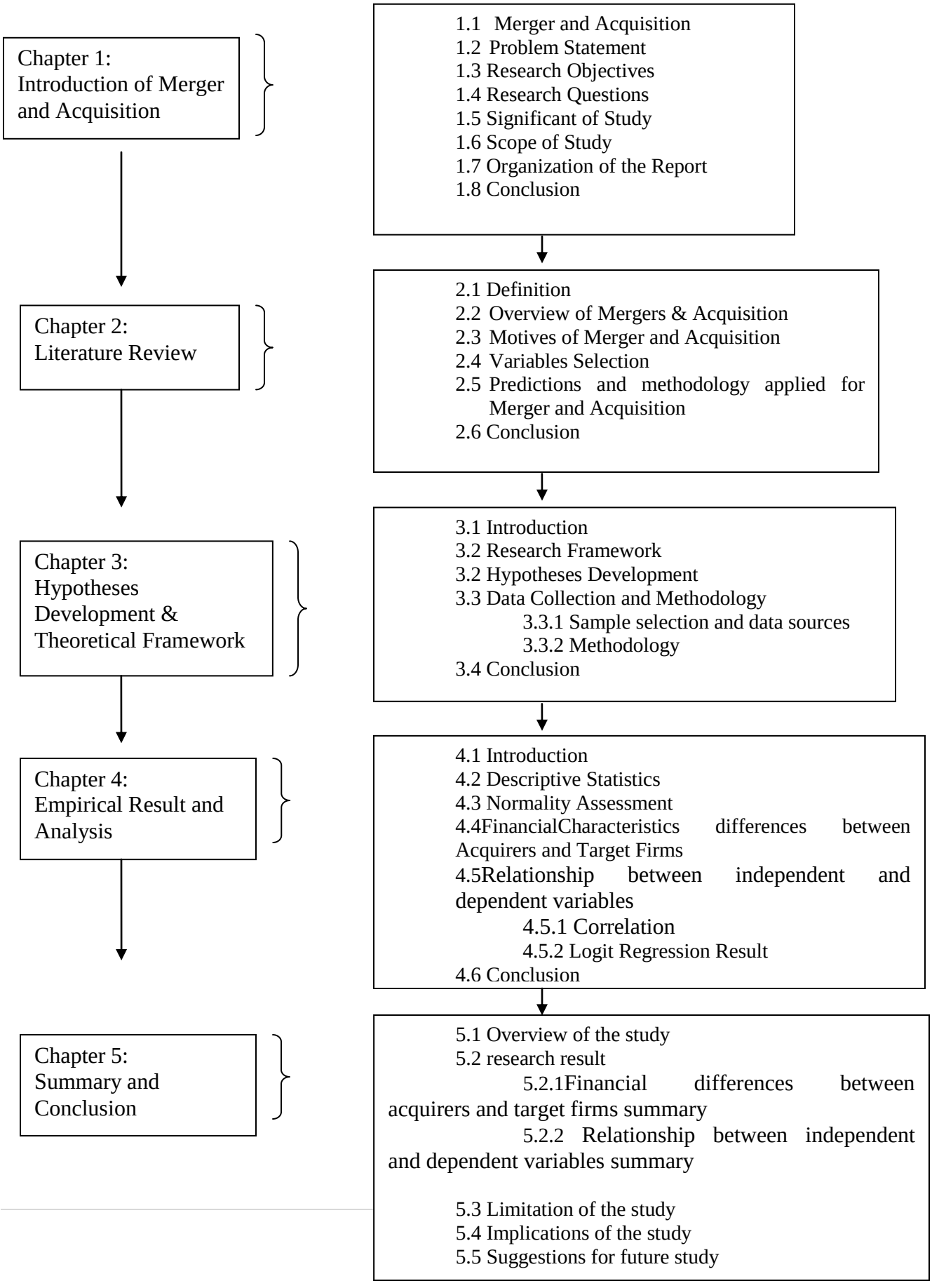
Chapter 4: Chapter 4 provides the empirical analysis and discusses the results of the study. It is followed by presenting the hypotheses to be accepted and rejected.

Chapter 5: The last chapter provides the conclusion and recommendations for the paper. Initially, the research outcomes and the evaluation of research objectives are revisited. Next, the limitations and the suggestions for the future research are provided. Lastly, the chapter ends with the implications of this study.

1.8 Conclusion

This chapter introduces the study that is going to discuss. In this chapter, the research problem statement, research objectives, research questions, significance of the study and scope of the study are presented. Last but not least, organization of the report is provided. Literature review about the M&A activities will be provided in the following chapter.

Figure 1.1 Organization of the report



Chapter 2: Literature Review

2.1 Introduction of M&A

The terms mergers and acquisitions (M&A) bring about the meaning of business combinations between target firms and acquirers, according to Ruhani and Pillay (2000). M&As are the activities where two or more firms combining their business transactions into one, according to Weston and Copeland (1992). M&As signify the substantial reallocation of resources within an economy and market.

The term merger and acquisition or M&A has been used synonymously in most studies and the terminology can vary considerably depending on the text used. A merger is explained as the "marriage" of two firms of approximately identical size, grouping the possessions together into one business. The shareholders of both pre-merger companies (acquirers and target firms) have shared in the possession of the merged firms and the managerial positions are maintained after mergers. According to Parvinen (2003), in his study of merger and acquisition, the meaning of the M&A was quoted from Vaara (2000) as below:

"*The term 'merger' has two meanings in the context of combining organizations. Merger can refer to any form of combination of organizations, initiated by different kinds of contracts. The more specific meaning that separates mergers from acquisitions is that a merger is a combination of organizations which are similar in size and which create an organization where neither party can be seen as the acquirer*."

In fact there are different definitions for M&A in which quoted by other researchers (Marchildon, 1991; Scott, 1997). The survivor acquired the assets as well as absorbed the liabilities of the target firms. In general, the company which survives is the buyer which retains its identity and the seller company is extinguished. When the firms are being acquired, all assets, liabilities and stock of the firms will be transferred to the acquirers in consideration of payments in the form of equity transfers or debentures or cash, in some cases, the mixture if two or three forms.

An acquisition in general is defined as a transaction in which a buyer acquires all part of the assets and business of a seller, or all or part of the stocks or other securities of a seller. Within the general terms of acquisition, there are more specific forms of transactions such as takeover, asset acquisition, stock acquisition and consolidation. From the perspective of business combinations, according to Prajapati (2010), she explained that an acquisition is the purchase by one company of controlling interest in the share capital of another existing company in her Indian banking mergers and acquisition study. The acquisition may be affected by the contract with the majority shareholders of the company, purchase of share in the flea market, to make takeover offer to the general body of shareholders, procure the new shares by private agreement and acquisition of share capital.

Despite the formal distinctions, the term merger and acquisition (M&A) is usually used interchangeably. The bottom line to this idea is not the distinction in the meaning but more often the net result that actually matters. Ultimately, two companies that had

separated their ownership are now operating under the same roof, usually to obtain some strategic or financial objectives.

The increasing level of the M&A has become a custom in investment marketplace. The terminologies for example take-over, mergers and acquisitions (M&As) provide the meaning of business combinations between target firms and acquirer (Ruhani, Pillay, 2000). One of the objectives of this activity is to better utilize the corporate assets. M&As are also one of the popular ways in order to enable the companies to realize economies of scale, eliminate ineffective organization or react to financial downturn (Rachel, Armando, Kathleen and Markus, 2004). Cross border M&As are amongst the core business strategies in which the multinational corporations (MNCs) employed to increase and expand their business. It could also facilitate firms to accelerate their expansion in shorter time period in order for them to deal with the fast track of globalization of business trade and competitive marketplace (Larsen, 2007). These famous means of business strategies increased attractiveness in the market force and Malaysia has no exclusion ever since the 1990s (Ruhani and Pillay, 2000).

There are different methods in which one firm is to be acquired by another firm. In a merger activity, the owners of the two or more firms agreed to merge and seek for the approval from the other shareholders for the merging. The target firm becomes a component of the acquiring firm; for example, Digital Computers were absorbed by Compaq after it was acquired in 1997 and it ceased to existence after the merging. In a consolidation, a new firm is formed after the merger and merging firms receive stocks in

this newly established firm; Citigroup, for example, as a firm being developed created after the merger of Citicorp and Travelers' Insurance Group.

The other form of M&A is tender offer. In this form of M&A, one firm offers a specific price to buy the outstanding stock of the other firm and this firm will communicate this offer by using the advertisements or mail to the target firms. Upon communication, it will find a way around the current management level personnel's of the target firm. As a result, tender offers are also known as hostile takeovers. The target firm will maintain to subsist as long as there are minority stockholders who reject the tender. From a practical point of view, though, most tender offers ultimately become mergers, if the acquiring firm is winning in gaining power of the target firm.

Acquisition of assets is also another form of merger and acquisition. In an acquisition activity, acquirers will acquire the properties of another firm, although there is a need of a official vote by all the shareholders of the firm. There is one category of acquisitions that does not fit into any of the M&As described which is a firm is acquired by its own management or by a group of investors, typically by a tender offer. After this transaction, the target firm can cease to be as a publicly traded firm and become a privately own firm. These are known as management buyouts when managers are involved in this activity, and are also known as leveraged buyouts when the funds for the tender offer come mainly from debt. The example of this kind of leverage buyouts in the 1980s is RJR Nabisco.

While the popularity of growth through acquisition remain high, according to Edward Milton Hanna (2005), a brief survey of outcomes reveals the sobering truth that the hope-for benefits of M&A activity have often failed to become visible. A trio of well known consulting firm from Mexico (A.T. Kearney, Mercer Management Consulting and PriceWaterhouseCoopers) has reported, in three separate studies, that acquisition deals are failing miserably when measured by creation of shareholder value.

The A.T. Kearney study involved $115 billion worth of mergers that occurred between 1993 and 1996. A full 58% failed to create substantial returns for shareholders as measured by tangible returns in the form of dividend and stock-price appreciation. The Mercer Management Consulting study involved all mergers from 1990 to 1996. Nearly half were found to have destroyed shareholder value (Edward, 2005).

2.2 Overview of Corporate Merger and Acquisition in Malaysia

A merger is when two companies, more or less on equal footing, decide to join forces. The basic attribute of a merger, however, is that it is considered to be an equal transaction with both parties accepting risk and sharing in the potential rewards while acquisition is taking over another company. From a global perspective, the rest of the world is also beginning to see increased merger and acquisition activities.

Figure 2.1 Global mergers and acquisition activity

Mergers and Acquisitions activities have increased as part of a worldwide trend in corporate restructuring. A common phenomenon all over the world is the acquisition waves that accompany strong economic growth in the nations or regions concerned. In such situation, firms with ample financial slack acquire other firms to timely seize the external opportunities provided by the economic environment. By acquiring their counterparts, firms expect to enhance shareholders wealth through ways which would not be possible otherwise.

Take-over activities followed the growth of the Malaysian capital market. In the 1970s, only 40 take-over were announced. The number increased to 394 in the 1980s and to more than 700 in the 1990s. The successful take-over rate ranged from 40 percent in 1970s to about 60 percent in the 1990s. Many deals were cancelled in the early days as the law and its enforcement on take-over announcements was not stringent. As a result, many small investors suffered, as most Malaysian investors were retail investors who

were not sophisticated. For instance, whenever there is an announcement of a take-over, the share price would shoot up sharply but when a deal was called off, the share prices would experience a decline. The unhealthy speculative activity that surrounded the announcement of a take-over had led to the cashing out of the majority shareholders at the expense of the minority shareholders (SC, 1998).

Merger and Acquisition (M&A) activities in Malaysia obviously started in the 1970's which were largely confined to oil palm and rubber plantation companies. The involvement of foreign companies in the M&A activity was also noted to be quite significant especially in the plantation sector. In the 1980's, rapid growth particularly in the industrial sector coupled with the privatisation policy has boosted many companies to become more acquisitive in diversifying their businesses. Among the major acquisitions in the 1980's were, Sports Toto taken over by Melewar Corporation and B & B Enterprise Sdn Bhd (1985), Big Sweep Lottery taken over by Pan Malaysian Sweeps Sdn Bhd (1989) and UEM took over the North South Highway Project (PLUS) in 1987.

However, in the 1990's, merger and acquisition activities started grabbing the headlines. Several Malaysian companies were involved in takeover proposals or acquisitions of substantially equity stakes in companies both foreign and local, while others acquired property and yet others were subjects of mergers. Among the ten largest corporate deals in 1994 were acquisition of 32 per cent in MAS made by Malaysian Helicopter Services; acquisition of 45 per cent stake in SESCO by Dunlop Estate; and takeover of Penang Bridge Concession by Acidchem. According to Merrill Lynch International Bank Ltd, Malaysia was the leading Asia Pacific "acquirer" and "target" country for mergers and

acquisitions in 1996. It was noticeable that the volume of completed deals in the region has grown at 15.4 per cent annually against the global annual growth rate of 8.1 per cent between 1990 and 1996.

When the financial crisis broke out in July 1997, many companies in Asia in general and Malaysia in particular faced serious financial downturn. In the case of Malaysia, many arguments made for the downfall of those companies and one of the big arguments was on the issue of over-diversification via mergers and acquisitions. However, to what extent M&A activity had caused poor performance of those companies remains debatable. Many studies have been made on mergers and acquisitions but surprisingly, very few have considered some specific or unique characteristics of acquiring companies and the effect of the financial crisis. (Marimuthu, 2008)

In Malaysia, it was announced that the value of M&A more than doubled to RM120.4 billion in 2006 (PriceWaterHouse Research, 2006). This jump in value has positioned Malaysia third in Asia Pacific's M&A, behind China and India. In addition, four out of five biggest M&A deals in South East Asia involved Malaysia companies.

Table 2.1 Asia Pacific mergers and acquisition (ex-Japan)

Asia-Pacific M&A (ex-Japan)

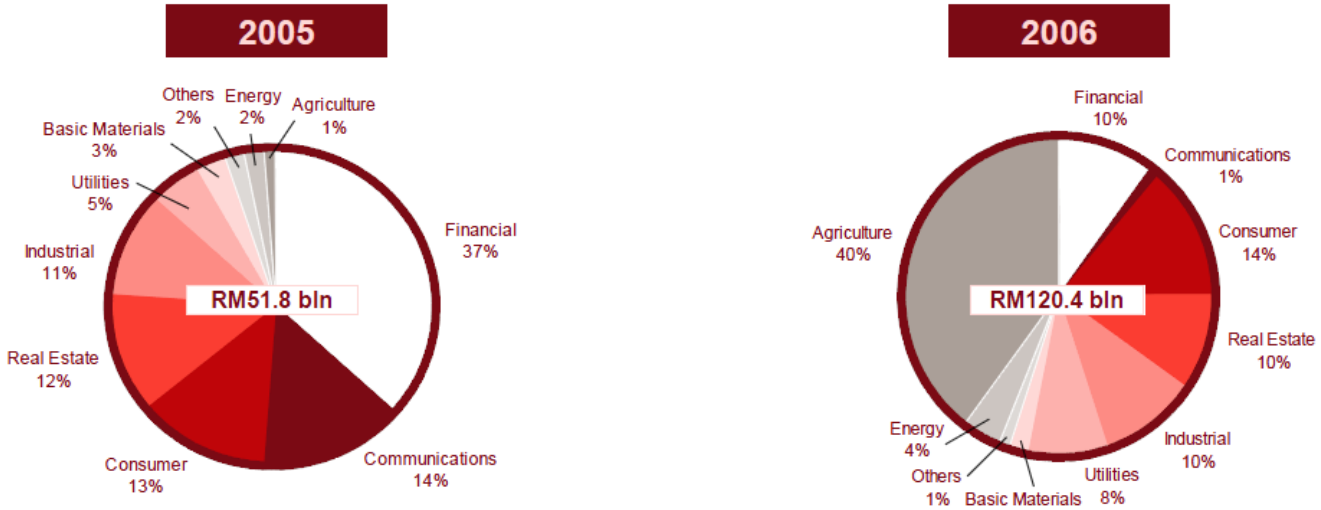
Top 5 countries in 2006	US$ bln
China	43.5
India	35.6
Malaysia	27.7
Hong Kong	27.6
South Korea	24.6

Source: Thomson Financial

Meanwhile, major domestic M&A transactions in 2006 include the merger of Golden Hope, Sime Darby and Guthrie through Synergy Drive, Bumiputra Commerce's acquisition of Southern Bank and IJM's acquisition of Road Builders (PriceWaterHouse Research, 2006). One the determinants that contributed to the better performance of the equity are corporate mergers following the announcement of the 9 Malaysian Plan infrastructure projects. (BNM annual report, 2006)

The graphs below show the incremental of M&A value from year 2005 to 2006 for different sectors in Malaysia. We can see that the major sector that involved in M&A in 2005 was financial sector and the sector that shoot up to become the main M&A sector in 2006 is agriculture sector which occupied of 40% of the total value of M&A in Malaysia.

Figure 2.2 Value of mergers and acquisition by sector, 2005 and 2006



Source: PwC Research

Foreseeing M&A which may branch from market share price movements of public listed companies and the noteworthy profits in general accruing to shareholders of the target firms is becoming an interesting topic among the scholars. There are many studies in the financial field that focus on different prediction models, explaining the rationales behind of an M&A activity and what are the impacts to the company's performance after the M&A. These studies consist of Simkowitz and Monroe (1971), Stevens (1973), Castagna and Matolesy (1976), Belkoui (1978), Dietrich and Sorensen (1984) and Palepu (1986). The outcomes confronted by the studies point out that, such predictive models have remarkable and dependable ability to predict merger targets. (Won et al, 1998). By using the Logit Regression Model, Mohamed Ariff, Michael Skully, Rubi Ahmad, 2007 had indentified the factors entering this massive merger exercise in banking sector of Malaysia.

Several studies have been conducted in this regard and various parameters have been identified to classify firms into acquirers and targets. This section summarizes the results of previous studies in terms of the variables identified.

M&A has becoming the financial subject in corporate finance that draws the attention and awareness from the general public and managers, finance academicians or practitioners. M&As are treated as a vital basis for the external growth when there is no other growth opportunity arise and at the same time, M&As also expose some of the companies with threat. The communities that directly or indirectly such as government officials, the financial society, employees, competitors and others have plentiful motives

to take it seriously towards the eventual consequences of M&A towards themselves (Doumpos, Kosmidou, Pasiouras , 2004).

Most of the studies conducted in this area to date have primarily aimed at predicting potential targets. However, at the same time, early accounting data studies on acquirers such as Singh (1971), Weston and Mansinghka (1971), Lev and Mandelker (1972), Meeks (1977) and Kumar (1984) compare pre- and post-takeover performances to consider the performance effects of takeovers. In most cases, the acquriers appeared to be more profitable prior to the takeovers vis-à-vis after the takeovers, thereby indicating the absence of efficiency gains. For instance, Meeks (1977) found a reduction in profitability subsequent to a successful bid, in the UK whereas Lev and Mandelker (1972) in a study in the US found no change in profitability of a firm after acquiring another. (Basu, 2010)

2.3 Motives of Merger and Acquisition

There are plenty of important reasons why economists have shown great interest in the analysis of merger activity in all advanced industrial societies. The first is that merger activity has been a major cause of rising concentration. The rise in concentration in turn, creates concern because of the misallocation of resources, the possible abuse of market power, the political and social collision of concentrated economic strength in big firms. A second reason is that because mergers have been major instruments of growth by firms and often involves large scale financial outlays; there is interest in the extent to which mergers have brought gains or losses to the firms involved, including their shareholders. There is a third reason which is connected more narrowly with the development of

theories of the firm. In looking at such determinants it is useful for analytical purposes to make some distinction between those approaches which focus on the relation between firms and their "macro" environment and those which concern themselves primarily with the characteristics of firms such as the degree of managerial/shareholder control with assumptions as to the different expected behavior; gearing which lead firms to seek avenues for investment or assets on which new borrowing can take place and so on. In this second approach, merger activity is explained as starting from variances in the financial characteristics of the firms involved and the focus on particular variables based on particular theories under discussion (Levine and Aaronovitch, 1981).

Goergen and Renneboog (2004) as well as Martynova and Renneboog (2006, 2008) studied the European market and argued that synergies are the prime motives for domestic and cross-border bids and that value creation is shared between targets and acquirer shareholders. Bradley et *al*. (1988) support that the acquisitions produce synergies (economies of scale), and profit from reducing management inefficiency. Several research document that synergies are localized at the exploitation cycle, company's financial process and at the market power.

There are various different reasons as to why a firm decides to merge and acquire another firm. Watson and Head (2001) had grouped the probable motives of M&A into three factors. The first factor is economic factors in which including of the gaining synergy, economies of scale, removal of unproductive management, new market entry, business growth, increase market control and share growth, risk elimination and so on. Second

factor is the financial factors like for example firm undervaluation, tax fulfillment and increasing earnings per share (EPS). Thirdly is the managerial motive.

Merger or acquisition of other firms can provide several rationales. Klaus Gugler and Kai A Konrad (2002) explained that merger and acquisition can alter the market structure and increase market power, generate economies of scale and other synergies, have tax advantages, or serve managerial ambitions. M&As have been taken place for many other reasons, as such benefitting from valuation inconsistency between companies' share prices and its perceived true market value, benefiting from ineffective management, realizing business diversification, take the advantage from other synergistic benefits, capitalizing the unused tax shields, and for other purposes (Won et al, 1998).

Over the vast reasons of merger and acquisition, the key purpose of merging and acquiring another firms is usually to improve overall firm's performance by achieving synergy, or the more commonly described as the ``2 + 2 = 5" effect between two business units that will increase the firm's competitive advantage (Porter, 1985; Weber, 1996).

Referring to Debarati Basu, Somashree Ghosh Dastidar and Deepak Chawla (2010), maximizing and growing of the profit are the main objective of a firm. This reason can be as a whole, in other words internal, or inorganic, in other words external. External growth can be achieved by acquiring the existing business firm. Hence, mergers and acquisitions (M&As) are important forms of external growth. It is argued that M&As are vital strategic tools for increasing product lines, entering new markets, acquiring new technologies and building new generation organizations with the ability to compete on a

global basis. In general, M&As aim to achieve greater efficiency, diversify business and increase market power. The synergistic gains from M&A activity may build up from various avenues like more efficient management, economies of scale and scope, improved production techniques, redeployment of assets to more efficient uses and the utilization of market power (Basu, 2008).

According to Pautler, 2001, there are six motives for a merger and acquisition activity to take place. Firstly, firms may improve their efficiencies through merging their business operations through mergers and acquisitions of corporate assets to lessen the manufacturing costs, increase output, improve product quality, obtain new technologies, or develop new products. The possible efficiency benefits from mergers and acquisitions financial include both operating and managerial efficiencies. Secondly, it is the financial factor such as tax shield benefits that lead to merger and acquisition. Firms may gain financial efficiency by diversifying their earnings by acquiring other firms or their assets with dissimilar earnings streams. Earnings diversification within firms may reduce the inequality in their profitability, reducing the risk of bankruptcy and its assistant costs (Pautler, 2001). Thirdly, some M&As may bring about the market control that contribute greatly to the advantage of the merging firms. The forth motive is the management greed, self-aggrandizement or hubris. The managers may over diversify, overstate growth, or simply make bad acquisition decisions. Fifth, getting a good buy as a reason for acquisition is still remained debatable as if all potential acquirers have alike insights about the value of potential targets and the market for corporate control is very competitive, the potential acquirers would bid up the price of the target firms which

appeared to be bargains until the acquiring firms would, at the margin, expect to receive a normal return from their acquisitions.

2.4 Determinants of merging firms

The main obstacle for the scholars who try to predict the possibility of M&A is to identify the suitable and the best projecting proxy variables, this is according to Barnes (2000). Undesirably, there is no specific ways of selecting the potential proxy variables as to develop a model. To select the suitable variables, one needs to filter out from a large number of financial ratios in the financial theories.

In general, there is no straightforward method to conclude what the specific ratios are and how many ratios to be used in a particular model. If it is too few in a model, the model will not confine all the relevant information; however, if it is numerous, the model will be overly fit the relevant sample, but under-perform in a proposed sample, and will most possible to have complex statistics input requirements (Kocagil et al., 2002). Proxy variables determination has become a vital research topic in model development and pattern recognition for quite some times. Hamer (1983) has suggested that, the proxy variable should be built on the center of minimizing the cost that will have to spend on data collection and maximizing the model's reliability (Pasiouras, Tanna, 1999).

Huberty (1994) has recommended the use of three different variable screening techniques to predict the M&A likelihood, which include logical screening, statistical screening (e.g. t-test to parametric data or Kruskal-Wallis for non parametric data) and dimension

reduction factor analysis. Naturally, these techniques have become the approaches to determine the proxy variables, however; it varies for many studies which deal with the target mergers prediction. Several studies, for example Simkowitz and Monroe (1979) who start with a bulky list of financial variables and then trim down them based on the basis of stepwise procedures. However, Palepu (1986) thinks the other way round and disagrees with the utilization of stepwise procedures, and criticizes that stepwise procedure is not logical and directs to the statistical "over fitting" to the sample of the model. Thus far, studies have used stepwise procedures not only in the prediction of target merger, but also in bankruptcy prediction and other categorization issues in finance and accounting.

Palepu (1986) proposes to select the proxy variables based on the most frequently mentioned merging hypotheses. Powell (1997) presents two feasible justifications for this. Firstly, the models will have to build based on takeover theories which are general in the literatures, with either little or no validity. Secondly, the empirical proxy variables have been failed to determine the implications underlying the theories (Pasiouras et al, 1999).

Barnes (1998, 1999, and 2000) starts by using numerous proxy variables covering the takeover hypotheses along with the uses of coefficient test to eliminate the highly correlated variables. If the proxy variables are highly interrelated, it has to be reduced. Nevertheless, using highly correlated ratios on the intrinsic multicollinearity among the variables will cause in vague "finest weights" for a model that may cause inaccurate model performance (Kocagil et al. (2002) However, while the existence of the

multicollinearity causes it complicated to examine the implication of the coefficients and it will not change the categorization precision of the model (Etheridge, Sriram, 1997).

Doumpos et al. (2004) use a mixture of univariate tests to choose a final set of proxy variables to develop the model Gaganis (2005) has used a similar method to select the variables in his bankruptcy prediction model and Spathis (2003) has also used it to identify the competent audit report. Here, the rule of thumb to select the proxy variable is to keep the statistically significant set of variables small and reduce the highly correlated variables.

The first researcher that applied the factor analysis to develop a model which used to predict the target firms is Stevens (1973), followed by Barnes (1990); Kira and Morin (1993); Zanakis and Zopounidis (1997); and Tartari et al. (2003). Nonetheless, Doumpos et al. (2004) disagree with the conclusion made by using of factor analysis that specify the number of different factors and the way how the novel data are clustered into the factors as Doumpos et al think that factor analysis does not contribute to whichever information regarding the significance of the variables in the particular research problem.

2.5 Predictions and methodology applied for Merger and Acquisition

The literature of merger and acquisition prediction models is a particular branch of the literature attempting to predict a dichotomous characteristic of a company by analyzing its previous corporate and financial information (Alzueta (1999), Lucey (1999)). Authors such as Ambrose and Megginson (1992), Espahbodi and Espahbodi (2003), Powell

(2004), Bhabra (2008), and Brar et al. (2009) consider the predicting takeover targets as a central research question.

There are early articles using financial ratios as an analytical technique to assess the performance of the enterprise. Edward I Altman (1968) and Beaver (1967) had used the financial ratios to predict the corporate bankruptcy. In the US perspective, Palepu (1986) has early developed prediction model of takeover targets and has used a logistic regression. He finds that management inefficiency and certain financial characteristic as leverage, size, growth rate and financial imbalance are discriminating variables between takeover and non-takeover target. In the UK market, Powell (1997) used both binomial and multinomial Logit model to predict takeover targets by introducing accounting and financial discriminating variables. Besides, he shows that multinomial Logit model outperform the binomial one in terms of prediction accuracy. Powell (1997) obtains almost the same results in 2004. Similarly, by introducing accounting and financial discriminating variables, Barnes (2000) underlines little difference between MDA and Logit approaches to predict takeover targets and a high classification rate of the two models. Tsagkanos et al. (2006) used conditional Logit framework as a predictive takeover target's method in the Greece context. Through accounting and financial variables, the authors underline their model provides low predictive power of the takeover targets and confirm the Palepu (1986) findings.

The bankruptcy prediction models have enjoyed particular attention from the researchers and it is interesting to see how, over the last few decades, the bankruptcy prediction literature was the pioneer in updating the advances of econometric techniques, always

introducing the regression models that the takeover prediction literature would use in the following years (Alzueta (1999); Lucey (1999)). Although it does not have the direct relationship with the M&A activities, these studies provided the basis for identifying the particular proxy variables that symbolize the financial characteristics of the firms and set up the correlations of these proxy variables. It was suggested by Altman (1968), before the development of the quantitative measurement of the company performance, qualitative performance of the company needs to be established in order to assess the creditworthiness of the firms.

When predicting the target merger, the previous studies had proved the predictive aptitude of the models such as Simkovitz and Monroe (1971), Stevens (1973), Belkaoui (1978); Dietrich and Sorensen (1984), but not Rege (1984). A significant change in the approach used to predict the target merger was played by a notable research done by Palepu (1986). According to Palepu (1986), due to that of the statistical problems and errors that occurred, the results of the precious studies were mostly unfound, particularly in the use of non-random equal-share samples. The improvement methods for the methodology such as the profit maximization factors were suggested by Barnes at the end of 1990s. However, Barnes (1999) found that the profit optimization factor was not able to increase the predictive accuracy of the model. Espahbodi and Espahbodi (2003) had compared the capability of four different methodologies like logit, probit, discriminant and recursive positioning models in predicting target merger. It was found that this study has aligned with Palepu's original findings regarding the predicting power of takeover models.

Debarati Basu, Somashree Ghosh Dastidar and Deepak Chawla (2010) used discriminant analysis and logit regression to develop the suitable frameworks according to the sample data of the companies that having M&A activities during the period 2002 to 2005 in India. The results showed that target firms have greater liquidity, higher growth and size on one hand and lower risk, leverage, profitability and operating efficiency than the acquirers. These results appear coherent and hold up the theory that takeovers are a market share enhancing means. Benefits of M&A such as gaining synergy through economies of scale and scope, increasing debt holding and reducing cost of capital are some of the driving force of M&A. The discriminant model can be used to classfy the acquirers and target firms up to the accuracy level of 64.8 per cent and has been applied to give sample for the year 2006 for verifying its predictive ability. Among all, the logit model emerges to be a better fit for acquirers with a prediction accuracy of 99.1 per cent, then increases to 100 per cent (Basu, 2008)

Many researchers (table 1) have tried to build models to predict corporate takeover. Table 2.2 illustrates a review of the previous studies showing the statistical techniques selected. From this table we can see that from early 1980s, researchers had started to aware that logit regression analysis is useful model to predict the merger and acquisition by analyzing their financial ratios.

Table 2.2 Summary of Significant Studies

Researchers	Year	Statistical Technique
Paul Levine and Sam Aaronovitch	1981	Logit
Timothy H Hannan and Stephen A. Rhoades	1987	Logit
David C Cheng, Benton E Gup and Larry D. Wall	1989	Ordinary Least Squares (OLS)
Woo Gon Kim and Avner Arbel	1998	Logit
Donal E. Sorensen	2000	Logit, univariate analysis of variance (ANOVA)
M. Doumpos, K. Kosmidou I and F Pasiouras	2004	Multicriteria Approach
Athanasios Tsagkanos, Antonios Georgopoulos, Costas Siriopoulos	2006	Logit
B. Rajesh Kumar and Prabina Rajib	2007	Logit
Debarati Basu, Somashree Ghosh Dastidar and Deepal Chawla	2010	Logit, Discriminant Anaysis
Maurine Pear and Maxwell Stevenson	2010	Logit

Paul Levine and Sam Aaronovitch (1981) claimed that the typical acquirer firm was larger, with a higher valuation ratio and price earning (PE) ratio than both the target firms and the average. Target firms were of less than average size with a lower than average price earning (PE) ratio. But there is no evidence of any significant differences between acquirers and target firms for the profit-related variables (Rate of Return, Earnings per Share) and their growth (Growth of Rate of Return, Growth in Earnings per Share).

By using logit model, Athanasios Tsagkanos, Antonios Georgopoulos and Costas Siriopoulos (2006) found that the motivation of the acquirers is to focus on large firms with good experience of high efficiency and good financial performance. The result is supported by some other studies which do not judge inefficiency to be an aspect for takeovers (Matsusaka, 1993; Thompson, 1997; Markidis, Singh, 1997, Chatterjee, 2000; Alcalde, Espitia, 2003; Weir, Lang, 2003). Particularly, this finding is also hold up by the

past empirical indication in the Spanish market (Alcalde Espitia, 2003) and the British market too (Weir, Laing, 2003). However, this is contradicted with the findings of B. Kumar and Rajib (2007) in which the acquirers' motive to acquire badly managed firm is due to the likely benefits that would build up when inefficient management is reinstated.

B. Rajesh and Rajib (2007) had drawn the conclusion by employing the logit regression model, the target firms are likely to be comparatively unprofitable, highly liquid, and have undervaluation ratios and grow slowly. The study also found that the lesser the liquidity position of a firm, the higher the likelihood of a firm being acquired while the bigger size firms (logarithm of assets) are the opposite, more unlikely to become target firms. From the result of the study, it indicated that acquirers look for well-to-do targets targeting for gaining the operational synergy and there is no one efficiency ratios result provide a statistically significant outcome.

In the study of Woo Gon Kim and Avner Arbel (1998), the overall accuracy rate of merger prediction by using logit model is 76 percent which is significantly above the general accuracy rates provided by Palepu (1986) which was about 46 percent. The finding on the firm size was contradict with the study of B. Rajesh Kumar and Prabina Rajib (2007), in which they found that the larger size the company, the higher likelihood of merger.

Donald (2000) stated that the majority of the researchers found that there were distinguishing uniqueness of firms undertaking merger that were assessable with quantitative factors. It was found that by using data from the time immediately

proceeding to merger and methodlogy (either multiple discriminant analysis or logit regression), they were capable to appropriately categorize a high fraction of merging firms. This categorization can achieve the accuracy rates between 60 percent and 90 percent.

Stevens (1973) studied the M&A companies in the year of 1996. His findings were found to have the same opinion as Simkowitz and Monroe who concluded that one way to determine the merging firms is by differentiating the financial characteristics; nevertheless Stevens had found out several useful financial ratios in grouping the factors of M&A. He found out that the target firms had lower leverage, lower profit margin, and higher liquidity compared with non target firms. The findings of these two studies propose that due to target firms in the 1960s were tracked for diversification and risk elimination, leverage were more significant factors than high profitability.

Acquisition likelihood using logit model estimated in the studies attempt to predict firms which are target of successful takeover bids (Mat Nor and Sheikh Hussin, 1998). According to Mat Nor and Mariah, logit analysis is used to specify the exact functional relationship between the firm characteristics and its acquisition likelihood in a given period.

According to Ksenija Denčić-Mihajlov, Ognjen Radović (2006), logistic regression model has been used as a suitable model to examine the correlation between binary or ordinal reaction probability and explanatory variables. Binary logistic regression is used as one of the prediction model with several suppositions and its dependent variable can

be either binary or dummy variable. By using binary logistic regression, it does not assume multivariate normality and equal covariance just like discriminant analysis does. The logistic regression method fits linear logistic regression model for binary or ordinal response data. The dependent variable in the logit regression model can be seen as a binary value with the value 1 is known as target firms and value 0 is the non target firm. In logistic regression, the parameters of the model are estimated using the maximum likelihood method where the coefficients that make the observed results most likely are selected (Ksenija Denčić-Mihajlov, Ognjen Radović, 2006).

2.6 Conclusion

Chapter 2 demonstrates an outline of M&A activities proceeding to the discussion of the literature results of the other researchers. The different definition of M&A based on past studies is presented. This chapter discussed the motives that of M&A presented in different studies, the financial variables that determined the M&A and the prediction of M&A. This chapter also presented the financial characteristics of the acquirers and target firms that are being used in the later chapter to build up the research framework and the hypothesis.

Chapter 3: Hypotheses Development and Theoretical Framework

3.1 Introduction

This chapter is about the research framework that is used to analyze the available accounting information and the practical use of this information in empirical research. Furthermore, the independent proxy variables are identified by referring to the previous studies and the hypotheses are developed. The research methodology which includes of the data collection and the data source are determined at the end of the chapter.

3.2 Research Framework

A research framework has been developed to identify the financial characteristics of the merging companies (acquirers and target firms) and a predictive model of merger likelihood is identified after the literature review which is based on the previous researchers' finding had been studied in Chapter 2.

This study uses IBM Statistical Package for Social Sciences (SPSS) Statistic version 19.0 for Windows to analyze the data collected from sixty eight (68) firms that exercised merger and acquisition from 2000 to 2009.

A suitable sample of acquirers and target firms were taken for the analysis. Accounting measurement (financial ratios) has been used to determine the factors of the acquirers and target firms in a takeover. The explanatory variables included in the analysis were capital structure (debt to equity ratio), size of the firm (logarithm of assets), the profitability

measurement (ROE), price earning measurement (PE ratio) and liquidity measurement (current ratio).

3.3 Hypotheses and Proxy Variables Development

Proxy Variables that Differentiate the Target Firms and Acquirers.

A set of hypotheses deemed to be important has been constructed after consulting the available literature on the subject of mergers and acquisitions, and after taking into account the objectives of the research. A number of financial variables have been used as a proxy measures for the purpose of measuring the financial characteristics of the target firms and acquirers.

Kumar and Rajib (2007) include price earning ratio as one of the financial characteristics that determine the acquirers, target firms as well as non-target firms. If a firm with a high price earnings ratio is likely to purchase firm with low price earnings ratio. Eventhough there is no actual raise in the earning power of the firms' assets; earnings per share (EPS) of the merging firms will increase after merger. This hypothesis utters that the price earning ratio of the target merger is lower than the acquirers.

Price Earning = Price of share / EBIT

H_1: The target firms have lower price earning than the acquirers.

Hypothesis 2 indicates that the possibility of an under-performing firm being acquired is fundamentally a purpose of probable gain that will be accrued after the incompetent managers of the target firms are reinstated. This hypothesis forecasts that target firms will have lower profitability than the acquirers. Profitability ratio is determined by return on equity (ROE) (Palepu, 1986). It is calculated with earnings before interest and taxes (EBIT) divided by total stockholders' equity (Anna Lee, Church and Rayburn, 1996). According to Al-Mwalla (1992), the target company's management does not operate at maximum potential. It suggests that a consistently poor performance by the firm makes it more vulnerable to acquisition.

Return on Equity = EBIT / Total stockholder equity

H_2: The target firms have lower profitability than the acquirers.

Referring to this hypothesis, firm's capital structure can be altered by having M&A activity. A firm with more capacity liquidity is indicated by low debt-to-equity or a low interest expense-to-earnings ratio. Hypothesis 3 affirmed that the target firms will have higher financial leverage than the acquirers which hold lower debt. This financial leverage is signified by the debt-to-equity ratio (D/E) and it is calculated as long-term debt divided by net stockholders equity.

Debt to equity ratio = Long-term debt / Net shareholder equity

H_3: The target firms have higher financial leverage compared to the acquirer firms.

According to Palepu (1986), firms with larger size (sales and assets) are less probable to become an acquisition target. This is because of the higher costs that the acquirers need to spend to absorb larger firms into their organizational composition. Following Palepu's (1986) study, the company size is indicated by logarithm assets.

Firm size = Firm's total assets

H_4: The target firms smaller in size than the acquirer firms.

According to Muslumov (2001), investment in liquid assets is expensive because the company needs to pay higher transaction costs when dealing with buying and selling financial securities, and because they incur higher taxation. Besides, liquid assets may jeopardize more rigorous agency problems than less liquid assets. The protective motive argues that companies maintain surplus liquidity to take the advantage of future investments profitability. Takeover is the example of the potential future profitable investment to a company. It could be argued that acquirer companies are trying to accumulate excess liquidity for merger purposes. Therefore, acquirer companies are expected to be more liquid than targets.

Quick ratio = (Current assets – Inventories) / Current liabilities

H_5: The target firms have lower liquidity than the acquirers.

Prediction Variables of the Target Firms

Acquisition hypotheses explored by Palepu (1986) and Powell (1997) are used to predict the likelihood of the firms being acquired in this study. The proxy variables will be PE, ROE, Size, DE and QR, the same for the financial characteristics as examined for the first five (5). Following are the explanation of the variables and hypotheses for the study:

According to Kumar and Rajib (2007), the target firms tend to have lower price earnings ratio in comparing with a non target firm. The target and the non target firms can be differentiated by their profitability attributes. The inefficient management hypothesis also points out that the unattractive firms will have higher profitability compared to those target firms (Kumar et al, 2007). It is generally acknowledged that, larger firms are more costly to be acquired, they have the financial muscle to fight takeovers, and hence, they become less attractive as takeover targets (Barai, 2007). So, the hypotheses:

H_6: Takeover likelihood is negatively related to the PE ratio

H_7: Takeover likelihood is negatively related to the ROE

H_8: Takeover likelihood is negatively related to the firm's size.

According to this hypothesis, when the firm's debt increases, the probability of being acquired will decrease (Stulz, 1988). According to Doumpos (2004), there are two

rationales to explain why firms with lower debt altitude are considered as being attractive to become the acquisition targets. Firstly, the firms that have lower debt ratio tend to have lower possibility to default in the future while simultaneously it raises the debt aptitude of the upcoming firm. The second reason including of enormously low debt ratio could be treated as the firm value may not be make the most of it. In contrast, low debt ratio can be used as an indication of inefficient management (Doumpos et. al, 2004). Hence the hypothesis is:

H_9 : Takeover likelihood is negatively related to the debt to equity ratio.

It was found that it is possible that the highly liquid firms are highly probable to be acquired due to the attractive short term liquidity position and the ease of use of cash or near cash (Tzoannos and Samuels, 1972). Alternatively, it can be debated that when a firm needs financial support to finance its firms expenses, it is probable to be an acquisition target due to the acquirers are expected to bring in supplementary fund into the firm to boost up its liquidity (Rege, 1984). Hence the hypothesis for this variable would be:

H_{10} : Takeover likelihood is negatively related to the firm's liquidity level.

3.4 Data Collection and Methodology

3.3.1 Sample Selection

The study proposes to consider the recent time period 2000 to 2009 for deciding the sample of firms to be considered for the above analysis. Financial institutions such as banks, insurance companies, and real estate companies were excluded from the list as their insertion would have brought in a great mix to the sample. In addition, accounting methods and reporting practices make ratio definitions totally different in these financial institutions (Sorensen, 2000). The basic source of data for the study is gathered from the Bursa Malaysia and Bloomberg. The study has considered a sample of 34 non-financial acquirers and 34 of target mergers from 2000-2008. The criterions set for the sample are:

1. The M&A deal was announced and completed within 1st January 2000 to 31st December 2008.
2. The merging companies must be of non-financial companies.
3. The M&A deal had been done in Malaysia.
4. All the data must be available in Bloomberg.

In order to avoid any missing data which could introduce bias to the sample, only those firms that merged within 2000 to 2008 with complete data for two (2) years before the merger activity taken place are considered. Firms with incomplete financial data are discarded since the identified variables are unable to be computed.

After the elimination of the firms without completed data, there are 34 target firms and 34 acquirers meeting the requirements. These firms with complete financial data (from Bloomberg) which are required to compute all the identified variables are selected for this study.

The 34 target firms were matched by another 34 non target as control firms during the year of M&A (two year before the deal closing) based on the closest size and industry (B Rajesh and Rajib, 2007; Lee, Roy and Ramasamy, 2010).

3.3.2 Methodology

The selected samples are tested for normality before analysis is started. For a parametric technique to be used, it is assumed that the populations from which the samples are taken must be normally distributed (Pallant, 2007).

In this study, a statistical analysis is made to classify the financial distinctiveness of the acquirers and the target firms that will have a considerable force to bring about the likelihood that a firm is to be acquired and also determine the characteristics of an acquirer. Some studies in the past using ratio analysis have utilized a univariate methodology to do the analysis (Ambrose and Megginson, 1992; Sorenson, 2000).

The variables used in this research were chosen from those used in the previous studies of Sorensen (2000), Peat and Stevenson (2002), B Rajesh and Rajib (2007), Basu, Ghosh Dastidar and Chawla (2010).

Further analyses are extended to investigate if there is any statistically significant difference in each of the five financial characteristics between the two categories of firms (acquirer and target) by using t-test statistic. In this study, the t-test statistics are determined to test the hypotheses that conclude the mean values for both the acquirers and target firms (B Rajesh and Rajib, 2007). This would give a preliminary idea of the significant characteristics that are markedly different between an acquirer and a target firm.

Correlation analysis is used to express the strength and direction of the linear relationship between two (2) variables. This analysis is done to eliminate the problem of multicollinearity. The statistical techniques that are used for the examination of the acquisition likelihood evaluation study including of linear probability functions, logit analysis, probit analysis and discriminant analysis (B Rajesh and Rajib, 2007). The methodology that will be used in this paper is that we follow the empirical study methodology of Won et al (1998), Sorensen (2000), M. Doumpos, K. Kosmidos and F. Pasiouras (2004), B Rajesh and Rajib (2007), Basu, Dastidar and Chawla (2010) by using Logistic Regression Model for predicting and classifying the firms into acquirers or target groups. Under logit analysis, the target firms and the non target firms (control groups) of identical size that did not involve in M&A activities within the duration period set were used for the estimation of the acquisition model (Mat Nor and Hussin, 1998; B Rajesh and Rajib, 2007). Size is measured by the total sales (B Rajesh and Rajib, 2007) and industry (Lee, Roy and Ramasamy, 2010).

As mentioned in the second objective, the empirical analysis of this study is to examine a selected set of financial characteristics of the target firms and non target firms in predicting past merger and acquisition which non-financial firms are more likely to be merger targets or the intention of improving prediction of future merger likelihood (Woo et al, 1998). The possibility of a firm to be a target merger can be represented scientifically by qualitative variables which presume one of only two possible values which are yes (1) and no (0) (Woo et al, 1998).

In this model, the dependent variable Y is defined as taking the value of 1 for target firms and 0 for non-target firms (Woo et al, 1998). Below is the framework for the proposed model analyzed by this research.

Probability of Acquisition = f (capital structure, firm size, profitability, firms' valuation, liquidity)

Logistic regression is employed to measure takeover likelihood as a function of financial characteristics, the regression model specified is:

$$P_i = F(L_i) = F(\alpha + Bx_i) = \frac{1}{1+e^{-Li}} \quad \text{……..} \quad (1)$$

Where,

$L_i = a + Bx_i$

Where P_i is the probability of ith firm being classified as a target firm, e is the base of the natural logarithm, X is a vector of independent variables, B is a vector of

parameters to be estimated, α is a constant term in the model and Li is the logarithm of odds that the ith firm will belong to target group.

$$\ln(\frac{P_i}{1-P_i}) = B_0 + B_1 CapStructure_i + B_2 Size_i + B_3 ROE_i + B_4 PE_i + B_5 QR_i + \varepsilon_i$$

Where,

$(\frac{P_i}{1-P_i})$	= Odd ratio of merging;
P_i	= Probability of being target for firm $_i$
$1-P_i$	= Probability of not being target for firm $_i$
$CapStructure_i$	= Capital Structure for firm $_i$
$Size_i$	= Firm size for firm $_i$
ROE_i	= Return on Equity for firm $_i$
PE_i	= Market to Book Value for firm $_i$
QR_i	= Quick Ratio for firm $_i$

Based on Won et al (1998), Binomial Logistic Regression Analysis is the most proper method for identifying the financial and performance proxy variables that differentiate into two categories which are target and non target merger of company.

Thus, in this case, the logistic regression does yield an unbiased estimate of the population acquisition probability.

The modeling procedure, which is the nominal logit model, made popular in the bankruptcy prediction literature by Ohlson (1980) and, subsequently, in the takeover prediction literature by Palepu (1986). Logit models are commonly utilized for

dichotomous state problems. According to Maurice Peat and Maxwell Stevenson, the logit model was developed to overcome the rigidities of the Linear Probability Model in the presence of a binary dependent variable.

4.4 Conclusion

Chapter 4 illustrates an overview of the development of the research framework and the development of the hypotheses for this study. The data collection method and the methodology used in this study are discussed. Next chapter will present the empiraical result analysis and the examination of all the ten hypotheses as developed in Chapter 4.

Chapter 4: Empirical Results and Analysis

4.1 Introduction

Chapter 4 discusses the result from Chapter 3. Firstly, descriptive statistic analysis is provided to have a basic statistical analysis about the samples being studied. It was then discussing the normality of the data. Furthermore, the relationship among the independent variables and dependent variable are determined by using the T-test. Lastly, logistic regression model was presented.

4.2 Descriptive Statistic

Referring to Table 4.1, it shows that there are 34 acquirer and 34 target firms in the sample, giving a total of 68 firms. Each group of sample (acquirer and target) is representing 50% of the total sample size and it is shown in Table 4.1 as descriptive statistic for the dependent variables. Missing data is checked by using SPSS Missing Value Analysis procedure to detect any unexpected missing data (Pallant, 2007, p. 56). From table below, we can see that there is no missing data for the analysis.

Table 4.1 Sample Size

Samples	Frequency	Percent
Acquirer	34	50%
Target	34	50%
Total	68	100%

After having a thorough checked on the data being collected, descriptive statistic is carried out. The data are being divided into continuous (target and acquirer) and categorical variables (Price Earning, Return on Earning, Debt to Equity, Size and Quick

Ratio). The average and standard deviation results for dependent variable, all five independent variables, are summarized in Table 4.2 and are also presented in Appendix 5 in the table of Descriptive Statistics.

Table 4.2 Descriptive Statistic

Variable	Mean (in million)	Std. Deviation	N
PE	13.379	10.586	68
ROE	11.097	7.239	68
DE	49.593	61.739	68
Size	2945.280	6146.434	68
QR	1.233	1.368	68

4.3 Normality Assessment

The assumptions of normality are inspected by using Histogram, Normal Q-Q Plot, Detrended Normal and Box plot (Pallant, 2007, p. 61) as presented in Appendix 6-10. A non-significant result of the Kolmogorov-Smirnov statistic indicates normality (Pallant, 2007, p. 62). Due to that of the data is not normally distributed (histogram skewed to left); Schweinle method (Mickey, Dunn and Clark V.A., 2004) and transformation method (Pallant, 2007, p. 61) are carried out to remove the outliers from the financial data being analyzed. Schweinle method is a method that removes the data that is 2.5 of standard deviation from the mean of the variables (Mickey et al., 2004).

From the Appendix 6, the Kolmogorov-Smirnov significant of PE is 0.052, which is above 0.05, indicating a normal distribution. From the descriptive statistic table as shown

in Appendix 6, the 5% Trimmed mean (3.3162) is very near to the mean (3.3555) of the PE data. This means that the extreme scores (Appendix 6) are not strongly influence on the mean ((Pallant, 2007, p. 59). The normal distribution plots (Normal Q-Q Plot) shows that the observed value for each ratio is cluttered against the expected value from the normal distribution and this suggests a normal distribution. Outliers are detected by referring to the box plot. They are being reduced by using Schweinle Method (Mickey et al, 2004). It is noticed that there are three outliers has standardized residual value above 4.81. This is less than one (1) percent of total cases falling outside the 50 range and thus it is accepted as a normally distributed sample (Pallant, 2007, p. 158).

ROE also shows a normal distribution, in which the Kolmogorov-Smirnov significant is 0.2 after transformation made (Appendix 7). The 5% Trimmed mean (0.4904) and the mean (0.4900) suggest that the extreme scores shown in the Appendix are not influential to the mean of the data. Four outliers (0.86, 0.76, 0.2 and 0.15) are detected. This is also less than one (1) percent of total cases falling outside the 50 range and so it is considered as a normally distributed sample (Pallant, 2007, p. 158).

Kolmogorov-Smirnov of debt to equity ratio shows a significant result of 0.080 which is higher than 0.05. This indicates that debt to equity ratio is normally distributed. It is shown that there is no missing data in this variable, by looking at case processing summary (Appendix 8). 5% Trimmed mean (5.8044) and mean (5.8732) suggest that the extreme scores of the data will not have strong influential against its mean of the statistic. There is only one outlier (12.51) which is out from the mean and it is within the range of possible scores for this variable.

Test of normality for the size variable showing a normal distribution with the significance of 0.098, which is higher than the normality rule of thumb of 0.05. The normal distribution plots (Normal Q-Q Plot) shows that the observed value for each ratio is plotted against the expected value from the normal distribution and this suggests a normal distribution (Appendix 9). The box plot (Appendix 9) shows that there is no outlier for the variable.

Descriptive statistic of the quick ratio shows that the Kolmogorov-Smirnov significant result is at the level of 0.062, which is higher than 0.05. This suggests that there is no violation of the assumption of normality and this could be considered as normal distribution statistic. The 1.221 skewness of the quick ratio variable shows that the distribution of the scores is positively skewed. There are three outliers (2.09, 2.00 and 1.86) are shown in the box plot of quick ratio.

4.4 Finanacial Characteristic Differences between Acquirers and Target Firms

An independent-sample t-test was conducted to compare the PE, ROE, DE, Size and QR for target firms and acquirers (Appendix 11 - 15). There is no significant difference in score for target firms (mean = 3.6088, standard deviation = 1.2619) and acquirers (mean = 3.3598, standard deviation = 0.9625) with its t (66) = 0.915 in term of PE. The significant value is larger than 0.05 (which is 0.798), equal variances assumed is referred. 2-tailed significant level is 0.364 indicating that there is no significant difference between the two groups. Therefore, hypothesis 1 is rejected.

Table 4.3 PE T-test

	Type	N	Mean	Sig.
PE	Target	34	3.6088	.364
	Acquirer	34	3.3598	

There is no significant difference in ROE score for target firms (mean = 0.4826, standard deviation = 0.1034) and acquirers (mean = 0.4974, standard deviation = 0.1331) with its t (66) = -0.512. The significant value is larger than 0.05 (which is 0.190), it is assumed that we have to refer to equal variances assumed. 2-tailed significant level is above 0.05 signifies that there is no significant relationship between the two groups. Hence, hypothesis 2 is rejected.

Table 4.4 ROE T-test

	Type	N	Mean	Sig.
ROE	Target	34	.4826	.610
	Acquirer	34	.4974	

There is no significant differences in DE score for target firms (mean = 5.6374, standard deviation = 2.9976) and acquirers (mean = 6.8313, standard deviation = 3.5188) with its significant level of 0.407, which is higher than 0.05 and equal variances assumed column is referred. The 2-tailed significant level is above 0.005, so it indicates that there is no significant relationship between the two groups. As a result, hypothesis 3 is rejected.

Table 4.5 DE T-test

	Type	N	Mean	Sig.
DE	Target	34	5.6374	.137
	Acquirer	34	6.8313	

There is a significant difference in firm size score for target firms (mean = 1.3574, standard deviation = 0.2231) and acquirers (mean = 1.6675, standard deviation = 0.2838) with its 2-tailed significant level of 0.000, which is lower than the cutoff of 0.05. This indicates that the acquirers are significantly larger in size than the target firms. Hence, hypothesis 4 is accepted.

Table 4.6 Firm Size T-test

	Type	N	Mean	Sig.
Size	Target	34	1.3574	.000
	Acquirer	34	1.6675	

There is no significant differences in QR score for target firms (mean = 1.4394, standard deviation = 1.6849) and acquirers (mean = 1.0260, standard deviation = 0.9338) with its significant level of 0.014, which is lower than 0.05, equal variances not assumed is referred. 2-tailed significant level of 0.217 signifies that there is no difference between these 2 groups of companies. Thus, hypothesis 5 is rejected.

Table 4.7 QR T-test

	Type	N	Mean	Sig.
QR	Target	34	1.4394	0.217
	Acquirer	34	1.0260	

4.5 Relationship between independent and dependent variables

4.5.1 Correlation

Bivariate correlation is used to investigate if there is any significant strong relationship between any two of the independent variables. This is done as part of the efforts to avoid potential multicollinearity. According to the Correlations table in Appendix 16, the highest value of correlation between any two independent variables is 0.481 (between PE and ROE) which is less than 0.7 (Pallant, 2009, p.155). Hence, all independent variables are to be retained.

Table 4.8 Correlation

		Type	**PE**	**ROE**	**DE**	**Size**	**QR**
Pearson Correlation	**Type**	1.000	.112	-.063	-.182	-.525	.152
	PE	.112	1.000	-.481	-.165	.012	.164
	ROE	-.063	-.481	1.000	.270	.032	-.146
	DE	-.182	-.165	.270	1.000	.332	-.332
	Size	-.525	.012	.032	.332	1.000	-.222
	QR	.152	.164	-.146	-.332	-.222	1.000

The tolerance values for all five independent variables are found to be above 0.10 (range from 0.730 to 0.868) and the values of variance inflation factor (VIF) are found to be smaller than 10 (range from 1.153 to 1.369). These indicate that regression analysis has not violated the multicollinearity assumption (Pallant, 2009, p.156) and thus multicollinearity does not create a problem to the proposed regression model.

4.5.2 Logistic Regression

In this section, logistic regression analysis was used to predict the likelihood of a firm being acquired. There are 34 target firms and 34 non target firms in the initial stage. Normality is assessed in order to get a normal distribution statistics before the analysis starts. Transformation and Schweinle method are being used due to the data is not normally distributed.

Logistic regression is used to test models to predict the likelihood of the target firms to be merged. Target firms are represented as one (1) and non target firms are represented by zero (0).

Direct logistic regression was performed to assess the impact of a number of factors on the likelihood that a firm being acquired. The model contained five independent variables (price earnings ratio, return on equity, firm's size, debt to equity ratio and quick ratio). The full model (Appendix 23) containing all the predictors was statistically significance, $p<0.05$, indicating that the model was able to differentiate between the target firms and non target firms. The model as a whole explained between 18.0 percent (Cox and Snell R Square) and 24.0 percent (Nagelkerke R Square) of the variance in the type of firms and correctly classified 70.6 percent of cases. As shown in Table 4.16, only price earnings ratio made a distinctive statistically significant contribution to the model (Sig. = 0.003) with 95% confidence level.

Table 4.9 Contribution of each Predictor Variables

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	PE	-10.544	3.493	9.109	1	.003	.000	.000	.025
	ROE	-.057	.047	1.481	1	.224	.945	.863	1.035
	Size	-.051	.089	.322	1	.571	.951	.798	1.133
	DE	-.250	1.151	.047	1	.828	.778	.082	7.431
	QR	.599	1.501	.159	1	.690	1.820	.096	34.479
	Constant	-1.307	1.876	.485	1	.486	.271		

a. Variable(s) entered on step 1: PE, ROE, Size, DE, QR.

Appendix 17 gives us information about the contribution or importance of each of our predictor variables. It is known as a Wald Test (Pallant, 2007). The significance level is 0.003 which indicates that PE ratio is actually contributed significantly to the predictive ability of the model. The value B shows the direction of the dependent variable (Target = 1) and the independent variable (PE). So, in this case, the B value of PE ratio is -10.544, which indicates that an increase in the independent variable score will result in a decreased probability of the firms being acquired. By looking at the Exp(B) column, it provides an odd ratio of 0.00, which is below than 1.00. So, this suggests that the higher the PE ratio, the less likely that the firm will be acquired. This answer the research question number two (2) and hypothesis number six. The hypothesis 6 is accepted.

According to Wald Test, ROE does not contribute significantly to the predictive ability of the model as the significance level is 0.224 which is above 0.05. The B value of the ROE is -0.057 which indicates that an increase in the ROE score will result in a decreased

probability of the firms being acquired. This result does support hypothesis 7 which indicates that the higher the ROE, the lower the probability that a firm to be acquired, but it does not provide a significant contribution in predicting the likelihood of the target firms. So, hypothesis 7 is partially accepted.

The Wald Test shows that the firm's size does not contribute significantly to the model, by looking at the 0.571 significance level. The B value of the firm's size indicates that there is a negative relationship between the dependent variable (target = 1) and firm's size but does not provide a significant contribution to the model. So, hypothesis 8 is partially accepted.

Wald test shows that debt to equity ratio does not contribute significantly to the predictive ability of the model by giving a significance level of 0.828. By looking at the B value, it shows that an increase in the debt to equity ratio will result in a decreased probability of the firms being acquired. This result does not support hypothesis nine as it does not significantly shows that the takeover likelihood is negatively related to the debt to equity ratio. So, hypothesis 9 is partially accepted.

The significance level (0.690) of the Wald test shows that quick ratio does not contribute significantly to the predictive ability of the model. The positive B value of the quick ratio shows that an increase in the quick ratio will result in an increased probability of the firms being acquired. Hypothesis 10 is rejected as the higher the quick ratio, the higher the likelihood of the firms being acquired.

4.6 Conclusion

Chapter 4 provides the analysis of the empirical result. The results are explained by using descriptive statistic, normally assessment, and t-test to answer the research question number one (1) while question number two (2) is answered by analyzing the correlation coefficient of the variables and the logistic regression.

The tables below show the summary of the results for the hypothesis 1 till hypothesis 10:

Table 4.10 Summary Result for Hypotheses 1 to 5

Hypothesis	Variables	Expected Result	Result
H1	Price Earnings Ratio	Acquirer>Target Firm	Rejected
H2	Return on Equity	Acquirer>Target Firm	Rejected
H3	Debt to Equity Ratio	Acquirer<Target Firm	Rejected
H4	Firm's Size	Acquirer>Target Firm	Accepted
H5	Quick Ratio	Acquirer>Target Firm	Rejected

Table 4.11 Summary Result for Hypotheses 6 to 10

Hypotheses	Variables	Expected Sign	Result
H6	Price Earnings Ratio	Negative	Accepted
H7	Return on Equity	Negative	Partially Accepted
H8	Firm's Size	Negative	Partially Accepted
H9	Debt to Equity Ratio	Negative	Partially Accepted
H10	Quick Ratio	Negative	Rejected

Chapter 5: Conclusion and Recommendations

5.1 Introduction

The final chapter presents the conclusion of this research. Firstly, the summary of the research results and the examination of research objectives are presented. Subsequently, this chapter provides the limitations of the study and the suggestions for further research. Then, this chapter ends with the implications of the study.

5.2 Research result

There are ten hypotheses in this study in which the first five (H1, H2, H3, H4 and H5) are used to answer the research question one. While the other five hypotheses (H6, H7, H8, H9 and H10) are used to answer the research question two. This study has fulfilled the two objectives mentioned in Chapter 1, which are 1) to examine the financial characteristics of non financial merged (acquirer and target) companies in Malaysia and 2) to examine the financial characteristics of the target firms and non target firms in predicting which non-financial firms are more probable to be merger targets. It was found that only debt to equity ratios can be used to differentiate between acquirers and target firms as it shows that target firms is significantly higher debt to equity than the acquirers. Question one is being answered by using this result. A logit regression model has been used to identify the financial characteristics that can be used to identify the likelihood of the firms being acquired. The results of logit regression model show that only price earnings ratio provide significant difference between the target firms and those non target firms. It shows that the higher the price earnings ratio, the lower chance that the firm will become the target merger.

5.2.1 Financial differences between acquirers and target firms summary

With regards to the research result being reported in Chapter 4, it was found that the proxy variable that determines the financial characteristic differences is the firm's size. Based on the t-test result, the acquirers are significantly larger in size than the target firms. It shows that the target mergers were significantly smaller compared to the acquirers based on the proxy of firm's size. This result is being supported by the study being done by B. Rajesh and Rajib (2007). While the other four proxy variables (PE, ROE, DE and QR) do not contribute significantly to the financial characteristics differences to the model as the significant level for the t-test is above 0.005. As a result, hypothesis 3 is accepted while hypotheses 1, 2, 4 and 5 are rejected. However, study (B. Rajesh and Rajib, 2007) shows that the acquirers' higher price earning ratio, return on equity, and quick ratio are statistically significant than that of the target firms. The result of these researchers also shows that the acquirers have significant lower debt to equity ratio than the target firms in India.

5.2.2 Relationship between independent and dependent variables summary

Logistic regression result shows that only price per earnings ratio significantly (Sig. = 0.03) contributes to the prediction ability of the model with the negative relationship with the dependent variable. Return on equity, firm's size and debt to equity ratio demonstrates that the likelihood of the target merger is inverse relationship to the dependent variable. As far as the profitability, size and capital structure hypotheses are concerned, it is only partially supported by the results of the present study. This is because return on equity, firm's size and debt to equity ratios appeared to be as

insignificant proxy variables in explaining the takeover likelihood in Malaysia as far as the non financial institutions are concerned. This result provides a parallel explanation as for the study done by Misra (2009), in which firm's size and debt to equity ratios emerge to be insignificant in explaining the likelihood of the firms being acquired. Only quick ratio is positively related to the dependent variable. So, hypothesis 10 is being rejected for providing an insignificant positive relationship with the likelihood of the firms being acquired.

5.3 Limitations of the study

The current research is not without weakness. Below are some of the limitations of the study:

a) The design of this study is restricted to the sample from the public listed companies in the Bursa Malaysia. Therefore, the result may be biased towards big and well-established firms and may not fully represent the population of the non financial firms in Malaysia as there are many small, medium, and big firms which are not listed in Bursa Malaysia. The exclusion of these firms might affect the validity and reliability of the sample.

b) This study assumes normal distribution data for the model being proposed. In actual fact it could be a non-normal distributed model which requires some correction factors if a linear model is to be proposed or a more advanced statistical approach is to be used in estimating the model. Transformation was done in order to get the normally distributed

data. This manipulation of data might get the result that is biased towards beautifying the result.

c) The differences in accounting method for every individual firm may cause a contradiction in comparing these firms at the same level. Such differences could significantly affect the reported financial data and ultimately the results of this study.

d) The sample size of 34 target firms, 34 acquirers and 34 non target firms are the companies that consist of the completed financial ratios that will be used in this study. The companies with uncompleted financial ratios were eliminated from the study.

5.4 Implications of the Study

According to Vikalpa (2007),

"*A merger can be termed as an investment alternative in the context of scarce fund resources*".

This study has made several substantive and practical contributions. Besides, this study has extended and tested previous study involving a model approach to the pre-acquisition prediction of potential merger target and acquisition combinations. Firstly, five hypotheses are hypothesized based on the analysis of the financial characteristics of the acquirers and target firms in the literature review. Target firms are known to be profitable but poor in revenue generation as compared with the acquirers. The target firms are generally smaller size than the non target firms and this is contradict with the

study being done by Blake Arnullalmond (2004), in which they found that the target firms are generally larger than the non target counterparts.

This study has provided the analysis of the financial characteristics of the acquirers and target firms within a 2000 to 2008 in which the M&A activities were taken place. The utilization of the logit regression methodology to forecast the target mergers based on a diversity groups of financial variables has provided a high accuracy outcome.

Another contribution of the study is related to the issue of the statistical distribution of the financial ratios in the study. The examination of the ratios indicated that many ratios are not well described by a normal distribution. This is due to the varying degree of skewness and the subsistence of the outliers. It has been found that removing the existing outliers helps the distribution of the ratios to approximately normal. This can provide a preliminary learning ground for the future study.

Besides, applying of the logistic regression result could provide the acquirers with a simple, easy-to-use method for performing an initial evaluation of the potential candidates. The results show that all the independent variables except PE ratio are insignificant. The PE ratio is significantly related to the probability of being a target and it has expected negative sign which is consistent with the PE ratio hypothesis. The general result of the logistic regression analysis is possible to predict the likelihood of the target firms with a high degree of accuracy and the whole model is able to predict with about 70.6 percent accuracy.

By knowing the characteristics distinctiveness between the acquirers and target firms, the preliminary knowledge about the financial characteristics of the merger firms has been provided. It is important to have the knowledge about the financial characteristics of these firms as it provides a green light for the acquirers to identify which firm will be the potential target firm. The results provided in this study are useful to the non financial industry in identifying the potential target firms when it comes to the decision to acquire a firm as their business strategy. By differentiating the financial characteristics of the target and non target merger, it enables the vital decision to be made. As a result, the industry or the acquirers will exploit the benefits of business expansion, technology acquisition, wider market and customer base. At the same time, it enables the acquirers to take the advantage of having a good investment strategy. Having to know the financial characteristics of one firm also provide the competitive advantage to the acquirers to enhance their business (Misra, 2009). The findings of the significant financial characteristics differences of the target as well as non target mergers enable the top management to consider different scenarios before they jump into conclusion to acquire a firm.

5.5 Suggestions for future research

This study just touches about the financial characteristics of the non financial firms. The future research is suggested to use the addition of variables to represent the non financial characteristics as it has been already recommended in the past studies (Zanakis and Zopounidis, 1997), in order to improve further the ability of the developed models. The use of market data could also be used for the study of M&As of listed companies.

In addition, the post merger effect to the different industry should be analyzed and do the comparison. Even though the pre mergers critical success factors play a part in achieving the successfulness of a firm, the post merger integrations factors cannot be neglected.

The pre-merger analysis for different industry might provide the different result for the study. So, it is also essential to analyze the target firms by industry and compare the result for different industries as a whole. This will provide a more in-depth examination of the pre-merger target firm's likelihood to become an acquired firm.