

**DETERMINANTS OF FINANCIAL DISTRESS AMONG
MANUFACTURING COMPANIES IN MALAYSIA**

BY

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ABSTRACT

This study is conducted to evaluate the relationship between liquidity (WCTA, CACL), leverage (TDTA, CLNW), profitability (EBTA, ROE, ROA), BTMV, sales growth, and cash flow (CFFTL, CFITL, CFOTL) and the corporate financial distress among listed manufacturing firms in Malaysia. This study uses a sample from 2001 to 2014. Logistic regression is used to evaluate the relationship between the variables in three models. In model 1, the result shows that the WCTA, TDTA, EBTA, ROA, BTMV, and CFOTL have significant relationship with corporate financial distress. In model 2 when only cash flows variables are included, the results show that CFITL and CFOTL are negatively significant with financial distressed. In model 3 when all variables are included in the analysis, the results remain similar as in model 1. In model 4 when the stepwise logit regression is used, the results similar as in model 1.

Keywords: Logistic regression, financial distressed, cash flow

ABSTRAK

Kajian ini dijalankan untuk menilai hubungan antara kecairan (WCTA, CACL), hutang (TDTA, CLNW), keuntungan (EBTA, ROE, ROA), BTMV, pertumbuhan jualan, dan aliran tunai (CFFTL, CFITL, CFOTL) dan kesulitan kewangan syarikat-syarikat pembuatan yang disenaraikan di Malaysia. Kajian ini menggunakan sampel dari tahun 2001 hingga 2014. Kaedah regresi logistik digunakan untuk menilai hubungan antara pembolehubah dalam tiga model. Dalam model 1, hasilnya menunjukkan bahawa WCTA, TDTA, EBTA, ROA, BTMV dan CFOTL mempunyai hubungan yang signifikan dengan masalah kewangan korporat. Dalam model 2 apabila pembolehubah aliran tunai sahaja dimasukkan, keputusan menunjukkan bahawa CFITL dan CFOTL adalah negatif dan signifikan dengan kesulitan kewangan. Dalam model 3 apabila semua pembolehubah dimasukkan dalam analisis, hasilnya tetap sama dengan model 1. Dalam model 4, apabila kaedah 'stepwise logit regression' digunakan, keputusannya adalah sama seperti model 1.

Katakunci: Regresi logistik, kesulitan kewangan, aliran tunai.

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LIST OF ABBREVIATIONS

WCTA	Working capital to total assets
CACL	Current assets to current liabilities
TDTA	Total debt to total assets
CLNW	Current liabilities to net worth
EBTA	Earnings before interest and taxes to total assets
ROE	Return on Equity
ROA	Return on assets
BTMV	Book to market value
CFFTL	Cash flow from financing to total liabilities
CFITL	Cash flow from investing to total liabilities
CFOTL	Cash flow from operating to total liabilities
SMEs	Small and medium sized enterprises
TEST	Tehran stock exchange
MDA	Multivariate discriminant analysis
PN17	Practice Note 17
PN4	Practice Note 4
DSC	Debt Service Coverage
KSE	Karachi Stock Exchange
KRIS	Kamakura Risk Information Services

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The research on bankruptcy prediction is still an important topic in the finance area. Bankruptcy is a circumstance when companies are unable to meet or having difficulty to pay pecuniary obligation to creditors. “Bankruptcy”, “insolvency”, “default”, and “failure” are the other terms usually used to describe the situation where the firms face financial difficulties. The chances to be in the financial difficulties increase when firms have high fixed costs, illiquid assets or their income is sensitive to the economic downturn. Malaysia has a strong economic fundamental before the Asian financial crisis in mid-1997. However, after the crisis, many Malaysian companies was restructured as most of the companies was affected by the crisis, and many companies fall into bankruptcy (Ferri et al., 1998). During the crisis period, almost 50% of the Malaysian ringgit has devalued. The Malaysian stock market also shows a decrease of 54% for the six months ended December 31, 1997, creating a serious impact on the economy in the country.

In Malaysia, companies that falls under financial distress condition are classified as PN17 companies (Practice Note 17). The companies that are under PN17 category must submit their proposals to the Board of Approval to restructure and restore the company to maintain the status in listing. Before

2005, the listed companies which in a state of PN17 are classified under PN4.

Forecasting corporate financial distress has attracted the attention of financial economists as it can provide a signal regarding the company financial condition. A range of techniques have been developed to predict bankruptcy (Altman, 1968; Shumway, 2001; Jones and Hensher, 2004). Research regarding failure of the company comes out with a model to predict the corporate financial problems (Altman, 1968, Haldeman and Narayanan, 1977). This model has been widely used for a variety of purposes, such as loan assessments by the lender, an assessment by the auditors and the portfolio risk assessment by the fund managers and others (Jones and Hensher, 2004).

There are varieties of methods used to predict failure such as multivariate discriminant analysis, probit model, logit model, survival analysis and neural networks; all of this is the traditional model for prediction of distress. According to the study by Chi and Tang (2006), their bankruptcy prediction model shows a good classification accuracy by using logit analysis. Laitinen and Laitinen (2000) also adopted logistic regression in their bankruptcy predictive model to prevent problems related with variables normality.

The earlier studies of bankruptcy assert that financial ratios are very important to distinguish the companies into healthy and non-healthy. Therefore this study will use financial ratios to predict corporate failure for Malaysian manufacturing firms for the period from 2001 to 2014.

1.2 Problem Statement

Liquidity ratio plays a significant role in predicting financial distress (Altman, Haldeman, & Narayanan, 1977). This might happen because firms with higher liquidity will have more money to cover all their financial obligations on time. Keige (1991), Kiragu (1993) and Ohlson (1980) find that current asset to current liabilities has successfully predict bankruptcy. In contrast, Nyamboga, Omwario, Muriuki and Gongera (2014) find that profitability ratio measured by earnings before interest and taxes to total assets is significant. However, Paranowo (2010) and Salehi and Abedini (2009) find that profitability ratio has no significant effect on the corporate financial distress status. Hence, this study will look at the relationship between profitability and financial distress.

For leverage ratio, the study from Keige (1991) and Halim (2008) conclude that the leverage ratio is a significant predictor of corporate distress. The study measure the leverage ratio by using total debt to total assets. Paranowo (2010) also find that leverage ratio proxied by debt service coverage is also a significant predictor. However, Nyamboga, Omwario, Muriuki and Gongera (2014) find that leverage ratio measured by book value of equity to total liabilities does not have a significant ability to predict financial distress. Hence, this study will look at the relationship between leverage and financial distress.

According to Dichev (1998), book-to-market can be a factor to measure distress. This confirms the earlier study by Beaver (1996) and followed by Altman (1968) who indicate that book-to-market value as the

most critical variable in predicting bankruptcy. Fama and French (1992) also find that book-to-market effect may be a cause of risk in financial distress companies. In contrast, the study by Titman and Wessels (1988) find that the relationship between this ratio and financially distressed firms is substantially weaker. Hence, this study will analyse the relationship between book-to-market and distress.

Platt and Platt (2008) find that sales growth is the most significant variable in predicting bankruptcy. Higher sales will lead to a higher profit, thus it will reduce the tendency of becoming bankrupt. Most study indicates that the larger the growth in sales, the lower is the possibility of financial difficulties (Altman, 1984; Giroux and Wiggins, 1984; Opler and Titman, 1994; and Plat, Platt, and Chen, 1995). Hence, this study will analyse the relationship between growth and financial distress.

Many previous studies measure the prediction of financial distress using operating cash flow and find that operating cash flow is an important variable in financial distress prediction. (Gombola and Ketz, 1983; Gombola et al, 1983; Libby, 1975; Aziz and Lawson, 1989; Beaver, 1966; Altman, 2000; Largay and Stickney, 1980; Andreas Charitou et al., 2004; Deakin, 1972; Gilbert, 1990; Charitou and Venieris, 1990; Fulmer et al., 1991; and Sharma and Iselin, 2000). Ward (2011) indicates that cash flow from operating and cash flow from investing are important variables in predicting financial distress. However, cash flow from financing is not a significant variable. Hence, this study will analyze the relationship between cash flow variables and financial distress.

1.3 Research Questions

The following research questions are formulated for the study.

- 1) Is there any relationship between financial distress and liquidity of the firms?
- 2) Is there any relationship between corporate financial distress and leverage?
- 3) Is there any effect of the firms' financial distress on their profitability?
- 4) Is there any relationship between book-to-market ratio and financial distress?
- 5) Is there any relationship between financial distress and firms' growth level?
- 6) Is there any relationship between cash flows and firms' financial distress?

1.4 Research Objectives

1.4.1 General Objective

The general objective for this study is to evaluate the determinants of financial distress among manufacturing firms listed in the Bursa Malaysia.

1.4.2 Specific Objectives

The specific objectives for this research are based on the research question as above:

- 1) To determine the relationship between financial distress and liquidity of the firms.
- 2) To evaluate the effect of corporate financial distress and leverage.
- 3) To examine the effect of the financial distress and profitability.
- 4) To examine the relationship between book-to-market ratio and firms' financial distress.
- 5) To determine the effect of financial distress on growth level.
- 6) To investigate the relationship between cash flow and firms' financial distress.

1.5 Significance of Study

Compared to previous study, this study uses a longer period, which is from 2001 to 2014. Having a longer period allows more firms to be included as a sample. Hence, the result will be more reliable.

Besides using a traditional ratio to predict bankruptcy, this study also uses three types of cash flows which are cash flow from financing, cash flow from investing, and cash flow from operating. Hence, this study is able to

show whether cash flow is an important factor that contributes to the failure of the firm.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

There are several prior studies and investigations that identify the determinants of corporate financial distress among non-financial firms. The determinants of financial distress have been conducted by scholars all over the world through many studies and using various methods.

2.2 Determinants of Financial Distress

2.2.1 Liquidity

The liquidity ratio is among the popular ratio that has been used in corporate financial distressed. Studies that have used liquidity ratios are Mohammed (1997), Altman, Haldeman, & Narayanan (1977), Salehi & Abedini (2009), Kiragu (1993), Altman (1968), Kimura (1980), Paranowo (2010), Keige (1991), Baimwera (2006), Sulaiman and Sanda (2001), Paranowo (2010) and Theodossiou, (1996). Their study provide some evidence on the usefulness of accounting information specifically the financial ratio as an indicator of present, past and future performance. In general, financial analysts and investors used financial ratios to evaluate or to identify the financial distress or bankruptcy.

The study of Altman, Haldeman, and Narayanan (1977) find that liquidity is the most significant indicator for financial distress. Their study use a matched sample consists of 53 bankrupt companies and 58 non-bankrupt entities between the years 1969 to 1975. The model adopted by them is multiple discriminant analysis. The finding suggests that companies should retain sufficient liquidity to prevent the insolvency problems. Paranowo (2010) uses debt service coverage ratio as a proxy for liquidity and find liquidity as a significant variable. The sample consists of public listed non-financial companies in Indonesia for the period from 2004 to 2008.

On the other hand, Altman (1968) uses a sample from manufacturing sector and find that liquidity ratio is not significant in predicting the bankruptcy. Keige (1991) uses discriminant analysis and concludes that stakeholder should give an attention to liquidity. Baimwera (2006) using Z-Score model find that liquidity has no significant influence in determining corporate financial distress. Similar findings is given by Theodossiou (1996) who finds that liquidity ratios is not significant, despite the fact that this measure is important determinants in the previous empirical papers. The reason might be on the proxy of liquidity used by the researchers.

Kiragu (1993) conducted a study of corporate failure prediction using accounting data of price adjusted. He uses a matched sample of 10 bankrupt firms and the 10 healthy firms. Financial ratios are calculated from financial statistics adjusted price level. Discriminant model developed shows that the 9 of the ratios has the ability to predict corporate failure. He finds that liquidity is the most important ratio and has negative relationship with

financial distressed. This conclusion is in line with previous findings. Firms need to maintain sufficient liquidity to prevent the problem of insolvency.

Sulaiman and Sanda (2001) use logit model to predict the corporate failure in Malaysia. Their study uses the data that is obtained from the Kuala Lumpur Stock Exchange Companies Annual Handbook. The bankrupt companies used in their research are those that has not sought for court protection and the companies which have sought for court protection. The finding shows that liquidity is negatively significant with corporate failure. The result is similar with previous studies even though the model used is different.

Nyamboga, Omwario, Muriuki, Gongera (2014) use debt service coverage ratio (DSCR) as their proxy for financial distressed. The sample consists of of 38 non-financial public firms listed in the NSE and the data is achieved from the financial statement of the selected companies from 2007 to 2010. The Altman Z-score model is used to determine the financial distress of companies and they find that liquidity has no significant effect on corporate financial distress.

2.2.2 Leverage

The studies which discuss the relationship between corporate financial distress and leverage ratios are Titman and Opler (1994), Paranowo (2010), Baimwera (2006), Shamsir et al. (2001), Tan (2012), Andrade and Kaplan (1998), and Malik (2013).

Titman and Opler (1994) find that leverage has a positively significant relationship with distressed. However, Paranowo (2010) found leverage has a positively significant relationship with debt service coverage (DSC). A similar finding by Keige (1991) also concludes that leverage is as an important variable. The results of Theodossiou et al. (1996) indicate that leverage factors have strongly impact in financial problems. In this respect, firms having high leverage ratios are more disposed to failure during low income or recessionary periods.

However, Baimwera (2006) study uses DSC as a proxy to corporate financial distress. The result shows that leverage has no significant effect with financial distress. This finding is different from Keige (1991) who find that leverage is important variable in predicting the financial distress.

In addition, Shamsir et al. (2001) attempt to identify the common characteristics of the failed firms that are listed on Bursa Malaysia and find that the leverage of those firms increase gradually as they approach bankruptcy. Significant decline in this ratio occurred a year before failure. This study finds that there is a consistent trend in the changes of selected financial ratios towards bankruptcy and it gives an early signal on the potential failure or financial problems of the firm.

A study to determine the relationship between financial performance and financial distress during the financial crisis by Tan (2012) is carried out and the results confirm that the firms that have a low level of leverage tend to do better than those firms with a higher amount of leverage. In addition, the negative relationship between crises augments financial

difficulties and financial performance and this simply shows that high leverage is a bad experience during the crisis. The result is consistent with Andrade and Kaplan (1998).

Furthermore, by using financial ratios, Malik (2013) evaluate the financial difficulties of Pakistanis firm that a listed on Karachi Stock Exchange (KSE). The non-financial companies from 2003 to 2010 are used as the sample and the analysis is done by using Z-score model. The results show that the leverage is positively significant to the financial distressed and it suggests that the use of a high level of leverage contributes to the bankruptcy.

2.2.3 Profitability

Profitability ratio is among the standard variable use in the study on the relationship between the financial distressed and firm specific factor. Prior study which discusses bankruptcy using profitability as the variable are Altman (1968), Altman, Haldeman, and Narayanan (1977), Kiragu (1993), Nyamboga, Omwario, Muriuki, Gongera, (2014), and Paranowo (2010), Li (2007), Geng, Bose and Chen (2013).

Altman (1968) using Z-Score model concludes that profitability has a positive relationship with distress and it is the most significant ratio in predicting failure. Kimura (1980) also indicates that profitability is the most important ratio.

On the other hand, Paranowo (2010) study revealed that profitability do not has an impact on the status of corporate financial problems. This leads to the conclusion that high profits is not a guarantee that

companies can live to satisfy its liability. However, financially distressed firms with above average profitability may be appealing acquisition targets to firms that have the income and know how to improve their financial distress problems. This result is based on Indonesian companies.

Szilagy, Hilsche, and Campbell (2010) study aim to examine the factors that determine individual and corporate financial problem of public companies listed on the Kamakura Risk Information Services (KRIS). They use logit model as the method. The result is similar with previous researcher which find that profitability has a negatively significant relationship with financial difficulties.

Salehi and Abedini (2009) investigate the relationship between profitability and financial distress prediction of listed companies on Tehran Stock Exchange (TES). For this reason, they use the multiple regressions as the model. Valuation models made using the data from the two groups. The first group consists of 30 companies which do not have any financial difficulties, and for the second group, likewise, contain of 30 companies facing the financial difficulties. Their study find that profitability has negative significant relationship with financial distressed.

Bhunja, Khan and Mukhuti (2011) use companies listed on Indian Stock Exchange as a sample. The data is collected from the Companies Annual Report. A matched sample design method is applied in their analysis. Each failed company has a non-failed “partner” in the sample. Paired samples of failed and non-failed companies from year of 2001 to 2010 are utilized in their analysis. Their result is different from previous studies where they find

that profitability is not significantly related with financial distressed. This result might occur because the proxy for liquidity use in the study is different from previous study.

Li (2007) uses a rough set (RS) model to study the financial distress prediction for Chinese listed companies. The sample consists of 212 financial distressed firms and 212 healthy firms from the years 1998 to 2005. The result from this study finds that profitability has a strong effects on corporate financial distress.

Geng, Bose and Chen (2013) studies the prediction of financial distress for 107 Chinese companies that received the label ‘special treatment’ from 2001 to 2008 by the Shanghai Stock Exchange and the Shenzhen Stock Exchange. They use data mining techniques to build financial distress warning models based on 31 financial indicators and using three different time windows by comparing these 107 firms to a control group of firms. The results find an important role of profitability in predicting financial distress.

2.2.4 Firms Growth

Most previous studies use assets to sales ratio as a proxy to measure sales growth. The result shows that an assets to sale has a positively significant relationship to financial distress costs (John, 1993). To identify troubled companies, Opler and Titman (1994) study use sales growth as a variable. Then, they find a negative growth in sales is related to the companies that have problems in their daily business. Both indicators are particularly important during a recession because they reflect not only the

structure of the effective operations of the company, but it shows that it is also dependent on investor sentiment, the state of competition and also to the general condition of the industry.

Altman (1984) estimate the cost of the financial difficulties by using two measures. The first measure is decline in the sales compared with other firms in the industry, and the second is a measure of the deviation between the firms in their real earnings and forecast their income in three years before they file for bankruptcy. They find that the observed decline in sales is due to the financial difficulties of the firm.

Another measure of growth used by previous authors is operating income. At the early stages of financial distress, operating income falls below industry average and this shows that it is positively significant with distressed (Whitaker, 1999).

2.2.5 Market Value

Baimwera (2006) study the relationship between the ratio of book-to-market of equity, distress risk and stock of return. The risk of distress is proxied by the score of Ohlson. The ratio of book-to-market equity and risk of distress as proxied by O-score is also compared to other variables that are considered to be related with distress. Stocks are listed each year based on the probability of the difficulty and the ratio of books-to-equity market and Spearman's rank correlation coefficients are calculated between ranks. The results show that the ratio of book-to-market equity and risk of distress are both negative in relation. Furthermore, Baimwera (2006) also look at the relationship between book-to-market and return and find that book-to-market

and return and find that book-to-market equity is positively related to return but the relationship is not very powerful.

A study conducted by Altman (2003) who use financial ratios to predict the occurrence of bankruptcy is able to correctly predict 94% one year before bankruptcy occurs, and 72% two years before the actual event. Book-to-market ratio is found positively significant on bankruptcy prediction. According to Dichev (1998), firm distress risk factor is related to size and the book-to-market effects. A natural proxy for firm distress is bankruptcy risk. He hypothesize that if bankruptcy is systematic, one would expect a positive association between bankruptcy risks and subsequent realized returns. However, his study proved that bankruptcy risk is not rewarded by higher returns. Thus a distress factor is unlikely to account for the size and book-to-market effects. Surprisingly, firms with high bankruptcy risk earn lower than average returns since 1980. A risk based description cannot fully explain inconsistent evidence.

2.2.6 Cash Flow

Most previous studies use cash flow information as a variable to predict the bankruptcy. The studies that use operating cash flow are Beaver (1966), Deakin (1972), Blum (1974), Casey and Bartczak (1984, 1985), Gentry et al. (1990), and Ward (1992, 2011).

The significance of cash flow information for predicting bankruptcy is emphasized by Beaver (1966). Beaver (1966) uses net income plus depreciation, depletion and amortisation, to total debt as a proxy for cash

flow from operations (CFFO). Nevertheless, the univariate approach to analyze financial problems is rarely followed by other researchers.

Deakin (1972) uses cash flow to total debt as the cash flow variable and uses a dichotomous classification test to study a single-year and multiple-years discriminant analysis; all for 1 to 5 years prior to failure. He finds that CF/TD is significant for 1, 2, and 3 years prior to failure with single-year discriminant models. Blum (1974) has similar result where CF/TD is a significant variable but he uses multivariate discriminant analysis as a method.

Casey and Bartczak (1984) use CFFO, CFFO/CL, and CFFO/TL as the variables in their MDA model in the study. The results of their study find that CFFO/CL is significant for the first three years, CFFO/TL for the first two years, and CFFO for years 1, 4, and 5 prior to bankruptcy. The best MDA model contain only CFFO variable.

Ward (2011) uses CFFO, CFFI, and CFFF and scaled them by total liabilities in mining, oil, and gas firms. The study also uses logistic regression prediction models. He find that CFFO is an important indicator to predict financial distressed companies in the industry. While, CFFI is the most important variable to predict the financial distressed in mining, oil, and gas firms.

CHAPTER THREE

METHODOLOGY

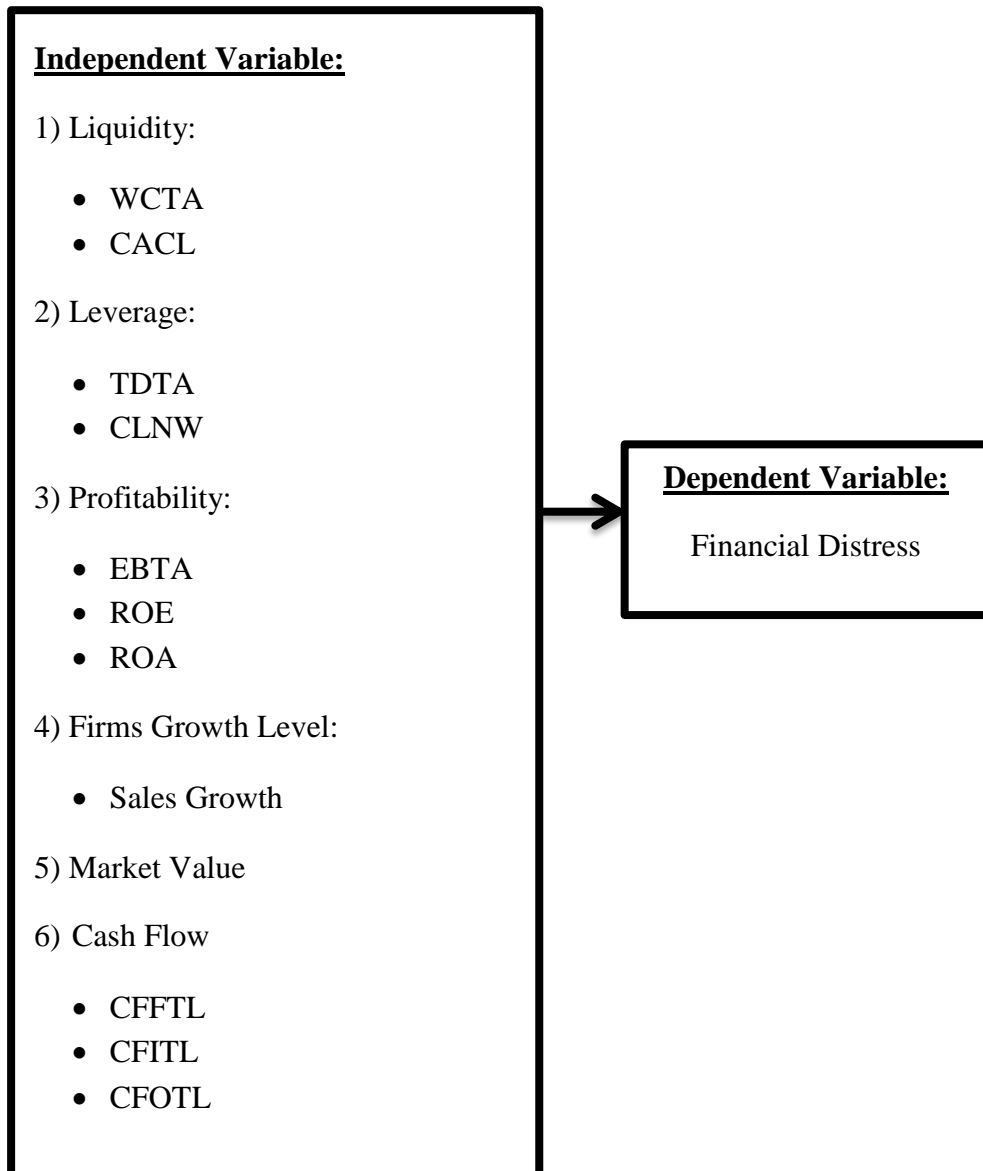
3.0 Introduction

This chapter is divided into seven subsections which comprise of research framework, variables used in the study, hypotheses development, measurement of variables, data collection, sampling and methodology.

3.2 Research Framework

The research framework for the study is as follows:

Figure 3.1: Theoretical Framework: Relationship between corporate financial distress and firms' performance



3.3 Variables

3.2.1 Dependent variables

This study uses a dummy variable as the dependent variable. It is coded as 1 for bankrupt firm and 0 for healthy firm.

3.2.2 Independent variables

Twelve financial variables are used as the independent variables in the study. They are WCTA, CACL, TDTA, CLNW, EBTA, ROE, ROA, Sales growth, BTMV, CFFTL, CFITL, and CFOTL. The ratios are chosen based on the results from previous study and they usually have been used in the bankruptcy studies.

In accounting term, liquidity is defined as the company capability to fulfil their financial obligations as they become due or in other words, it measure the ability of the company to pay the short-term debt on time. The ratio of working capital / total assets (WCTA), which is a measure of the firm's net liquid assets compared with total capitalization, is used as a measure for liquidity. Typically for a firm that consistently has losses in their business, the current assets will become lower in relation to the total assets. Merwin (1942) indicates that the net working capital to total assets is the best indicator for financial distress. The second ratio used to proxy for liquidity is the current ratio. The current ratio shows the ability of the company to pay the debt or its obligations on time. The current ratio is calculated as current assets / current liabilities.

The second independent variable used is the leverage ratio. Leverage ratio also determines the balance costs mix of the company and its impact on operating income. Those who are concerned with long-term financial position of the firm are long-term creditors such as debenture holders and financial institutions. The total debt / total assets (TDTA) is used as a measure of leverage which shows the long-term financial obligations of the company. Increases in leverage will increase the probability of the financial difficulties. With the high degree of leverage, there is possibility that the company will have insufficient cash flow to service debt which lead to bankruptcy. The second ratio used to measure the leverage is current liabilities/net worth (CLNW) which shows the cost of debt financing may be greater than the return that the company generates on the debt through investment and business activities and become too much for the company to handle. This can lead to bankruptcy, which would leave nothing to the shareholders.

Profitability ratio measure the performance of the company. Earnings before interest and taxes to total assets (EBTA) is used as a measure of profitability. This ratio measures the actual productivity of the assets of the firm after abstracting tax. Since an absolute existence is based on this ratio, it seems appropriate to use this ratio in studies related to corporate failures. In addition bankruptcy or insolvency happens when the total liabilities exceed the fair valuation of the assets of the firm with the value determined by the power of the item.

The return on equity (ROE) measured as net income to common equity is used as a second measure for profitability. High returns on common equity shows that companies have use their equity and this increases the

profitability of the company. Higher return on common equity leads to a higher share prices. Analysts believe that the return on common equity is an essential indicator of the company's publicly traded health.

The return on assets (ROA) is the third measure of profitability used in the study proxied by net income to total assets. Companies that cannot utilize their assets effectively tends to go bankrupt.

Firms' growth is proxied by sales growth. Sales growth is a measure of the percentage increase in sales between the two time periods. The equations for sales growth is current period net sales minus prior period net sales to prior period net sales. The higher the sales growth for the companies, the lower is the probability of bankruptcy.

Book-to-market ratio is the ratio of the book value of a firm's to its market value. The book value is a historical cost or accounting value of the firm. The market value is determined on the stock market by market capitalization. The ratio of book-to-market can be used to identify whether the securities are undervalued or overvalued. In basic terms, if the ratio is above one then it is undervalued; if it is less than one, stocks are overvalued.

Cash flow from operations is cash inflows and outflows arising directly from producing and selling the products of company. This cash flow from operations activities include item from net income, depreciation and working capital accounts other than cash and operations that is associated with short-term debt. Cash flow from investing activities is cash flow relating to the purchase or sale of long-term fixed assets or others. Cash flow from financing activities is cash flow arising from the debt and equity financing.

These include increasing cash by issuing short-term debt, long-term debt issuing, issue of shares, using of cash to pay dividends, using the cash to buy back shares and use cash to pay off debt.

3.4 Hypotheses

Six hypotheses have been developed for this study.

3.4.1 Liquidity

Liquidity measures the company's ability to fulfil its current obligations. Failure to have enough liquidity will lead to poor creditworthiness as the company cannot fulfil their financial obligations. This will lead to loss of creditors' confidence. Previous studies which found positive relationship between liquidity and financial distress are Muhammad Suleiman (2001), Altman (1968), Platt and Platt (2002), Smith and Graves (2005), Taffler (1983), Ameer (2010), Abdullah et al. (2008), and Rosliza (2006).

However, negative relationship can occur when the higher the liquidity, the lower would be the probability of bankruptcy. Studies that find negative relationship between liquidity and distress are Nuha (1996), Begley (1996) and Deakin (1972). Nevertheless, Shirata (1998) find that liquidity is not an important factor. Begley (1990) and Deakin (1972) show that working capital ratio to total assets is an important factor. Hence, we hypothesized that

H1: There is a relationship between financial distress and liquidity of the firms.

3.4.2 Leverage

The higher the amount of leverage in the company, the greater is the financial risk. Prior researchers who have found a significant positive relationship between corporate financial distress and leverage are Altman (2000), Theodossiou et al. (1996), Zulkarnain (2009), Paranowo (2010), Halim (2008), Malik (2013), Andrade and Kaplan (1997); Asquith et al. (1994), Kaplan and Stein (1993), Whitaker (1999), Wruck (1990) and Keige (1991).

However, some prior study finds that leverage is not significantly related to corporate financial distress. Those studies are from Baimwera (2006), Nyamboga, Omwario, Muriuki, Gongera (2014), Baimwera and Muriuki (2014), Sitati and Ondipo (2006), and Pindado (2005). Hence, we hypothesized that

H2: There is a relationship between corporate financial distress and leverage.

3.4.3 Profitability

Companies with poor profitability are associated with potentially bankrupt firm. Previous researchers find that profitability has a positive significant relationship with firms' financial distress level (Altman, Haldeman, & Narayanan, 1977; Altman, 1968; Kimura, 1980; Nyamboga, Omwario, Muriuki, Gongera, 2014; Malik, 2013; Hunter and Isachenkova,

2000; Bhunia, 2011; Baimwera and Muriuki, 2014; Theodossiou et al., 1996; Parker, Peters and Turetsky, 2002; Li and Liu, 2009; Altman, 1968, 1991 & 2000; Myer, 1977; Myers and Majluf, 1984; Fazilah, 2000; Beaver, 1966; and Idris, 2008).

However, some studies find that profitability does not lead to the distress (Kiragu, 1993; Paranowo, 2010; Kaver, 1980; Ohlson, 1980; and Shirata, 1998). Hence, we hypothesized that

H3: There is a relationship between profitability and firms' financial distress.

3.4.4 Sales Growth

Plat and Platt (2008) find that sales growth is negatively significant with distress, where the larger the growth in sales, the lower is the possibility of financial difficulties. Their study confirm the earlier studies by Altman (1984), Giroux and Wiggins (1984), Opler and Titman (1994), and Plat, Platt, and Chen (1995). Hence, we hypothesized that

H4: There is a relationship between sales growth and firms' financial distress.

3.4.5 Market Value

Baimwera (2006) and Dichev (1998) find that book-to-market ratio is negatively significantly related to distress. Fama and French (1992) find that book to market ratio is significantly positively and related to distress is an important factor to measure the risk. Hence, it is hypothesized that

H5: There is a relationship between corporate financial distress and market-to-book value.

3.4.6 Cash Flow

Earlier study has been conducted to estimate whether the data of operating cash flow are negatively significantly associated with distress and lead to more exact in predictions of corporate failure. Those studies are Gombola and Ketz (1983), Gombola et al. (1983), Libby (1975), Aziz and Lawson (1989), Beaver (1966), Altman (2000), Largay and Stickney (1980), Andreas Charitou et al. (2004), Deakin (1972), Gilbert (1990), Charitou and Venieris (1990), Fulmer et al. (1991), and Sharma and Iselin (2000).

Several prior studies find that cash flow is not an important factor in predicting corporate failure. The studies are Casey and Bartczak (1984 & 1985), Shamser et. al (2001), Zavgren (1983), Jones (1987), Neill et al. (1991), Watson (1996), Gentry et. al (1985), Viscione (1985), Laitinen (1994), Ward (1994), Simons (1994), Ijiri (1979), Heath (1978), Climo (1976), Lee (1971), and Sharma (1995). Hence, we hypothesized that

H6: There is a relationship between cash flow from activities with firms' financial distress.

3.5 Measurement of variables

Twelve variables are used in this study as shown in table 3.1. All the variables have been found as significant by previous researcher.

Table 3.1: Variables used in this study

	Variables	Formula
Independent Variable	WCTA	Working Capital/Total Assets
	CACL	Current Assets/Current Liabilities
	TDTA	Total Debt/Total Assets
	CLNW	Current Liabilities/Working Capital
	EBTA	EBIT/Total Assets
	ROE	Net Income/Total Equity
	ROA	Net Income/Total Assets
	BTMV	Book Value of Equity / Total Liabilities
	SALES	$(Sales_t - Sales_{t-1}) / Sales_{t-1}$
	CFFTL	Cash From Financing/Total Liabilities
	CFITL	Cash From Investing/Total Liabilities
	CFOTL	Cash From Operating /Total Liabilities

3.6 Data Collection

This study uses the Malaysia firms listed in Bursa Malaysia and delisted companies from PN17 list. The data only covers the manufacturing sector. Companies with missing data or company that die not because of financial distress are excluded from the study. Due to the differences in the accounting treatment, financial sector is excluded from the sample (Palani and Mohideen, 2012). The name of companies listed under PN4 and PN17 are collected from the library of Bursa Malaysia, while the data for the accounting information is taken from Thomson Reuters Datastream for the period between the years of 2001 to 2014. Appendix A list all the companies selected for the study.

3.7 Sampling

The data are collected from 2001 to 2014. All 84 delisted companies as in appendix A in that period are taken into account. However, some of the companies are delisted because of other reasons; therefore, those companies are excluded from the sample. As a result, only 36 companies are chosen as the sample as in the table 3.2.

Table 3.2: List of 36 delisted companies in manufacturing sector

NO	DATE ENTERED	IND-PROD	SECOND NAME
1	23/2/2001	Denko Industrial Corporation Berhad	
2	26/2/2001	Integrated Rubber Corporation Berhad	
3	26/2/2001	Lion Corporation Berhad	
4	13/5/2002	Sunway Building Technology Bhd (Now known as Dolomite Corporation Bhd)	Dolomite Corp Bhd
5	1/12/2005	Boustead Heavy Industries Corporation Bhd (formerly known as PSC Industries Berhad)	
6	11/7/2005	Poly Glass Fibre (M) Berhad	
7	28/2/2005	Scomi Engineering Bhd (formerly known as Bell & Order Berhad)	
8	7/7/2005	Sinora Industries Berhad	Innoprise Plantations BHD
9	8/5/2006	Harvest Court Industries Bhd	
10	8/5/2006	Syarikat Kayu Wangi Bhd	
11	8/5/2006	Tenggara Oil Bhd	
12	30/11/2007	Wonderful Wire & Cable Bhd	
13	9/6/2008	BSA INTERNATIONAL BHD	
14	11/9/2008	Energreen Corporation Berhad (fka Welli Multi Corporation Berhad)	
15	3/12/2008	Englotechs Holding Bhd	
16	2/5/2008	Luster Industries Bhd	
17	20/3/2009	Axis Incorporated Berhad	
18	26/2/2009	Connectcounty Holdings Berhad	

19	12/5/2009	Evermaster Group Berhad	
20	3/9/2009	HDM-Carlaw Corporation Berhad	
21	17/8/2009	JPK Holdings Berhad	
22	15/5/2009	Poly Tower Ventures Berhad	
23	30/12/2009	Limahsoon Berhad	
24	29/10/2010	Carotech Berhad	
25	13/7/2010	Ecofuture Berhad	
26	23/6/2010	Linear Corporation Berhad	
27	23/8/2010	Metech Group Berhad	
28	2/3/2010	Tracoma Holdings Berhad	
29	25/2/2010	VTI Vintage Berhad	ML GLOBAL BERHAD
30	8/6/2012	Octagon Consolidated Bhd	
31	29/6/2004	Adventa Bhd	
32	4/2/1998	Autoair Holdings Bhd	
33	10/8/2005	IRM Group Bhd	
34	26/5/1996	Malaysian AE Models Holdings Bhd	
35	31/10/2014	Asia Knight Berhad	
36	2014	Metal Reclamation Bhd	

Non-distressed listed companies and distressed companies are matched based on total assets and industry. For each distressed companies, a non-distressed companies is matched and chosen. This sampling technique is called one-to-one basis. This procedure of using matched sampling is consistent with the studies by Beaver (1996), Laitinen (1994), Altman (1968), Zulkarnain et al. (2001), and Gadenne and Iselin (2000).

3.8 Data Analysis

3.3.1 Logistic Regression Analysis

This study uses logit analysis by statistical package for the social sciences (SPSS) to overcome the limitations in the Multivariate Discriminant

Analysis (MDA), which are multivariate normality and equality in the distribution matrix among group. Logit analysis provides the likelihood ratio where it is explained by the dichotomous dependent variable or by independent variables coefficients. The prediction from logit model is estimated by a maximum likelihood ratio. In this study, dependent variables are coded as one if the firms are in financial distress and coded as zero if they are healthy companies. This model is used by Ohlson (1980) and Gujarati (1995). The model is as follows:

$$y = \alpha_0 + \alpha_1 WCTA_{it} + \alpha_2 CACL_{it} + \alpha_3 TDTA_{it} + \alpha_4 CLNW_{it} + \alpha_5 EBTA_{it} + \alpha_6 ROE_{it} + \alpha_7 ROA_{it} + \alpha_8 SG_{it} + \alpha_9 BTMV_{it} + \alpha_{10} CFFTL_{it} + \alpha_{11} CFITL_{it} + \alpha_{12} CFOTL_{it} + \varepsilon_{it}$$

Where,

y = dummy variable, =1 for distress companies, and 0 for non-distress companies

$WCTA_{it}$ = Working Capital / Total Asset

$CACL_{it}$ = Current Asset / Current Liabilities

$TDTA_{it}$ = Total Debt / Total Asset

$CLNW_{it}$ = Current Liabilities/Working Capital

$EBTA_{it}$ = Earnings before Interest Taxes / Total Assets

ROE_{it} = Return on Equity

ROA_{it} = Return on Assets

SG_{it} = Sales Growth

$BTMV_{it}$ = Book-to-Market Value

$CFFTL_{it}$ = Cash Flow from Investing / Total Liabilities

$CFITL_{it}$ = Cash Flow from Financing / Total Liabilities

$CFOTL_{it}$ = Cash Flow from Operating / Total Liabilities

Where, subscription of i is the companies, and t refer to the year. The dependent variable is a dummy variable, 0 for healthy company and 1 for distressed company.

CHAPTER FOUR

FINDINGS AND DISCUSSION

4.1 Introduction

This chapter discusses the result of this study. Section 4.1 discusses the descriptive statistics, section 4.2 discusses the correlation while section 4.3 discusses the correlation and section 4.4 discusses the logit regression results.

4.2 Descriptive Statistics

Table 4.1 shows the result of the descriptive statistics by each of the independent variable. The table of descriptive statistics shows the minimum, maximum, mean, and standard deviation of all twelve variables.

The descriptive statistics of the liquidity variables are shown in table 4.1. The minimum value for WCTA is - 23.06%, while the maximum value is 1.30%. Meanwhile, CACL value is between 0.02% and 252.74%, which higher than WCTA. The standard deviation for WCTA is 1.52 and for CACL is 8.43.

For leverage variable, this study uses a measurement of TDTA and CLNW ratios as a proxy. The value for TDTA ratio is between 0% and 10.27% and the value for CLNW is between - 253.12% and 105.61%. This

result shows that the value of CLNW is higher than TDTA ratio and the standard deviation of CLNW is much higher than TDTA.

Table 4.1: Descriptive statistics for non-distressed and distressed companies

	DISTRESS		NON DISTRESS		
	Mean	Std. Deviation	Mean	Std. Deviation	
WCTA	-0.420	2.091	WCTA	0.196	0.230
CACL	1.911	11.584	CACL	2.521	2.780
TDTA	0.647	1.059	TDTA	0.238	0.167
CLNW	-0.298	15.662	CLNW	-1.433	18.698
NITA	-0.140	0.595	NITA	0.006	0.085
ROE	-0.216	1.580	ROE	-0.002	0.207
ROA	0.036	0.097	ROA	0.021	0.080
BTMV	14.443	94.525	BTMV	0.930	0.850
SALESGROWTH	82.852	1573.967	SALESGROWTH	28.638	450.661
CFFTL	0.039	0.212	CFFTL	0.012	0.992
CFITL	0.024	0.224	CFITL	0.126	0.591
CFOTL	-0.012	0.159	CFOTL	0.146	0.830

Table 4.2: Independent samples t-test for equality of means

	t	Sig. (2-tailed)
WCTA	-6.568	0.000***
CACL	-1.150	0.251
TDTA	8.584	0.000***
CLNW	1.045	0.296
EBTA	-3.692	0.000***
ROE	-3.011	0.003***
ROA	2.765	0.006***
BTMV	3.209	0.001***
SALESGROWTH	0.743	0.457
CFFTL	0.610	0.542
CFITL	-3.626	0.000***
CFOTL	-4.194	0.000***

***Significant at 1% level

Table 4.1 shows the result of the descriptive statistics by each of the independent variable. The table of descriptive statistics shows the mean, and standard deviation of all twelve variables. Sample for non-distressed companies has better mean values than the sample from distressed companies.

The descriptive statistics of the liquidity variables are shown in table 4.1. The mean value for WCTA is -0.42 for distress and 0.19 for non-distress which shows that the working capital for distress companies lower and the companies lead to the bankruptcy.

The TDTA ratio of the leverage is shown in the table 4.1. The mean value for distress is 0.65 and 0.24 for non-distress. This shows that the higher debt of the companies will tend to the bankruptcy.

The descriptive statistics of the profitability is measure by EBTA, ROE and ROA. The table 4.1 shows that the mean value for EBTA ratio for distress is -0.06 and non-distress is 0.03, ROE is -0.22 for distress and -0.002 for non-distress. ROA mean value is 0.04 for distress and 0.02 for non-distress. This shows that higher of profitability will reduce the probability of bankruptcy.

The result for book-to-market variable is 14.4 for distress and 0.93 for non-distress. The variable of firms' growth is measured by sales growth. The mean value is 82.8 for distress and 28.6 for non-distress.

The variables used to measure cash flows are cash flow from financing, investing, and operating activities. The descriptive statistics shows that the mean value of CFFTL is 0.04 for distress and 0.012 for non-distress. CFITL is 0.02 for distress and 0.13 for non-distress while CFOTL is -0.0122 for distress and 0.15 for non-distress.

Table 4.2 shows an independent samples t-test for equality of means. The results show that there are significant differences in mean between the two groups in WCTA, TDTA, EBTA, ROE, ROA, BTMV, CFITL and CFOTL.

4.3 Correlation Analysis

The correlation analysis shows the relationship between the variables, where, a higher correlation shows a higher level of association between the variable while a lower correlation indicates a lower level of association. The result shows that all variables are not highly correlated.

Table 4.3 Pearson Correlation Coefficients

	WCTA	CACL	TDTA	CLNW	EBTA	ROE	ROA	BTMV	SALES GROWT	CFFTL	CFITL	CFOTL
WCTA	1	0.089 (0.005)**	-0.671 (0.000)**	0.020 (0.525)	0.173 (0.000)**	0.046 (0.148)	0.040 (0.200)	-0.011 (0.723)	0.003 (0.921)	0.035 (0.263)	0.179 (0.000)**	0.150 (0.000)**
CACL		1	-0.040 (0.205)	0.014 (0.660)	0.086 (0.006)**	0.052 (0.099)	0.147 (0.000)**	-0.020 (0.520)	-0.007 (0.834)	0.084 (0.008)**	0.107 (0.001)**	0.020 (0.521)
TDTA			1	-0.014 (0.657)	-0.408 (0.000)**	-0.075 (0.018)**	-0.056 (0.078)	0.012 (0.710)	-0.011 (0.720)	-0.001 (0.982)	-0.088 (0.005)**	-0.131 (0.000)**
CLNW				1	0.033 (0.292)	0.029 (0.363)	0.091 (0.004)**	-0.008 (0.811)	0.012 (0.707)	0.006 (0.859)	0.011 (0.734)	0.010 (0.746)
EBTA					1	0.191 (0.000)**	0.246 (0.000)**	0.003 (0.914)	0.014 (0.647)	0.000 (0.997)	0.041 (0.192)	0.073 (0.021)**
ROE						1	0.208 (0.000)**	-0.030 (0.348)	0.011 (0.729)	0.003 (0.934)	0.010 (0.752)	0.023 (0.459)
ROA							1	0.037 (0.245)	0.023 (0.468)	-0.061 (0.054)	-0.036 (0.259)	0.146 (0.000)**
BTMV								1	-0.003 (0.936)	-0.003 (0.936)	-0.009 (0.780)	-0.007 (0.823)
SALES GROWTH									1	-0.002 (0.945)	-0.002 (0.944)	0.002 (0.941)
CFFTL										1	0.518 (0.000)**	-0.623 (0.000)**
CFITL											1	0.145 (0.000)**
CFOTL												1

4.4 Logistic Regression

In this study, the logit analysis is used to estimate the relationship between dependent and independent variable. Three models are being analyzed. In model one, except cash flow variables are excluded. Then, in the second model, only cash flow variables are included from the analysis. After that, in the third model, all variables are included in the analysis. In model 4, we include all variables, but the method changes to stepwise logit regression.

Table 4.4 shows that in model 1, the significant variables to measure distress are WCTA, TDTA, EBTA, ROA, and BTMV. The WCTA, which is a measure of liquidity, is negatively significant. This shows that the higher the liquidity, the lower would be the probability of bankruptcy. This finding is similar to Nuha (1996), Begley (1996) and Deakin (1972).

The variable of TDTA which is a measure of leverage shows a positively significant value. This indicates that the higher the debt of the company, the higher the probability for the company to be in the financial distressed. This finding is similar to Altman (2000), Theodossiou et al. (1996), Zulkarnain (2009), Paranowo (2010), Halim (2008), Malik (2013), Andrade and Kaplan (1997), Asquith et al. (1994), Kaplan and Stein (1993), Whitaker (1999), Asquith et al. (1994) and Wruck (1990).

EBTA which is a measure of profitability is negatively significant to financial distress. This is consistent with previous studies that suggest that a higher amount of profitability will reduce the probability of bankruptcy. This finding is similar to Altman (1968 and 2000), Altman et al. (1977), Bhunia and Sarkar (2011), Odipo and Sitati (2006), and Paranowo (2010).

ROA which is another measure of profitability shows a positively significant relationship with financial distress. This shows that as return on assets increases, the probability of bankruptcy increases. This finding is similar to Gombola (2014), Paranowo (2010).

The BTMV has a positively significant relationship to the financial distressed. This shows that assets of the company decline in value before the liabilities exceed the assets and the firm tends to go into the bankruptcy. The findings is similar to Dichev (1998), Fama and French (1992), Chen and Zhang (1998), Giroux and Wiggins (1984), Opler and Titman (1994), Plat, Platt, and Chen (1995) and Shumway (1996).

In model 2, only cash flows variables are included in the analysis. The results show that CFOTL and CFITL have negative and significant relationship with financial distressed. The negative relationship suggests that cash flows that arise from operating and investment of the company has a tendency to reduce the probability of bankruptcy. This finding is similar to Ward (2011).

Model 3 shows that when all items are included in the analysis, the results remain similar as in model 1. For cash flow, only CFOTL is negatively significant to the financial distressed and this results suggest that the higher the operating cash flow the lower the probability of bankruptcy. This results confirms the finding by Gombola and Ketz (1983), Gombola et al. (1983), Libby (1975), Aziz and Lawson (1989), Beaver (1966), Altman (2000), Largay and Stickney (1980), Andreas Charitou et al. (2004),

Deakin (1972), Gilbert (1990), Charitou and Venieris (1990), Fulmer et al. (1991), and Sharma and Iselin (2000).

In model 4, the stepwise regression confirms that the WCTA, TDTA, EBTA, ROA, and CFOTL are important variables in determining financial distress in Malaysia.

Hence, all the hypotheses regarding liquidity, leverage, profitability, book-to-market ratio, and cash flow are accepted.

Comparing the percentage correctly predicted, table 4.4 shows that model 1 correctly predict 70.1% of the companies, while model 2 is 68.1%, model 3 is 71.7%, and model 4 is 70.5%.

Table 4.4: Logit regression results

Independent Variables	Model 1	Model 2	Model 3	Model 4
WCTA	-0.782 (0.001)***	-	-0.746 (0.003)***	-0.871 (0.001)***
CACL	-0.004 (0.783)	-	-0.002 (0.893)	
TDTA	3.479 (0.000)***	-	3.266 (0.000)***	3.321 (0.000)***
CLNW	0.007 (0.131)	-	0.007 (0.145)	
EBTA	-2.945 (0.001)***	-	-2.933 (0.001)***	-3.308 (0.000)***
ROE	-0.078 (0.414)	-	-0.111 (0.260)	
ROA	9.198 (0.000)***	-	10.092 (0.000)***	10.387 (0.000)***
BTMV	0.195 (0.018)**	-	0.183 (0.027)**	
SALESGROWTH	0.000 (0.399)	-	0.000 (0.419)	
CFFTL	-	0.294 (0.403)	0.046 (0.898)	
CFITL	-	-1.160 (0.001)***	0.358 (0.334)	
CFOTL	-	-1.158 (0.000)***	-0.595 (0.000)***	-0.652 (0.017)**
CONSTANT	-1.509 (0.000)	0.153 (0.027)	-1.395 (0.000)	-1.224 (0.000)
-2 Log likelihood	1106.29	1344.324	1095.148	1113.615
Nagelkerke R Square	0.334	0.068	0.345	0.327
Percentage Correct	70.1	68.1	71.7	70.5

**Significant at 5% level

***Significant at 1% level

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1 Conclusion

The general objective of this study is to evaluate the determinants of financial distress among manufacturing firms listed in the Bursa Malaysia for the period from 2001 to 2014. A matched sample consists of 36 distressed and 36 non-distressed firms are used in the study. This study uses a binary logistic regression to determine the financial distressed. The variables consist of liquidity ratios (WCTA and CACL), leverage ratio (TDTA and CLNW), profitability (EBTA, ROA, and ROE), book-to-market (BTMV), sales growth, and cash flow (CFFTL, CFITL, and CFOTL). Three models are develop. In the first model, all variables except cash flow variables are included in the analysis. In the second model, only cash flow variables are included while in the third model, all variables are included in the analysis. In model four, all variables are included but the method changes to stepwise logit regression. Hence, this study can highlight the importance of cash flow in determining the financial distress of the firm.

The results from model 1, cash flow variables are excluded from the analysis. The results show that WCTA has negatively significant relationship which suggests that the higher the liquidity, the lower is the probability of distress. The CACL is not significant with financial distress. Furthermore, the findings show that a higher amount of leverage will lead to bankruptcy. This is reflected in the relationship between TDTA and distress

which is negatively related. In terms of profitability, the results shows that EBTA is negatively significant while ROA is positively significant to corporate financial distressed. The results of ROA is confusing since it shows that the higher the profitability, the higher would be the distressed. This contradicts the results from previous studies. In addition, BTMV ratio also has positive significant relationship to the bankruptcy of the company while sales growth has no significant relationship to the corporate financial distressed.

In order to see the importance of cash flow, model 2 is carried out where only cash flow variables are included in the analysis. The results confirm that CFOTL is still an important factor. In addition, the model also show that CFITL is also significant to the corporate financial distressed.

When all variables are included from the analysis as in model 3, the results remain similar as model 1. Regarding cash flow variables, model 3 show that only CFOTL has a negatively significant relationship to the financial distressed. This shows the importance of operating cash flow in reducing the financial distress of the firm. Model 3 shows that cash flow from investing and cash flow from financing are not important in determining financial distress in Malaysia.

5.2 Limitation of the study

There are several limitations in this study. The first limitation is the time period. This study is conducted within three months. Due to the time

limitation, this study could not observe the determinants of financial distressed in all Malaysian listed firms. Hence, the sample only covers manufacturing sectors, and excludes other non-financial sectors such as constructions, mining, consumer, hotels, plantations, properties, technologies, trading and services sectors. The results would be better if a larger sample size is used.

5.2 Recommendation

There are several opportunities for future investigation in this area. First, a larger sample size might be used to get a better results of this study. Future researchers can also conduct an analysis by looking at all sectors in Malaysia.

LIST OF REFERENCES

- Altman, E. I. (1968). Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. *Journal of Finance*, 23,589-609.
- Altman, E. I. (1993) *Corporate Financial Distress and Bankruptcy* (2nd ed.), New York: John Wiley.
- Altman, E. I., Haldeman, R. G. & Narayanan, P. (1977). Zeta Analysis: A new model to identify bankruptcy risk of corporations. *Journal of Banking and Finance*, 1, 9-24.
- Baimwera, B. (2006). The relationship between book-to-market ratio of equity and distress for stocks quoted at the NSE. *Nairobi: University of Nairobi*.
- Barnes, P. (1987). The analysis and use of financial ratios: A review article. *Journal of Business Finance and Accounting*, 14(4), 449-461.
- Beaver, W. H. (1966). Financial ratios as predictors of failure. Supplement to *Journal of Accounting Research*, 4 (3), 71-13 1.
- Casey, C.J. and Bartczak, N.J. (1984). Cash Flow-It's Not the Bottom Line. *Harvard Business Review*, pp. 61-66.
- Casey, C. and Bartczak, N. (1985). Using operating cash flow data to predict financial distress: some extensions. *Journal of Accounting Research*, Vol. 23, No. 1, 384-401.
- Deakin, E. B. (1976). Distributions of financial accounting ratios: some empirical evidence. *The Accounting Review*, 90-96.
- Dichev, D. I. (1998). Is the Risk of Bankruptcy a Systematic Risk? *The Journal of Finance*, 10-28.
- Gilbert, L. R., Menon, K. & Schwartz, K. B. (1990). Predicting bankruptcy for firms in financial distress. *Journal of Business Finance and Accounting*, 17, 161-171.
- Gombola, M.J. and Ketz, J.E. (1983). A note on cash flow and classification patterns of financial ratios. *The Accounting Review*, Vol. LVIII, No. 1, pp. 105-114.
- Gombola, M.J., Haskins, M.E., Ketz, J.E. and Williams, D.D. (1987). Cash flow in bankruptcy prediction. *Journal of Financial Management*, pp. 55-65.
- Gujarati, D. N. (1995). *Basic Econometric* (3rd ed.). Singapore: McGraw- Hill International Editions.

- Abdullah, Ahmad, H., & Rus, M. R. (2008). Predicting corporate failure of Malaysia's listed companies: comparing multiple discriminant analysis, logistic regression and the hazard model. *International Research Journal of Finance and Economics*, 1-17.
- Keige, P. (1991). Business failure prediction using discriminate analysis. *Nairobi: University of Nairobi*.
- Kiragu, M. (1993). The prediction of corporate failure using price adjusted accounting data. *Nairobi: University of Nairobi*.
- Laitinen, E. K. (1994). Traditional versus operating cash flow in failure prediction. *Journal of Business Finance and Accounting*, 22 (2), 195-217.
- Libby, R. (1975). Accounting ratios and the prediction of failure: some behavioral evidence. *Journal of Accounting Research*, Spring, 150-161.
- Lincoln, M. (1984). An empirical study of the usefulness of accounting ratios to describe levels of insolvency risk. *Journal of Banking and Finance*, 8,321-340.
- Mohamed, S., Ang, J. & Ahmadu, U. S. (2001). Predicting corporate failure in Malaysia: An application of the logit model to financial ratio analysis. *Asian Academy of Management Journal*, 6 (1), 99-118.
- Muhamad Sori, Z., Mohamad, S., Hamid, A., & Ali, M. (2001). Why Companies Fail? An Analysis of Corporate Failures. *An Analysis of Corporate Failures. Akauntan Nasional: Journal of the Malaysian Institute of Accountants*, 14(8), 5-8.
- Ohlson, J. A. (1980). Financial ratios and the probabilistic prediction of bankruptcy. *Journal of Accounting Research*, 28,109-131.
- Paranowo, K. e. (2010). Determinant of Corporate Financial Distress in an Emerging Market Economy: Empirical Evidence from the Indonesian Stock Exchange 2004-2008. *International Research Journal of Finance and Economics*, 80-88.
- Platt, H. D. & Platt M. B. (1990). Development of a class of stable predictive variables: The case of bankruptcy prediction. *Journal of Business Finance and Accounting*, 17, 31-51.
- Scott, J. (1981). The probability of bankruptcy: A comparison of empirical predictions and theoretical models. *Journal of Banking and Finance*, 5 (3), 317-344.
- Shirata, C. Y. (1998). Financial ratios as predictors of bankruptcy in Japan: an empirical research. *online paper*.

- Sitati, A., & Odipo, M. K. (2009). Evaluation of applicability of Altman's revised model in prediction of Financial Distress: A case of companies quoted in the Nairobi Stock Exchange.
- Soo, W. L., Fauzias, M. N. & Puan Yatim. (2001). Predicting Corporate Financial distress using the logit model: The case of Malaysia. *Asian Academy of Management Journal*, 6 (1), 49-61.
- Titman, S., & Opler, C. T. (1994). Financial distress and corporate performance. *The Journal of Finance*, 1015-1040.
- Ward, T. J. & Foster, B. P. (1997). A note on selecting a response measure for financial distress. *Journal of Business Finance and Accounting*, 24, 869-879.
- Wruck, K. H. (1990). Financial distress, reorganization, and organizational efficiency. *Journal of Financial Economics*, 27, 419-444.
- Zulkarnain, M. S., Mohamad Ali, A. H., Annuar, M. N. & Zainal Abidin, M. (2001). Forecasting corporate failure in Malaysian industrial sector firms. *Asian Academy of Management Journal*, 6(1), 15-30.
- Zulkarnain, M. S., Shamsheer, M., Mohamad Ali, A. H. & Annuar, M. N. (2002). Determinants of corporate success and failure: The Malaysian case. *Akauntan Nasional*, 23.