

PREDICTION OF FINANCIAL DISTRESS AMONG
COMPANIES IN MALAYSIA

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DECLARATION

We hereby declare that:

- (1) This undergraduate research project is the end result of our own work and that due acknowledgement has been given in the references to ALL sources of information be they printed, electronic, or personal.
- (2) No portion of this research project has been submitted in support of my application for any other degree or qualification of this or any other university, or other institutes of learning.
- (3) Equal contribution has been made by each group member in completing the research project.
- (4) The word count of this research report is 18,325.

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DEDICATION

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LIST OF ABBREVIATIONS

ANN	Artificial Neural Networks
AR	Activity Ratio
BNM	Bank Negara Malaysia
CLRM	Classical Linear Regression Model
DF	Degree of Freedom
EBIT	Earnings before Interest and Tax
EBT	Early Bankruptcy Theory
EPS	Earnings per Share
GDP	Gross Domestic Product
IPO	Initial Public Offering
LA	Logit Analysis
LR	Liquidity Ratio
LVR	Leverage Ratio
MDA	Multiple Discriminant Analysis
OLS	Ordinary Least Square
PCA	Principal Components Analysis
PN17	Practice Note 17
PN4	Practice Note 4
PR	Profitability Ratio
ROE	Return on Equity

SR	Solvency Ratio
SSR	Sum of Square Residual
SST	Sum of Square Total
TOL	Tolerance
VIF	Variance Inflation Factor
WT	Wreckers Theory

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Companies

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PREFACE

This research study is constructed based on a compulsory subject for all final year students, namely UBFZ 3026 Research Project.

Our research topic is “Prediction of financial distress among companies in Malaysia” The primary objective of this research is to investigate the prediction of financial distress using financial ratios and a Logit model.

The reason we choose this topic is because it played key roles to help build shared prosperity and a stable economy in Malaysia. This research will provide an insight of the prediction of financial distress among companies in Malaysia using only financial ratios.

ABSTRACT

This study examines the prediction of financial distress among companies in Malaysia. Early Bankruptcy Theory (EBT) model is adopted as conceptual framework in this study including 5 independent variables (profitability ratio, liquidity ratio, leverage ratio, solvency ratio, and activity ratio) and one dependent variable (Prediction of financial distress among companies in Malaysia). Secondary data will be collected from 10 companies' annual report. Multiple Linear Regression analysis is employed to investigate whether the five constructs will have relationship with the prediction of financial distress among companies in Malaysia.

CHAPTER 1: OVERVIEW OF RESEARCH

1.0 Introduction of Chapter

Chapter one basically exhibits the study's background and the statement of problem. Research objectives and questions were also included in this chapter. The last section of this chapter will covered the significant of study and conclusion.

1.1 Background of Study

Financial distress creates a crucial impact on respective stakeholders of a company. It may affect the stakeholders directly or indirectly. If such scenario takes place, major stakeholders will probably lose their investment while creditors will only be compensated according to the amount of money that the company had owed them (Abdullah, Ma'aji & Lee, 2016). When a company is facing financial distress, employees of the company will no longer have jobs. Hence, this study will help analyze the prediction for financial distress in a company.

In Malaysia, the companies that faced financial distress problem are categorized under one list this is **Practice Note 17 (PN17)**. In converse, Non **PN17** companies are the companies that are not facing financial distress problem. **PN17** contains of companies which were listed in the Malaysia Stock Exchange that is currently facing financial problems. In other words, the companies have difficulties in meeting the minimum capital or equity. Companies is said to be financial distress when they have less than 25% of the paid up capital. In the year 2010, thirty four companies were still classified under **PN17** list (Muhammed, 2012). Companies are required to submit a regularized plan to the Bursa Malaysia so that the reformation may strengthen the company. This must be done in order to be listed again in the Malaysian Stock of Exchange (Ng, Mohammed & Mostafa, 2014). Nevertheless, the listed companies still can change its status by improving its management and business transaction. There are many reasons to change the status of the company. For example, changes in management, risk profile, employee's experience, foresight, financial appetite and many more.

Some of the investors may not be aware about the status of the company that they had invested. Some investors feel unsecured if the company they invest in falls under the categories of **PN17**. They will be left with two choices which is either giving up their shares or hoping for the

comeback. The companies which do not have any significant business or operation will cause the companies to be suspended or ceased from their operation and thus default in loan interest and principal repayments will be categorized under the list of **PN17**. Apart from that, companies with poor management process will also be listed under **PN17** for they have adverse opinions between the auditors. In a null shell, a company with poor management and poor transaction track mostly will be listed under **PN17**.

Prediction of financial distress is important to the companies, investors and regulators. This is because they need the information to make their decision. Financial distress occur when a company fails to meet or having financial difficulties in settling their financial problem. There are some issues that will cause the financial distress of the company such as high borrowed capital, insufficiency of cash and risk management (Yousop, Abdullah, Ramdhan, Ahmad, Sipon, Ismail, Mohamed & Jaffar, 2014). For example, the financial distress will happen when a firm has high fixed cost and obligation but does not have liquid assets and revenues. The company does not have enough cash or income to recover the losses and obligation.

There are some effects that are caused by financial distress. It will affect the stock price value of the company. In other words, the increase in level of financial distress will cause the stock price to decrease. It is said that the financial distress and stock price are likely to have a negative relationship. Furthermore, there will be a negative liquidity effects whenever there are losses in the market value of a firm's equity. Thus, it will increase in illiquidity. A company will face financial distress problem due to lack of an efficient management team. With the presence of an efficient management team, the company performance can be improved. For example, **Return on Equity (ROE)**, **Earnings before Interest and Tax (EBIT)** and **Earning per share (EPS)** will increase. The financial distress can be solved by restructuring the company organization. Reorganization can be made by converting the debt to equity, converting the equity from one class to another and converting debt from one class to another.

1.2 Problem Statement

The Asian financial crisis that occurred in 1997 has given a great impact on Malaysian companies. Most of the Malaysian companies have undergone restructuring in order to survive. Companies will face problems like having an abnormal profit in the beginning, however, the profit obtained are not stable enough to guarantee the future of the company (Liew, Munusamy, Chelliah & Mandari, 2011). This is due to the loss of confidence level in investor. Thus, no capital will be supplied to the company. However, there are still many researches being conducted to seek for the method to predict financial distress in company. This study conducts an investigation into the relationship between predictions of financial distress in a company using financial ratios (Alifiah, 2013).

Several studies have been done by Malaysia's economist to predict the financial distress among the company. Most of the companies in multiple sectors are using **Multiple Discriminant Analysis (MDA)** to predict their companies' financial distress (Alifiah, 2013). However, the model is used under the normality assumption; the variable away from the normality assumption will make the accuracy of the model become lower. So, the economist try to recover the weakness of **MDA** model by investigate the determinants of the financial distress and the bankruptcy of the companies. They found that the financial determinants can be divided into four groups which are ratios that represent the company's asset management, leverage, liquidity and profitability. However, Isa (2004, as cited in Alifiah, 2013) suggested that **Gross Domestic Product (GDP)** is considered as a momentous variable in estimating financial distress in Malaysia.

Several countries' researchers also pay attention on the bankruptcy prediction model that can predict the financial distress among the company. This is because the percentage bankruptcy of the company and the bank increase year by year. These researchers focus on developing a proper model that can predict the company financial distress with the highest accuracy. So, the country's government, bank, household and investor could take some action based on the model applicable before the bankruptcy occurs.

Moreover, the financial condition of capital market also being concerned by most of the stakeholders and stockholders because the capital market represent the economic performance of a country. According to Jollife (2002, as cited in Sayari & Mugan, 2016), two model mostly used

by investors are discriminant analysis and cluster analysis to make bankruptcy prediction based on the determinant have been investigated. However, the problem occurred in the unpredictable variable condition will make the model become no accurate. Therefore, they try to explore the new model that includes the entire possible variable to get the most efficient and satisfy outcome. In conclusion, this study tries to come out with the best model that suitable current market condition. Thus, this study will try to use financial ratios. Ratios like liquidity ratio, profitability ratio, leverage ratio, activity ratio and solvency ratio will be used to develop a prediction needed using the latest data based on Malaysia market.

1.3 Research Objective

1.3.1 General Objective

The main purpose of this research is to find out the prediction of financial distress among companies in Malaysia.

1.3.2 Specific Objectives

For this study, there are four ratios used as explanatory variables to estimate whether a companies is going to face financial distress. Profitability ratio, liquidity ratio, leverage ratio, activity ratio and solvency ratio are the independent variables that will use to predict the probability of a company to face financial distress.

Some specific objective:

1. To predict financial distress using profitability ratio.
2. To predict financial distress using liquidity ratio.
3. To predict financial distress using leverage ratio.
4. To predict financial distress using activity ratio.
5. To predict financial distress using solvency ratio.
6. The significance of the model with the combination of these five independent variables together.

1.4 Research Question

Firm's bankruptcy will have an impact on stakeholders. It is important to enhance the knowledge regarding the causes of the bankruptcy. Therefore, this research is about prediction of financial distress among company in Malaysia.

To begin on this research paper, research question should be determined. Research question are as follows:

1. Is the profitability ratio significant to predict the financial distress?
2. Is the liquidity ratio significant to predict the financial distress?
3. Is the leverage ratio significant to predict the financial distress?
4. Is the activity ratio significant to predict the financial distress?
5. Is the solvency ratio significant to predict the financial distress?
6. Are the independent variables significant to the financial distress level?

1.5 Hypothesis

H₀: Profitability ratio is not significant to predict the financial distress level.

H₁: Profitability ratio is significant to predict the financial distress level.

H₀: Liquidity ratio is not significant to predict the financial distress level.

H₁: Liquidity ratio is significant to predict the financial distress level.

H₀: Leverage ratio is not significant to predict the financial distress level.

H₁: Leverage ratio is significant to predict the financial distress level.

H₀: Activity ratio is not significant to predict the financial distress level.

H₁: Activity ratio is significant to predict the financial distress level.

H₀: Solvency ratio is not significant to predict the financial distress level.

H₁: Solvency ratio is significant to predict the financial distress level.

1.6 Significance of Study

The findings of this research will redound to the benefit of society considering that financial distress is a major problem for a company. The importance of conducting this research is to prevent companies in Malaysia facing financial crisis. If most of the companies in Malaysia faces financial crisis, the economics of the country will be affected. Economics as in foreign exchange rate, currency exchange rate, supply and demands of goods and also import and export of the country will also affected. If all the companies in Malaysia can prevent this from happening, then the economics of the country will be stabilized. Predicting financial distress can prevent companies from having financial problems like facing obstacles in repaying debts. There are many benefits in predicting a financial distress of a company. Benefits like increasing the performance of the company. When the performance of the company increases, the stock price of the company will also increase.

Survivor of companies depends on the stock price; however the trading of shares in the market were not concerned. Therefore, the stock price is the deciding factor for the company to survive in such a competitive environment.

The financial distress will affect the foreign exchange rate, as mentioned above. If that were to happen, the country's exports and imports of goods will be affected too. The exports and imports are the core business of a country. For an example, if the import of the country is more than the exports of the country, then the balance of payment of country is said to be deficit. From this point of view, predicting the financial distress is very important to financial analyst.

1.7 Layout of Chapter

The first chapter briefly describes the research's background, statement of problem and objectives of research. The following chapter interprets all the independent variables which affect the prediction of financial distress. The theoretical framework will be explained and hypotheses will be developed here. Apart from that, methods used for conducting the test, gathering of data and diagnostic checking will be discussed in following chapter. The fourth chapter will mainly discuss about the analyzation of data and interpreting the results obtained. Last but not least, the last chapter will be summary, major findings, implication of studies, restriction faced while carrying out this study together with some helpful suggestions for future purposes.

1.8 Conclusion

As a conclusion, the research's background, statement of problem and major purposes and the importance of the research have been discussed, the legitimacy of this research has been will defined. In following chapter, the comprehensive literature review related to model will be further discussed.

CHAPTER 2: REVIEW OF LITERATURE

2.0 Introduction of Chapter

For this chapter, the theoretical framework applied and reviews from previous researches were discussed. Apart from that, theoretical models and hypotheses were also developed.

2.1 Theoretical Foundation

In this study, **Early Bankruptcy Theory (EBT)** was used to explain that the bankruptcy system can sometimes be used to resolved collection problems from the creditors of an insolvent firm. Insolvency may cause economic distress, financial distress, or both (Schwartz, 2005). Financial distress will be likely to occur when firm are not able to gain enough profit to overcome its expenses. This expense however does not involve the financing cost. If the company is under this situation, it is said that the firm has a negative economic value. This can be further explaining when the insolvency takes place; the firm's debt will sink. The debt's existence cannot single-handedly decide the firm's future (Schwartz, 2005). When the firm is facing financial distress, the creditors of the firm have less interest in saving the firm than in figuring are there any assets enough for their claims. If there is any asset left in the firm, the creditors will seize them at all cost. Saving a firm is not impossible but it needs the creditors' cooperation in collection effort. The cause of coordinating the collection effort is high. In order to save the firm, reasonable equilibria and the financially distressed firms are liquidated gradually. The theory suggests by applying the bankruptcy system, the inefficient equilibria can be avoided. By having collection effort of creditor, time will be given to state official to make a decision about the consequences of saving the firm. EBT prefers the liquidation decision will be made by the market itself. Apart from that, early theorist concluded that the bankruptcy system should be applied. This means that creditors will be first to be compensated after the firm's contracts created.

There is also another theory which can further explain the prediction of financial distress. This theory is known as **Wreckers Theory (WT)**. The **Wreckers Theory** of financial distress seeks to explain the benefits that may step put of financial distress to stakeholders (Nyamboga, Omwario, Muriuki & Gongera, 2014). According to Kalckreuth (2005), stocks of distressed firm vastly underperform those of financially healthy firms but distressed firm not necessary ascribed to inefficient or irrational markets. When firms are near to bankruptcy, there will be the non-cash

returns to the owners in the form of return to equity. When markets expect for a control, the returns will appeal in stock valuation. The governance problem will create a relationship between the financial position of firms and the allocation. This may or may not enlarge the financial shocks. Common sense expects that distress companies are more leverage on average and more risky. According to Kalckreuth (2005), overpricing of distressed companies is a steady state of pattern and inefficiency of capital market does not need to be adduced. The benefits own by ownership of a company will form a large part of the total payoff of a financially distressed firm. This will be known as 'Wreckers Theory'. The companies that have higher financial distress level will strip of their asset. With the probability of a firm's bankruptcy increasing, it is less advantages for the owner to leave their valuable asset in the company. Wreckers Theory shows that the premium paid is positively related to the company's financial leverage and the disposable free cash's amount works well with it (Kalckreuth, 2005).

2.2 Review of Literature

Financial distress is a financial term that used to describe the situation when promises to creditors of a firm are in difficulty. If financial distress cannot be resolved, it can be fatal to the company's future. The worst outcome for the company will be bankruptcy. To avoid the happening of financial distress of the company, researchers conduct studies about prediction of financial distress. Prediction for financial distress among companies is considered as a favorable topic of researchers to conduct their research. It is important to assume level of bankruptcy because it considers as important source towards potential and also to current investors. Besides that, the regulators of stock market needs to know such crucial information too. Bursa Malaysia is known as the market regulator of Malaysia and they are given such obligation to handle the financial distress firms. Therefore, Practice Note No. 4/2001 (**PN4**) was introduced on 15th of February 2001 while Practice Note No. 17/2005 (**PN17**) was introduced on 3rd of January 2005 (Alifiah, 2013). Both Practice Note No. 4/2001 (**PN4**) and Practice Note No. 17/2005 (**PN17**) are introduced by Bursa Malaysia.

There are many ways in predicting financial distress of a firm. According to Tinoco and Wilson (2013), they found out that there are two models which can accurately predict in the probability of financial distress. They are market-based models and accounting models. However there is little difference between them. Tinoco and Wilson (2013) also found out that previous study which suggests these two approaches contains important information about firms' chances of facing bankruptcy. Researches that only include financial ratios into failure prediction model have an assumption that the annual account will exhibit the failure or success indicators internally and externally.

Financial distress can be made as a dependent variable, while the macroeconomic and financial ratios can be set as the independent ratios for this study. **Logit Analysis (LA)** will be used in this research. When the explained variable is a dummy variable, the Logit model will be more suitable. The probability for being a financially distress company can be detected. The prediction for financial distress is crucial to company.

There are several studies conducted in predicting financially distress companies in multiple sectors in Malaysia by using **MDA** (Alifiah, 2013). **MDA** is a method used to minimize the

distinction between exogenous variable. So that, it can be categorized into many proportion of large groups. By using **MDA**, the curse of dimensionality will have a strong impact on the classifiers. It means that when the signals are represented in very-high-dimensionality spaces, the classifier's performance is impaired by the over-fitting problem. However, there is flaw with **MDA**. The data set of study will violate the assumption and **MDA** will be the best solution when the regular requirements are fulfill.

In prediction of bankruptcy, statistical techniques are the models that most frequently used while AIES approach is relatively new. For the theoretical models, these types of models are relatively uncommon (Aziz & Dar, 2006). AIES and theoretical models are based on a smaller number of studies but have slightly better average predictive accuracy than statistical models. Due to the existence of the problem above, it is more advisable to use **LA**. **LA** may be more probability of occurrence of failure will be needed. **LA** can describe a dichotomous explained variable by using coefficients of the explanatory variables (Alifiah, 2013). Furthermore the independent variables do not need to be multivariate normal in **LA**. Most importantly, **LA** can direct the significant of the each independent variable. Hypothesis T-testing can be carried out to determine the significant of the independent variable. Clearly, **MDA** is different from **LA** because they do not have the same demanding assumptions.

The earliest studies on company failures and company bankruptcies were univariate in nature. Artificially Intelligent System like **Artificial Neural Networks (ANN)** is also used to predict the financial distress for a company. Besides that, there are some other models which were the Balance Sheet Decomposition Model by Lev or the Gambler's Ruin Model by Wilcox, Cash Management Models. The models above emphasizes on the importance of cash by Mills. Recursive partitioning have the highest prediction accuracy for the predicting the failure of the company. Researchers investigated that first year return for **IPO** companies lower than the expectation of the market that had a higher probability of bankruptcy and financial distress.

However, the bankruptcy prediction model nowadays have a largest drawback which is did not make the prediction according to the current economic condition. It will lower the accuracy of the bankruptcy prediction. So, the researchers created bankruptcy index to make the bankruptcy prediction. This model worked by combining the linear discriminant analysis and Box-Cox

transformation variable Different with other models, bankruptcy index incorporates a company-size factor and use the transformed variable.

Apart from that, stock price index is considered as a microeconomic variable that can predict financially distressed firm (Al-Darayseh, 1990). Money supply is also considered as a macroeconomic variable that can predict financially distressed firm (Alifiah, 2013). The prediction of financial distress cannot be carried out effectively and efficiently. This is due to the lack of studies on financial model among companies and also the incompleteness of data (Aziz & Dar, 2006).

Moving on, if the organization or company were to face bankruptcy, they will encounter risk which is the bankruptcy risk. Bankruptcy risk will be faced by a company if the selected company endures hardship in meeting the debt obligation. Besides that, it also describes the likelihood that firm will become insolvent because of its inability to service its debt. Breaking down the bankruptcy risk, there are a few factors that will cause a company to encounter the bankruptcy risk. One of the factors is the condition of the market. In the estimated regression model, condition of the market is one of the significant independent variables for the model. Poor economic condition in overall economy performance is a common cause of bankruptcy. There will be a boom and bust of rapid expansion or recession in economy. When there is a bust in the economy, the consumer will tend to have lower confidence in spending; this will lead to low revenue for all manufacturing companies.

Apart from that, financing is also one of the important significant independent variables in the estimated regression model. Financing is considered as main challenges for small businesses. Many business owners will apply loans to finance their operations. If a business were to struggle, borrowers may not fund their operation. This could lead to bankruptcy. Even though a business owner is able to apply for loan, the company will only survive for short term only. This is due to the repayment of interest on the debt.

According to previous studies, ratios that represent the company's profitability, liquidity, leverage, activity and solvency will be used as the determinants of bankruptcy and financial distress (Altman, 1968). Of course, financial ratios can be calculated using the income statement and also the balance sheet. The main purpose of using financial ratio for the prediction of failure

is because ratios are currently in widespread use. It is also a starting point for the construction of empirical verification of ratio analysis (Beaver, 1966). A combination of the financial ratios gives the more accurate model (Otom, 2014).

2.2.1 Profitability Ratio (PR)

Profitability ratio is the independent variable in the regression model. Profitability ratio measures the ability to generate earning excluding the cost, expenses incurred during a specific period of time. Profitability ratio comprises of profit margin, return on asset and return on equity. Gross margin is also considered as one of the profitability ratio. Gross margin determines the profitability rate of the firm's goods and services. The gross margin's formula can be derived as:

$$\frac{\text{Gross Profit}}{\text{Net Sales}} * 100\%$$

Apart from that, return on asset is also one of the key ingredients in determining the profitability ratio. The main objective of having return on asset is to identify how effectively and efficiently the company can generate its profit by utilizing their asset. It can exhibit whether is there any profit gained through making used of their total assets. Return on asset initiates an idea as how efficient management is at utilizing the company's asset to generate profit. The return on asset can be calculated by dividing the company's annual earnings by its total assets. The return on asset's formula can be derived as:

$$\frac{\text{Net income}}{\text{Total Assets}} * 100\%$$

Return on equity is known as the profit gain by shareholder form the invested company. The formula for calculating the return on equity can be derived as below:

$$\frac{\text{Net Income}}{\text{Shareholder's Equity}} * 100\%$$

Financial distress have a negative impact on profitability and leading firms to insolvency and shortage of cash flow for current payment of debts and results in several

consequential effects (Ufo, 2015). According to Platt & Platt (n.d.), they proposed that Asian companies have a higher percentage in facing financial distress when there is insufficient cash flow or operating earnings before depreciation charges. Profitability ratio was provided in financial report because it makes it easier for users to take informed decisions especially in case of danger sign. Analysts will also check for the profitability ratio to examine whether a company makes profit (Tuvadaratragool, 2013). On the other hand, a firm with poor profitability or solvency record may be regarded as a potential bankrupt. Moreover, it can allow timely corrective actions to be taken when necessary thereby help reduce incidences of company failure. Profitability ratio is the most important ratio in predicting financial distress because investors will hope of making gain instead of losses. Hence, there are the needs to look at the performance indicators which include profitability and earning abilities among others (Otom, 2014). According to Tuvadaratragool (2013), net profit margin was used to compute the profitability ratio of the company. The profitability of the company never includes cost of financing and taxes. In other words, this is the truth profit for the shareholders of the company.

2.2.2 Liquidity Ratio (LR)

Liquidity ratio is the ability of a company to pay off its debt obligations (Otom, 2014). The ability of an asset to be converted into cash is described as liquidity. There are three key liquidity ratios which are current ratio, quick ratio and cash ratio. The current assets are the assets that can be transformed into cash within a year while current debts are the liabilities of the company that should be clear off using cash within a year. The higher the ratio, the ability of a company to meet its short term obligations is higher. The formula for current ratio can be derived as:

$$\frac{\text{Current Assets}}{\text{Current Liabilities}}$$

Quick ratio also known as acid test ratio refines the current ratio by removing inventory and expenditures which were paid beforehand from current assets. The quick assets include cash, marketable securities and account receivable. If the ratio obtained is higher

than 1.0 then it is acceptable. However, it is said that the current assets were not efficiently used if there is a higher ratio. The formula is:

$$\frac{\textit{Quick Assets}}{\textit{Current Liabilities}}$$

Moreover, cash ratio does not only remove stocks and expenditure paid beforehand, account receivable will be removed from current assets. The formula is:

$$\frac{\textit{Sum of Cash + Marketable Securities}}{\textit{Current Liabilities}}$$

Liquidity ratios help creditors to understand the company situation easily if the company can meet its short term obligations. Firm's managers must have enough liquidity to prevent financial crises. If a firm do not have enough cash and cannot secure financing, it will fail, even if its value of assets is larger than the level of its liabilities (Campbell, Hilscher & Szilagyi, 2010). According to Beaver (1966), the researcher had used liquidity ratio to predict the financial distress by collection of financial statement data from non-failed firms and failed firms. According to Otom (2014), liquidity is crucial in determining financial health of the company. The researcher also concluded that financial ratios are good predictors of financial distress.

2.2.3 Leverage Ratio (LVR)

Leverage ratio is also an independent variable used for the regression model. Leverage ratio is one of several financial measurements that used to evaluate a company's debt levels or to determine about the companies' financing methods, or the ability to meet the obligations. Leverage ratio comprises of debt ratio, debt-to-equity ratio and return on equity ratio. Debt ratio is simply a company's total debt divided by its total assets. The debt ratio's formula is:

$$\frac{\textit{Total Debt}}{\textit{Total Assets}}$$

The relationship between the capital contributed by creditors and owners can be derived using debt-to-equity ratio. The shareholder's equity can help the company to settle their debts owed to creditors. The debt-to-equity ratio's formula can be derived as:

$$\frac{\textit{Total Debt}}{\textit{Total Equity}}$$

Return on equity is known as the profit gain by shareholder from the invested company. Profit of the company gained by using investment from shareholders can be reviewed. According to Andrade & Kaplan (1998), they found out that distress can occur due to the high level of leverage ratio. They found out that their sample firms have the criteria of positive operating margin. This will lead to financial distress. In short, if the leverage ratio is high, their sample firms will be having a stable financial performance. Holthausen and Leftwich, (1983 as cited in Demerjian, 2007), Press and Weintrop, (1990 as cited in Demerjian, 2007) stated that leverage is used to monitor the costs and closeness to covenant violation. It is said that the higher the leverage level, the higher the risk of the company. Besides that, the company will also have lower growth opportunities. Leverage ratio is significant in predicting the probability of facing financial distress of a firm. According to Beaver (1966), total debt over total asset was used to calculate the leverage ratio of a firm. Previous researcher like Otom (2014) also used debt ratio and debt-to-equity ratio to obtain leverage ratio. Firm with low leverage will face financial distress later, and in many instances, is force to liquidate (Otom, 2014).

2.2.4 Activity Ratio (AR)

Activity ratio is a ratio that measures how fast a firm converts its different accounts within its balance sheets into cash or sales. Activity ratio indicates the how efficient a firm can use its asset to generate profit (Tuvadaratragool, 2013). Other than that, it is significant to determining the company's performance generating revenues by using the company's resources. For example, a sport equipment business needs to know how fast it can convert the business inventories into cash so that bills can be paid. Several activity ratios can help firm obtained valuable information, such as inventory turnover, days in inventory and the average collection period. When firm finds out its inventory turnover is

equal to 10, this means that the firm can turn its inventory stock into cash 10 times every year. According to Lan (2012), the activity ratio measures the rate at which the company is turning over its assets or liabilities. This researcher also stated that it is the number of times the inventory is replenished or receivables are collected. Lan (2012) also claimed that, a decrease in inventory or an increase in cost of goods sold will increase the ratio. The increase in ratio also means that the inventory's efficiency has been improved. In short, the firm sells the same amount of goods while holding less inventory or selling more goods while holding the same amount of inventory. There is another ratio which can be used to determine the activity ratio. The ratio is known as receivable turnover ratio. The activity ratio includes (Drake, n.d.) accounts receivable turnover ratio, inventory turnover ratio and total asset turnover ratio. Turnover ratios like cash to sales, accounts receivable to sales, inventory to sales, quick assets to sales and current assets to sales were used by Beaver (1966).

The formula of accounts receivable turnover is:

$$\frac{\text{Net Credit Sales}}{\text{Average Account Receivables}}$$

The formula of inventory turnover is:

$$\frac{\text{Cost of Goods Sold}}{\text{Inventory}}$$

The formula of total asset turnover is:

$$\frac{\text{Sales}}{\text{Total Assets}}$$

The capital turnover ratio is a standard financial ratio illustrating the sales generating ability of the firm's asset. Although this ratio is consider as the least significant ratio on the individual basis but it is still important for the prediction of financial distress (Altman, 1968).

2.2.5 Solvency Ratio (SR)

Solvency ratio is a ratio that used to measure a company's ability to meet its long term obligations (Tuvadaratragool, 2013). This ratio allows investors to know the ability of a company to pay the interest payment and other fixed charges. If a company runs out of cash, it means that the company is most likely overburdened with debt and bondholders may force the company into default. Solvency ratio includes debt-to-capital ratio and debt-to-equity ratio (Otom, 2014). Debt-to-capital ratio is used to measure the amount of a company's total capital that is provided by debt. A high ratio means high financial leverage and risk. Having a high financial leverage will lead to a higher financial risk but there are still benefit like it does not dilute the ownership. Hence, the earnings obtained by the firm are split among fewer owners; this will lead to higher earnings per share. On the other hand, disadvantages like business expansion and the increment of shareholders' dividend. The formula of this ratio is:

$$\frac{\textit{Total Debt}}{\textit{Total Capital}}$$

According to Altman (2000), a firm with a poor profitability and solvency record will have higher chances of facing bankruptcy. Distressed firms will have lower solvency ratio (MSELMI, 2014). However, solvency ratio can be obtained using two major formulas. In this project, the formula used to derived solvency ratio is debt-to-capital ratio. The ratio used places the liability over the asset. Hence, the result shows that the solvency ratio have positive relationship with financial distress level. As the debt increases, the risk of a firm facing financial distress will also increase (Idris, 2008). In addition, Otom (2014) stated that solvency ratio was prevailed as the most significant indicator. The researcher also used debt-to-capital ratio to compute the solvency ratio for every firm's study.

2.3 Conceptual Framework Proposed

Figure 2.3

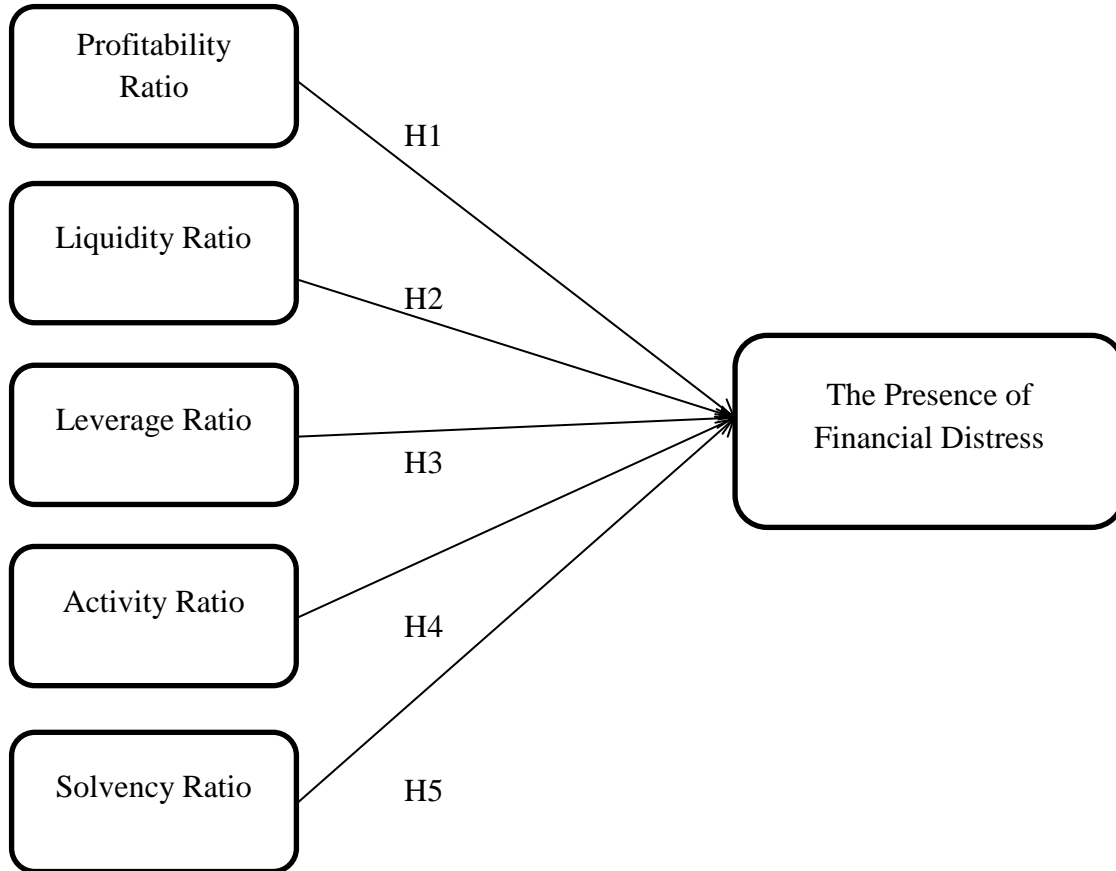


Figure 2.3: The relationship between profitability ratio, liquidity ratio, leverage ratio, activity ratio, solvency ratio and the prediction of financial distress among company in Malaysia.

The framework is formulated to explain the relationship between the explanatory variables (profitability ratio, liquidity ratio, leverage ratio, activity ratio and solvency ratio) and explained variable (the presence of financial distress). Profitability ratio can be included as the independent variable for the model because it is the optimal solution to find out whether the observed sales loss can have an impact on the cost of benefit of financial distress (Opler & Titman, 1994). As for the liquidity ratio, it is also an important element in predicting the financial distress among company in Malaysia. Liquid assets such as cash and marketable securities constitute a considerable portion of total assets. Financial managers of a company will focus more on the corporate's measurement and management liquidity. Most importantly, having liquidity problem might cause a firm in facing financial distress. Apart from that, leverage ratio too is considered as one of the independent variable of our regressed model. This is because the leverage ratio is the perfect way to find out whether the observed sales loss can reflect a cost or benefit of financial distress. Customer or competitive driven sales losses show that financial distress is costly (Opler & Titman, 1994). Next, activity ratio is a ratio that measures how fast a firm converts its different accounts within its balance sheets into cash or sales. Activity ratio indicates the how efficient a firm can use its asset to generate profit. Other than that, it is significant to determining the company's performance generating revenues by using the company's resources. Lastly, solvency ratio is a ratio that used to measure a company's ability to meet its long term obligations. This ratio allows investors to know the ability of a company to pay the interest payment and other fixed charges.

2.4 Hypothesis Development

Five hypotheses were developed as follows:

H₀: Profitability ratio is not significant to predict the financial distress level.

H₁: Profitability ratio is significant to predict the financial distress level.

Financial distress have a negative impact on profitability and leading firms to insolvency and shortage of cash flow for current payment of debts and results in several consequential effects (Ufo, 2015). According to Platt & Platt (n.d.), they proposed that Asian companies have a higher percentage in facing financial distress when there is insufficient cash flow or operating earnings before depreciation charges.

H₀: Liquidity ratio is not significant to predict the financial distress level.

H₁: Liquidity ratio is significant to predict the financial distress level.

Firm's managers must have enough liquidity to prevent financial crises. If a firm do not have enough cash and cannot secure financing, it will fail, even if its value of assets is larger than the level of its liabilities (Campbell, Hilscher & Szilagyi, 2010).

H₀: Leverage ratio is not significant to predict the financial distress level.

H₁: Leverage ratio is significant to predict the financial distress level.

According to Platt & Platt (n.d.), they proposed that Asian companies have a higher percentage in facing financial distress when there is insufficient operating leverage. Modigliani and Miller, (1963, as cited in Salehi & Biglar, 2009), stated that firm value will increase with higher financial.

H₀: Activity ratio is not significant to predict the financial distress level.

H₁: Activity ratio is significant to predict the financial distress level.

According to Lan (2012), the researcher stated that activity ratio are used to identify the efficiency of a firm utilizing its assets. He stated that the more efficiently the firm utilizes their assets, the more profit will be generated by the firm. With the efficient use asset, the chances of the firm facing financial risk will be lower. Therefore, the higher the activity ratio, the lower the financial distress level of the firm.

H₀: Solvency ratio is not significant to predict the financial distress level.

H₁: Solvency ratio is significant to predict the financial distress level.

According to Altman (2000), a firm with a poor profitability and solvency record will have higher chances of facing bankruptcy. Distressed firms will have lower solvency ratio (MSELMI, 2014). However, solvency ratio can be obtained using two major formulas. In this project, the formula used to derived solvency ratio is debt-to-capital ratio. The ratio used places the liability over the asset. Hence, the result shows that the solvency ratio have positive relationship with financial distress level. As the debt increases, the risk of a firm facing financial distress will also increase (Idris, 2008).

2.5 Conclusion

The purpose of this chapter is to study previous research as reference and the fundamental of the prediction of financial distress among companies in Malaysia. Furthermore, suggestions were developed for the conceptual framework and also the hypotheses. The following chapter, chapter three will focus on the research methodology to test the hypotheses developed.

CHAPTER 3: RESEARCH METHODOLOGY

3.0 Introduction of Chapter

This chapter explains methods or ways used to collect data and also analyze the data. It is important to include the concepts and theories which underlie the methods. In addition, this chapter also clarifies the variables, method used for collecting and analyzing data.

3.1 Research Sample

3.1.1 Data Collection Method

This study uses financially stable Malaysia firms and companies which are listed in **PN17** list. The data only covers the five sectors which are construction, food and beverage, manufacturing, steel manufacturing and plantation. Companies with missing data or companies that face bankruptcy not because of financial distress are excluded from the study. The period of the data collected is between the years of 2006 to 2015. The name of the companies will be listed in the appendix sheet.

3.1.2 Data Processing

Data collections from 10 companies which include 5 companies are under **PN17** and 5 companies are from financially stable companies. Calculations of each company's ratios are the data that is needed to be analyzed. The ratio calculated includes gross margin, return on assets, return on equity, current ratio, quick ratio, cash ratio, debt ratio, debt-to-equity, account receivable turnover, inventory turnover, total asset turnover, debt-to-capital ratio.

3.2 Research Framework

The research framework for the study is as below:

Figure 3.2

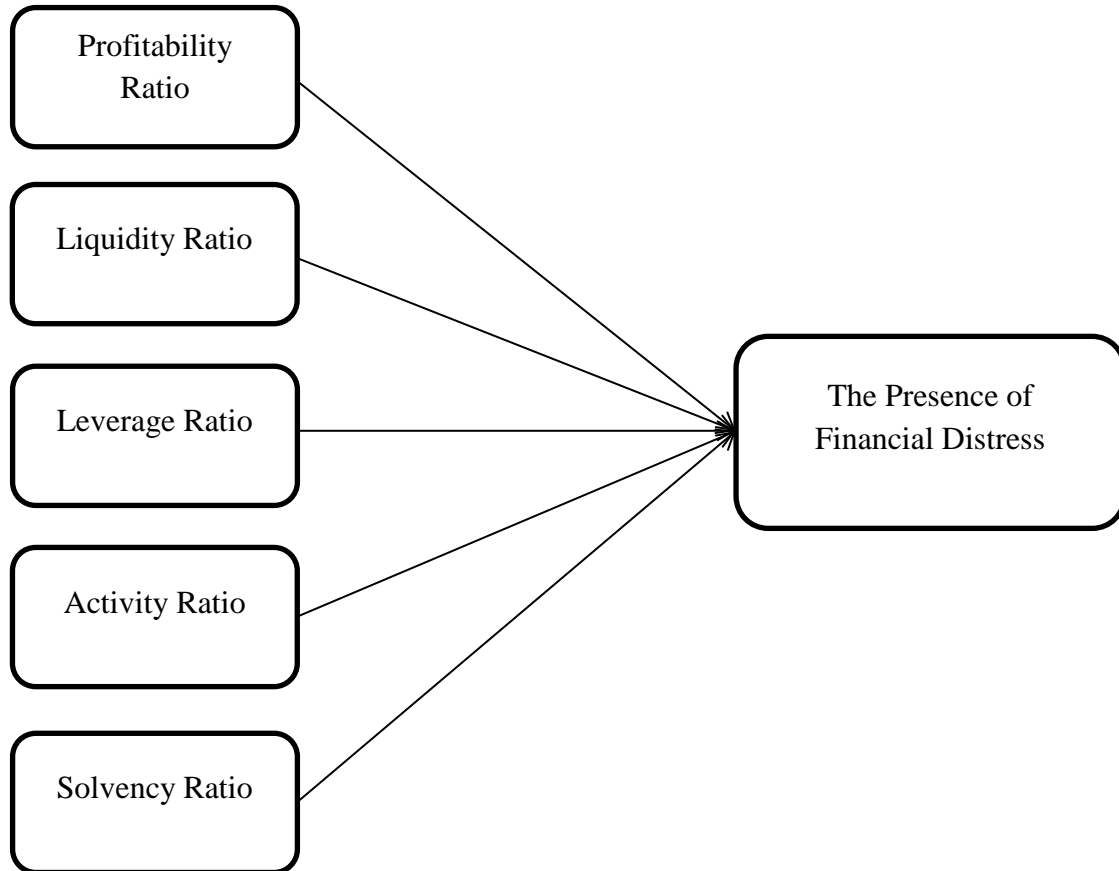


Figure 3.2: The relationship between profitability ratio, liquidity ratio, leverage ratio, activity ratio, solvency ratio and the prediction of financial distress among company in Malaysia.

3.3 Variables Interpretation

3.3.1 Dependent Variable

A dummy variable is used as the dependent variable. There are two codes used for dummy variable. Code 1 signifies as firm facing bankruptcy and code 0 signifies as financially stable firm.

3.3.2 Independent Variables

Five financial ratios are used as independent variables in this study. They are profitability ratio, liquidity ratio, leverage ratio, activity ratio and solvency ratio. The ratios were selected based on previous study for the prediction of bankruptcy.

Profitability ratio measures the firm's ability to generate earnings which exclude the cost and expenses incurred during a specific period of time. Liquidity ratio is used to determine the capacity of the company to pay off its debt obligation. Next will be the leverage ratio. Leverage ratio can be used to evaluate a company's debt level or to determine about the company's financing method. It can also measure the company's ability to meet their financial obligation. In addition, activity ratio is categorized as financial ratio because it can measure how fast a firm can convert its different accounts within its balance sheet into cash or sales. This ratio is important because it can determine whether a company's management is doing well in generating revenue and cash by using the company's resources. Lastly, solvency ratio is considered as one of the independent variables because it can measure the capability of a company to meet its long-term financial obligation. This ratio reflects the interest payment and other fixed charges to the fellow investors.

3.4 Hypotheses

Before conducting this study, five hypotheses were developed.

3.4.1 Profitability Ratio

Profitability is the income generator by firm. Therefore, firms with poor profitability level are associated with potentially bankruptcy firm. Previous researcher like Altman claims that profitability has a negative significant relationship with firms' financial distress level. From this, it is obvious that financial distress have a negative impact on profitability of a firm.

H₁: Profitability ratio is significant to predict the financial distress level.

3.4.2 Liquidity Ratio

Liquidity ratio is important because it can predict the liquidity of the company in settling short-term financial obligation. If a firm does not have sufficient cash, the company will still be financially distress even if they possessed a large amount of assets. Therefore, there is an inverse relationship between the liquidity ratio and the financial distress level.

H₁: Liquidity ratio is significant to predict the financial distress level.

3.4.3 Leverage Ratio

Leverage ratio is any one of several financial measurements that look at how much capital comes in the form of debt, or accesses that ability of the company to meet the financial obligation. Companies rely on the mixture of owners' equity and debt to finance their operation.

H₁: Leverage ratio is significant to predict the financial distress level.

3.4.4 Activity Ratio

The activity ratio can be used to identify the efficiency and effectiveness of a firm utilizes its assets. With the correct use of asset, the chances of a firm facing financial risk will be lower. The higher the activity ratio, the lower the financial distress of the company.

H₁: Activity ratio is significant to predict the financial distress level.

3.4.5 Solvency Ratio

Distress firm will tend to have a lower solvency ratio. This is due to solvency ratio identify the capability of the firm to settle its long-term debt. Besides that, solvency ratio also quantifies the company's size after tax income, not including non-cash depreciation expenditure, as compare to the total debt obligations of the firm. According to the previous study, it is also said that the solvency ratio have the positive relationship with financial distress level.

H₁: Solvency ratio significant to predict the financial distress level.

3.5 Measurement of Variables

Dependent Variable		Dummy Variable
Financial Distress		Code 1 – Company that facing bankruptcy
		Code 0 – Financially stable company
Independent Variables		Formulas
Profitability Ratio	Gross Margin	$\frac{\text{Gross Profit}}{\text{Net Sales}} * 100\%$
	Return on Asset	$\frac{\text{Net Income}}{\text{Total Asset}} * 100\%$
	Return on Equity	$\frac{\text{Net Income}}{\text{Shareholder's Equity}} * 100\%$
Liquidity Ratio	Current Ratio	$\frac{\text{Current Assets}}{\text{Current Liabilities}}$

Quick Ratio

$$\frac{\text{Quick Assets}}{\text{Current Liabilities}}$$

Cash Ratio

$$\frac{\text{Sum of Cash + Marketable Securities}}{\text{Current Liabilities}}$$

Leverage Ratio

Debt Ratio

$$\frac{\text{Total Debt}}{\text{Total Assets}}$$

Debt-to-equity Ratio

$$\frac{\text{Total Debt}}{\text{Total Equity}}$$

Activity Ratio

Account Receivable Turnover

$$\frac{\text{Net Credit Sales}}{\text{Average Account Receivables}}$$

Inventory Turnover

$$\frac{\text{Cost of Goods Sold}}{\text{Inventory}}$$

Total Asset Turnover

$$\frac{\text{Sales}}{\text{Total Assets}}$$

Solvency Ratio

Debt-to-capital Ratio

$\frac{\text{Total Debt}}{\text{Total Capital}}$

Table 3.5

3.6 Data Analysis

3.6.1 Correlation Analysis

Correlation analysis is a term that uses to analyze the strength of a relationship between two variables (Rebekic, Loncaric, Petrovic & Maric, 2015). A high correlation means that both of the variables have a close relationship. On the other hand, a low correlation is means that both of the variables are hardly related. The range of correlation coefficient is from -1.00 to +1.00. If the analysis shows that the value of correlation is close to -1.00, it means that the two variables have a negative relationship. While the value of the correlation fall close to +1.00, it means that the two variables have a positive relationship. The coefficient of correlation (r) can be conveying by a formula:

$$r = \frac{n \sum xy - \sum x \sum y}{\sqrt{[n \sum x^2 - (\sum x)^2] [n \sum y^2 - (\sum y)^2]}}$$

3.6.2 Ordinary Least Square (OLS)

Ordinary least squares regression is a method that has some very attractive statistical properties. It is one of the most powerful and popular methods of regression analysis. It provides a linear modeling technique and this technique can be used in one or more than one independent variables. This method also may be used to model single response variable which has been recorded an at least an interval scale (Hutcheson, 2011). There are some properties of the **OLS** regression. First property is the regression line defined by estimated β_1 and estimated β_2 passes through the means of the observed values mean X and mean Y. The second property is the mean of estimated Y's for the sample will equal to the mean of the observed Y's for the sample. Furthermore, the sample mean of the residual will be equal to zero. Besides that, the correlation between residuals and observed values of Y will be zero is known as one of the properties. Lastly, same with Y, the correlation between observed value of X and residuals will be zero (Nagler, 2001). Assumptions of **OLS** also need to fulfill in order to meet the good **OLS**. The assumptions include linear in parameter, data are random sample of population and expected value of errors is zero. The relationship between independent variables cannot be correlated and

are measured precisely. In additional, the residuals have constant variance and the error are normally distributed are also one of the assumptions. This research will conduct some test that include in ordinary least square regression which are T-test, F-test, R^2 test, White test, Breusch-Godfrey LM test, Non-normality test and Model Specification.

T-test evaluate whether means of two variables are statistically different from each other (Hole, 2009). The formula of T statistic (t) can be derived as:

$$\frac{\hat{\beta}_2 - \beta_2}{se(\hat{\beta}_2)} = \frac{(\hat{\beta}_2 - \beta_2) \sqrt{\sum x_i^2}}{\hat{\sigma}}$$

Where, $\hat{\beta}_2$ also known as the estimated β_2 , $se(\hat{\beta}_2)$ is known as standard error of estimated β_2 (Schmidt, 2005).

While F-test is use when need to compare the two variances between variables (Blackwell, 2008). The F-test is conducted involving more than one parameter of the model. However, T-test cannot be used to conduct this test, since a T-test is only able to test the value of one parameter at a time. A more general way to test hypotheses that can handle hypotheses with more than one parameter in them was needed. Therefore, F-test is carried out to make a comparison between the statistical models which have been fitted to the data set. Furthermore, it can be used to determine which model best fit sampled population data. If the null hypothesis is true, F statistic is used. The formula of F statistic (F) can be derived as:

$$\frac{(SSR_R - SSR_{UR}) / r}{SSR_{UR} / df}$$

According to Schmidt (2005), F distributed with r degrees of freedom in the numerator and df degrees of freedom in the denominator, SSR_R is the sum of squared residuals in the restricted model, SSR_{UR} is the sum of squared residual in the unrestricted model, r is the number of restrictions impose and df is the number of degrees of freedom in the unrestricted regression equation (number of observations minus number of parameter estimated).

The main objective of R^2 test is to obtain how near the data is to the fitted regression line (Cameron & Windmeijer, 1995). The formula of R-square can be derived as:

$$R^2 = 1 - \frac{SSR}{SST}$$

Since **SSR** will always lie between zero and **SST**, R^2 will always lie between zero and one, no matter what the units of Y may happen to be. If the model fits the data perfectly – all residuals are 0 – then **SSR** = 0 and $R^2 = 1$. The larger the residuals gap, the larger **SSR** gets and the smaller R^2 is. In the worst case, **SSR** = **SST** and $R^2 = 0$. In general, the closer the data lie to the regression line, the higher the R^2 is (Schmidt, 2005).

White test is a test for heteroscedasticity that with a problem of error does not have constant variance. If there is a heteroscedasticity problem, the parameter estimates will be unbiased and the P-values also will be unreliable. In this phenomenon, it cannot fulfill the assumption of **OLS**. Breusch-Godfrey LM test is used to test for the autocorrelation problem. It can provide conclusive result. Other than that, it also can be test if there is a higher order of series correlation and lagged dependent variable. Model specification is a process of convert a theory into a regression model. There are some rules that can be follow to make sure the model is good. To obtain good model, relevant independent variables should be include in the model. The independent variables must be uncorrelated with error term. Select an appropriate form of variables also can help to improve the model. Besides that, the estimated parameter value should be stable. The reason that will cause model specification is omitting a relevant independent variable that have a close relationship with dependent variable. On the other hand, if include an unnecessary, irrelevant or non-influential independent variable also one of the reasons. The incorrect arrangement of explained and explanatory variable is also consider as one of the reasons. The test that can be conduct to measure whether there is a model specification problem is Ramsey's RESET test.

3.6.3 Diagnostic Checking

This research will perform both methods which are ordinary least square and logistic regression analysis. Thus, it is necessary to conduct diagnostic checking in order to measure whether all of the model assumption is valid.

(a) Multicollinearity

Firstly, multicollinearity also known as collinearity is a situation in which the relationships between independent variables are highly correlated (Schmidt, 2005). However, the Ordinary Least Square (**OLS**) estimators are still BLUE, which Best, Linear, Unbiased and Efficient. An example for the collinearity is X_1 and X_2 are perfectly collinear if there exist parameters λ_0 and λ_1 . If there is the existence of the multicollinearity, the regression model has difficulty telling which explanatory variables are influencing the dependent variable. There are two types of multicollinearity, which is the perfect multicollinearity and the high multicollinearity (Pedace, 2013).

Till now, there are no sure methods of detecting collinearity. However, there are still several indicators of it. Having a high R^2 but with less significant of t-ratio or having a high pair-wise correlation coefficient can act as an indicator. In addition, the **variance inflation factor (VIF)** and **tolerance (TOL)** can also act as an indicator for detecting multicollinearity in a regression model (Jayakumar & Sulthan, 2014). As the rule of thumb, if the **VIF** of a variable exceeds 10, which will happen if R-square exceeds 0.90, the variable is said to be highly collinear. If the **TOL** is near to zero, the degree of collinearity will be greater.

According to Zainodin and Yap (2011), several methods have been suggested to overcome the problem of multicollinearity. The study explained that the use of **principal components analysis (PCA)** technique in detecting, quantifying and adjusting the regression coefficients for the effects of multicollinearity in a data base. Another solution to solve the multicollinearity problem is by combining the highly correlated independent variables into a single variable. Some studies also suggested that dropping a variable from a model. However, this will lead to specification bias. Increasing the sample size can also be a solution to the multicollinearity problem. Furthermore, combining the time-

series data with cross-sectional data is also considered as one of the solution for solving multicollinearity problem. This is because, through this way, a fairly reliable estimate can be obtained from a pooled data.

(b) Heteroscedasticity

Heteroscedasticity occurs when error terms of variance are non-constant with numbers of data. **Classic Linear Regression Model (CLRM)** assumes that the disturbance should have a constant variance independent of i . However the variance of the error is no longer assumed to be constant when $\text{var}(\mu_i) = \sigma_i^2$, whereby the σ^2 is with subscript i and with unequal spread of variance. There are multiple reasons for the heteroscedasticity to occur, which are larger random numbers have larger variances, average have smaller variances as the number of observations that produced the average rises. Besides that, the quality of data measurement varies and inherent variance in the unobserved factors can cause error terms in the models will also lead to the existence of heteroscedasticity problem. The Ordinary Least Squares estimators are still unbiased and consistent, but they are no longer inefficient (Schmidt, 2005). The inefficiency arises because the **OLS** estimator places greater emphasis on the ones with low variances, allowing one “ugly” observation to distort the estimates of the parameters more than it should be allowed to.

There are several ways in detecting heteroscedasticity problem. Ways like conducting test such as Park test, Glesjser test, Breusch-Pagan test and White test. The Breusch-Pagan test is designed to detect any linear form of heteroscedasticity. Besides, the heteroscedasticity problem can be detected if there is a suspect in the patterns about which observations tend to have high variances and which tend to have low variances (Williams, 2015)

As for the solutions to deal with heteroscedasticity problem can also be found in the studies. The studies had proven that by using Generalized Least Squares or Weighted Least Squares can indeed solve the heteroscedasticity problem. The model can be re-estimated by applying the Generalized Least Squares method. If this action were taken, it would then produce a new set of parameter estimates which would be more efficient than the **OLS** ones. Furthermore, a correct set of covariance and t-statistics will be obtained. Apart from that, researches have proposed that a method of obtaining consistent

estimators of the variances and covariance of the estimators. Through this way, much statistical software is only able to compute the White's heteroscedasticity corrected variance and standard errors (Gujarati & Porter, 2009).

(c) Autocorrelation

Autocorrelation are also known as serial correlation or cross-autocorrelation. It is also the cross-correlation of a signal with itself at different points in time. If there is an occurrence of autocorrelation in the regression model, the error terms of the model do not appear to be independent of one another, or even correlated with one another (Schmidt, 2005). It can be said there is a similarity between observations as a function of the time lag between them. If the data set has a serial correlation, but **OLS** estimators were used to estimate the parameters, there will be some consequences for the resulting estimates. According to the assumptions of the Gauss-Markov theorem, the β parameters remains unbiased, it is also consistent. However, the β parameters are no longer efficient; this is due to the small variances. Furthermore, the usual standard error of the **OLS** estimators becomes biased and inconsistent. This will still occur because error term's average value is still 0. They are still equally likely to lie above or below the true regression line.

Test can run in order to detect the problem of autocorrelation. Durbin Watson *d* test, Durbin Watson *h* test and the Breusch-Godfrey test can be used as the detection of autocorrelation problem. For the Durbin Watson *d* test, it will be biased on the estimated residuals, which are routinely computed in regression analysis (Gujarati & Porter, 2009). There is a weakness in the Durbin Watson *d* test, there are 'acceptance' and 'rejection' regions to decide whether there is an existence of autocorrelation problem, but there is also the 'inconclusive' region which never states the stance clearly.

There are remedies that can be suggested for solving the autocorrelation problem. Remedial measures like trying to transform the model if it is a pure autocorrelation. In this case, there will no longer have the problem of pure autocorrelation then. In order to complete the transformation, Generalized Least Square method can be used to obtain standard errors of **OLS** estimators that are corrected for autocorrelation (Williams, 2015).

(d) Normality Test

The test that is being conducted is the normality test: the Jarque-Bera test in order to identify whether the model meets the normality assumption on the error term. The normality assumption is important in identifying the probability of **OLS** estimator. The assumption asserts that a linear function of normally distributed variables is itself normally distributed.

(e) Model Specification Bias Test

For this diagnostic checking, the test being conducted is Ramsey RESET test. It is basically used to check or prove the functional form of the equations. In other words, it actually helps to define whether non-linear integration of the fitted values can explain the predicted variable. However, there is a drawback regarding this RESET test. Drawbacks like not giving a clear pathway on how to continue if the model is rejected. Though, some have argued RESET test is a general test for model misspecification, including unobserved omitted variables and heteroscedasticity. If there is variable being omitted from the model, the RESET test has no abilities in detecting it. Furthermore, if the functional form is correct, the test cannot detect heteroscedasticity (Schmidt, 2005).

3.7 Linear Probability Model

Linear probability model (LPM) is uses to estimate or predict the probability of certain event occurs when an assumption of the rate of changes in probability is constant or same across the different observations. However there are a few limitations for **LPM**. Firstly, there is no guarantee that all the predicted probability will fall between zero and one. Secondly, there will be the presence of heteroscedasticity problem in **LPM** where the variances of the error term are not constant. According to Schmidt (2005), **OLS** method can be used to estimate in model.

3.8 Logistic Regression Analysis

This study mainly uses **LA** to overcome the limitation in the **MDA**, which are multivariate normality and equality in the distribution matrix among group. **LA** provides the likelihood ratio where it is explain by the dichotomous dependent variable or by independent variables coefficients. In this study, dependent variables are coded as 1 if the firms are in financial distress and coded as 0 if they are healthy companies.

$$\ln \frac{\hat{p}_t}{1-\hat{p}_t} = \beta_0 + \beta_1 \text{CASHR}_{it} + \beta_2 \text{CR}_{it} + \beta_3 \text{DR}_{it} + \beta_4 \text{DTC}_{it} + \beta_5 \text{DTE}_{it} + \beta_6 \text{GPM}_{it} + \beta_7 \text{IT}_{it} + \beta_8 \text{QR}_{it} + \beta_9 \text{ROA}_{it} + \beta_{10} \text{ROE}_{it} + \beta_{11} \text{RT}_{it} + \beta_{12} \text{TAT}_{it} + \varepsilon_{it}$$

Where,

$$\ln \frac{\hat{p}_t}{1-\hat{p}_t} = \text{Dummy variable, 1 for distress companies and 0 for not distress companies}$$

CASHR = Cash Ratio

CR = Current Ratio

DR = Debt Ratio

DTC = Debt to Capital

DTE = Debt to Equity

GPM = Gross Profit Margin

IT = Inventory Turnover

QR = Quick Ratio

ROA = Return on Asset

ROE = Return on Equity

RT = Receivable Turnover

TAT = Total Asset Turnover

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

Several test including T-test, F-test, R^2 test, Likelihood test and Hosmer-Lemeshow test were used in the method. T-test evaluate whether means of two variables are statistically different from each other (Hole, 2009). The significant of T-test is highly relies on assumption of normality (Gali, 2015). While F-test is used to analyses hypotheses when there involve several parameters (Blackwell, 2008). If fulfill the addition assumptions of normally distributed data, F-test is qualified for small data sets (Goldstein, 2013). The main goal of R^2 test is to identify how near the data is to the fitted regression line (Cameron & Windmeijer, 1995). The function of Likelihood test is used to determine the significant of whole estimated Logit. Hosmer-Lemeshow test is used to determine the goodness of fit of the logistic regression model (Wu, 2010).

There are not many differences between Logit regression analysis and probit regression analysis. Thus, only Logit regression analysis will be used to test the significance of independent variables in this research. According to past researchers such as Lakshan & Wijekoon (2013), Roslan (n.d.), Abdullah, Ma'aji & Lee (2016), Alifiah (2014), Tuvadaratragool (2013), Campbell, Hilscher & Szilagyi (2010), Idris (2008), MSELMI (2014) and Platt & Platt (2008), Logit regression analysis is used to complete the research.

3.9 Stepwise Multiple Regression

Stepwise regression is a method that is used to choose which independent variable needs to include in a regression model. It also used to determine the linear relationship between one dependent variable and multiple independent variables. Stepwise procedure usually will be used when there is lack of theoretical in the dependent variable (Low, Fauzias & Ariffin, 2001 as cited in Abdullah, Ma'aji & Lee 2016). According to Abdullah, Ahmad, Rus & Zainudin (2015), the Stepwise regression result in the research indicates that debt ratio and profitability ratio are significant in detect failure. Stepwise regression involves two levels which are adding variables and eliminating variables. Forward stepwise selection represent adding variable in the model while backward elimination represent removing variable in the model (Rawlings, Pantula & Dickey, n.d.). The assumption includes in this method is no multicollinearity among predictors. Next, the subjects involve for each independent variables must be at least 10 to 15 or 20 also is one of the assumptions. This is because a small N will lead a bad prediction equation. The last assumption is must confirm that result are not skewed by outlier values. By fulfilling these assumptions, it can ensure that the result is indeed a reflection of the relationship between dependent variable and independent variables (Tarazi & McKeever).

3.10 Conclusion

This chapter described the method used for this study including the design of research, the extraction of data's method, data processing, framework of research, variables interpretation, hypotheses, measurement of variables and analysis method. The next chapter will present the data analysis finding.

CHAPTER 4: ANALYSIS OF DATA

4.0 Introduction of Chapter

The aim of study chapter 4 is to identify the significant relationship between predictor variable and predicted variable. The study is using the data of ten companies with five different sectors between 1995 years to 2006 years. The five different sectors which are construction, manufacturing, steel manufacturing, food and beverage and plantation. We want to find out the best econometric model for conclude our result.

4.1 Correlation Analysis

	FINDIS	CASHR	CR	DR	DTC	DTE	GPM	IT	QR	ROA	ROE	RT	TAT
FINDIS	1.000000	-0.21151	-0.21391	0.231905	0.117217	0.184409	-0.26375	-0.02982	-0.29992	-0.5006	-0.21449	-0.21744	0.179058
CASHR	-0.21151	1.000000	0.201775	-0.11455	-0.16472	-0.13208	0.181393	0.366914	0.292140	0.322034	0.149498	0.293018	-0.21227
CR	-0.21391	0.201775	1.000000	-0.55306	-0.27631	-0.27562	0.219360	0.376728	0.938376	0.443904	0.190205	-0.0636	-0.26234
DR	0.231905	-0.11455	-0.55306	1.000000	0.552327	0.595159	-0.15406	-0.12726	-0.45869	-0.42712	-0.33515	-0.18603	0.390848
DTC	0.117217	-0.16472	-0.27631	0.552327	1.000000	0.760157	-0.1804	-0.09264	-0.24983	-0.56188	-0.88404	-0.12193	0.215596
DTE	0.184409	-0.13208	-0.27562	0.595159	0.760157	1.000000	-0.1505	-0.05363	-0.23708	-0.52132	-0.81158	-0.04984	0.128793
GPM	-0.26375	0.181393	0.219360	-0.15406	-0.1804	-0.1505	1.000000	-0.01364	0.212198	0.637997	0.277456	0.117907	0.061201
IT	-0.02982	0.366914	0.376728	-0.12726	-0.09264	-0.05363	-0.01364	1.000000	0.490028	0.023314	-0.01585	-0.32907	-0.04833
QR	-0.29992	0.292140	0.938376	-0.45869	-0.24983	-0.23708	0.212198	0.490028	1.000000	0.430367	0.186601	-0.05563	-0.27114
ROA	-0.5006	0.322034	0.443904	-0.42712	-0.56188	-0.52132	0.637997	0.023314	0.430367	1.000000	0.660187	0.267296	-0.06969
ROE	-0.21449	0.149498	0.190205	-0.33515	-0.88404	-0.81158	0.277456	-0.01585	0.186601	0.660187	1.000000	0.039174	-0.06798
RT	-0.21744	0.293018	-0.0636	-0.18603	-0.12193	-0.04984	0.117907	-0.32907	-0.05563	0.267296	0.039174	1.000000	0.121592
TAT	0.179058	-0.21227	-0.26234	0.390848	0.215596	0.128793	0.061201	-0.04833	-0.27114	-0.06969	-0.06798	0.121592	1.000000

Table 4.1

4.2 Initial OLS Multiple Regression Model

Ordinary Least Square Regression Model (Refer to table 4.2)

$$\text{FINDIS} = \beta_0 + \beta_1\text{CASHR} + \beta_2\text{CR} + \beta_3\text{DR} + \beta_4\text{DTC} + \beta_5\text{DTE} + \beta_6\text{GPM} + \beta_7\text{IT} + \beta_8\text{QR} + \beta_9\text{ROA} + \beta_{10}\text{ROE} + \beta_{11}\text{RT} + \beta_{12}\text{TAT}$$

Interpretation of β

$$\beta_0=0.161274$$

Holding all variable equal to zero, the minimum probability to have financial distress is 0.161274 or 16.1274%.

$$\beta_1=0.26284$$

For every percentage point increase in cash ratio, on average, the probability for a firm to have financial distress will increase by 0.26284 or 26.284%, holding other variable constant.

$$\beta_2=0.338802$$

For every percentage point increase in current ratio, on average, the probability for a firm to have financial distress will increase by 0.338802 or 33.8802%, holding other variable constant.

$$\beta_3=0.733696$$

For every percentage point increase in debt ratio, on average, the probability for firm to have financial distress will increase by 0.733696 or 73.3696%, holding other variable constant.

$$\beta_4=-0.286005$$

For every percentage point increase in debt to equity ratio, on average, the probability for a firm to have financial distress will decrease by 0.286005 or 28.6005%, holding other variable constant.

$$\beta_5=-0.030555$$

For every percentage point increase in debt to equity ratio, on average, the probability for a firm to have financial distress will decrease by 0.030555 or 3.0555%, holding other variable constant.

$$\beta_6=0.251268$$

For every percentage point increase in gross profit margin, on average, the probability for a firm to have financial distress will increase by 0.251268 or 25.1268%, holding other variable constant.

$$\beta_7=0.003874$$

For every percentage point increase in inventory turnover, on average, the probability for a firm to have financial distress increase by 0.003874 or 0.3874%, holding other variable constant.

$$\beta_8=-0.367750$$

For every percentage point increase in quick ratio, on average, the probability for a firm to have financial distress will decrease by 0.367750 or 36.775%, holding other variable constant.

$$\beta_9=-2.104694$$

For every percentage point increase in return on asset ratio, on average, the probability for a firm to have financial distress will decrease by 2.104694 or 210.4694%, holding other variable constant.

$$\beta_{10}=-0.212272$$

For every percentage point increase in return on equity ratio, on average, the probability for a firm have financial distress will decrease by 0.212272 or 21.2272%, holding other variable constant.

$$\beta_{11}=-0.012623$$

For every percentage point increase in receivable turnover, on average, the probability for a firm to have financial distress will decrease by 0.012623 or 1.2623%, holding other variable constant.

$$\beta_{12}=0.224470$$

For every percentage point increase in total asset turnover, on average, the probability for a firm to have financial distress will increase by 0.22447 or 22.447%, holding other variable constant.

$$\begin{aligned} \text{FINDIS} = & 0.161274 + 0.26284\text{CASHR}(0.3196) + 0.338802\text{CR}(0.0056) + 0.733696\text{DR}(0.0803) \\ & + 0.286005\text{DTC}(0.0047) - 0.030555\text{DTE}(0.4703) + 0.251268\text{GPM}(0.2533) - 0.003874\text{IT}(0.5206) \\ & - 0.367750\text{QR}(0.0105) - 2.104694\text{ROA}(0.0013) - 0.212272\text{ROE}(0.1140) - 0.012623\text{RT}(0.1745) \\ & + 0.224470\text{TAT}(0.0598) \end{aligned}$$

4.2.1 Individual T-test

CASHR=Cash Ratio

Reject H_0 if the p-value is less than α , significance level (0.10/0.05/0.01). Otherwise, do not reject H_0 . Do not reject H_0 , since the p-value (0.3196) is higher than α , significance level (0.10/0.05/0.01). Therefore, there is insufficient evidence to conclude that there is a significant relationship between cash ratio and financial distress at significant level of 0.10/0.05/0.01.

CR=Current Ratio

Reject H_0 if the p-value is less than α , significant level (0.10/0.05/0.01). Otherwise, do not reject H_0 . Reject H_0 since the p-value (0.0056) is less than α , significant level (0.10/0.05/0.01). Therefore, there is sufficient evidence to conclude that there is a significant relationship between current ratio and financial distress significant level of 0.10/0.05/0.01.

DR=Debt Ratio

Reject H_0 if the p-value is less than α , significant level (0.10/0.05/0.01). Otherwise, do not reject H_0 . Reject H_0 when the significant level is at 0.10, but do not reject when significant level is at 0.05 or 0.01 since the p-value (0.0803) is less than 0.10 but greater than 0.05 or 0.01. Therefore, there is sufficient evidence to conclude that there is significant relationship between debt ratio and financial distress when the significant level is at 0.10 but insufficient evidence to conclude the relationship when significant level is at 0.05 and 0.01.

DTC=Debt to Capital Ratio

Reject H_0 if the p-value is less than α , significant level (0.10/0.05/0.01). Otherwise, do not reject H_0 . Reject H_0 since the p-value (0.0047) is less than α , significance level (0.10/0.05/0.01). Therefore, there is sufficient evidence to conclude that there is significant relationship between debt to capital ratio and financial distress when the significant level at 0.10/0.05/0.01.

DTE=Debt to Equity Ratio

Reject H_0 if the p-value is less than α , significant level (0.10/0.05/0.01). Otherwise, do not reject H_0 . Do not reject H_0 since the p-value (0.4703) is greater than α , significance level (0.10/0.05/0.01). Therefore, there is insufficient evidence to conclude that there is significant relationship between debt to equity ratio and financial distress when the significant level at 0.10/0.05/0.01.

GPM=Gross Profit Margin

Reject H_0 if the p-value is less than α , significant level (0.10/0.05/0.01). Otherwise, do not reject H_0 . Do not reject H_0 since the p-value (0.2533) is greater than α , significance level (0.10/0.05/0.01). Therefore, there is insufficient evidence to conclude that there is significant relationship between gross profit margin and financial distress when the significant level at 0.10/0.05/0.01.

IT=Inventory Turnover

Reject H_0 if the p-value is less than α , significant level (0.10/0.05/0.01). Otherwise, do not reject H_0 . Do not reject H_0 since the p-value (0.5206) is greater than α , significance level (0.10/0.05/0.01). Therefore, there is insufficient evidence to conclude that there is significant relationship between inventory turnover and financial distress when the significant level at 0.10/0.05/0.01.

QR=Quick Ratio

Reject H_0 if the p-value is less than α , significant level (0.10/0.05/0.01). Otherwise, do not reject H_0 . Reject H_0 since the p-value (0.0105) is less than 0.10 and 0.05, but do not reject H_0 when significant level is at 0.01 because 0.0105 is greater than 0.01. Therefore, there is sufficient evidence to conclude that there is significant relationship between quick ratio and financial distress when the significant level at 0.10 and 0.05, but insufficient evidence to conclude when significant level at 0.01.

ROA=Return on Asset

Reject H_0 if the p-value is less than α , significant level (0.10/0.05/0.01). Otherwise, do not reject H_0 . Reject H_0 since the p-value (0.0013) is less than α , significance level (0.10/0.05/0.01). Therefore, there is sufficient evidence to conclude that there is significant relationship between return on asset and financial distress when the significant level at 0.10/0.05/0.01.

ROE=Return on Equity

Reject H_0 if the p-value is less than α , significant level (0.10/0.05/0.01). Otherwise, do not reject H_0 . Do not reject H_0 since the p-value (0.1140) is greater than α , significance level (0.10/0.05/0.01). Therefore, there is insufficient evidence to conclude that there is significant relationship between return on equity and financial distress when the significant level at 0.10/0.05/0.01.

RT=Receivable Turnover

Reject H_0 if the p-value is less than α , significant level (0.10/0.05/0.01). Otherwise, do not reject H_0 . Do not reject H_0 since the p-value (0.1745) is greater than α , significance level (0.10/0.05/0.01). Therefore, there is insufficient evidence to conclude that there is significant relationship between receivable turnover and financial distress when the significant level at 0.10/0.05/0.01.

TAT=Total Asset Turnover

Reject H_0 if the p-value is less than α , significant level (0.10/0.05/0.01). Otherwise, do not reject H_0 . Reject H_0 since the p-value (0.0598) is less than 0.10, but do not reject since p-value is greater than 0.05 and 0.01. Therefore, there is sufficient evidence to conclude that there is significant relationship between total asset turnover and financial distress when the significant level at 0.10, but insufficient evidence when significant level at 0.05 and 0.01.

4.2.2 F-test

Reject H_0 if the p-value is less than α , significant level (0.10/0.05/0.01). Otherwise, do not reject H_0 . Reject H_0 since the p-value (0.000) is less than α , significant level (0.10/0.05/0.01). Therefore, there is sufficient evidence to conclude that the **Ordinary Least Square (OLS)** model is significant level of 0.10/0.05/0.01.

4.3 Diagnostic Checking

4.3.1 Multi-collinearity

The factors that measure the seriousness of Multicollinearity

- High R-square but few significant t-ratio
- High pair-wise correlation among independent variables
- Variance Inflation Factor, $VIF=1/(1-R^2)$
- **Tolerance (TOL)**, = $1/VIF$

$$\begin{aligned} VIF &= \frac{1}{1-R^2} \\ &= \frac{1}{1-0.446484} \\ &= 1.8066325 \end{aligned}$$

$$\begin{aligned} \mathbf{TOL} &= \frac{1}{\mathbf{VIF}} \\ &= \frac{1}{1.8066325} \\ &= 0.553516 \end{aligned}$$

Every model would have multicollinearity problem, because every factor would have some relationship with each other. Therefore, mathematicians have come out some assumptions to conclude serious multicollinearity. First, look at the R-square and the significant of independent variables. Refer to table 4.3.1, the R-square shown 0.446484 which is moderate and from the same table individual t-test shown half of the number of independent variables are considered significant to the research. The result shows not serious problem of multicollinearity. Second assumption is high pair-wise correlation among independent variables. Refer to table 4.8, correlation among every independent variable; the tables shown most of the variables are not highly correlated with each other, which have the same result as the first assumption. Lastly, the third and fourth assumption are **VIF** and **TOL**, if **VIF** is close to or more than 10 and **TOL** is close to 1 then the multicollinearity problem is serious. Based on the result above, **VIF** is 1.8066325 and **TOL** is 0.553516. Throughout these four assumptions, the multicollinearity problem in this research is not serious.

4.3.2 Heteroscedasticity Test: White

The null hypothesis would be rejected when the P-value less than significant value of 10%, 5% and 1% to conclude the heteroscedasticity. Based on white test for heteroscedasticity, the result shows 0.2340 which is higher than 0.10, 0.05 and 0.01. Therefore, null hypothesis is not rejected. There is sufficient evidence to conclude that there is homoscedasticity.

4.3.3 Breusch-Godfrey Serial Correlation LM Test

The null hypothesis need to be rejected when the P-value less than significant value of 10%, 5% and 1% to conclude the seriousness of autocorrelation. Through the result of Breusch-Godfrey Serial Correlation LM Test, the result show 0.0000, this is lower than the significant value of 0.10, 0.05 and 0.01. Therefore, null hypothesis is rejected and have sufficient evidence to conclude that the model has higher order autocorrelation at the significant level of 10%, 5% and 1%.

4.3.4 Normality Test

The results have to reject null hypothesis when the P-value less than significant value of 10%, 5% and 1% to conclude the normality of the data. Based on the result of Jarque-Bera test, the P-value is 0.163597 which is higher than the significant value of 10%, 5% and 1%. Therefore, H null is not rejected and there is enough evidence to show that the data of this research is normally distributed.

4.3.5 Goodness of Fit test

The results have to reject the null hypothesis when the P-value lowers than significant value of 10%, 5% and 1% to conclude the goodness of fit. Based on Andrews and Hosmer-Lemeshow Tests, the result show that the probability of Chi-square is 0.4013, which is higher than significant value of 0.10, 0.05 and 0.01. Therefore, null hypothesis is not rejected and conclude that there is sufficient evidence to say that the fitness of data is sufficient.

4.3.6 Model Specification Problem

(a) Ramsey RESET Test

The null hypothesis would be rejected when the P-value less than significant value of 10%, 5% and 1% to conclude the model specification. By comparing the Akaike info criterion (AIC) and Schwarz criterion (SC), lag 4 was taken to test the model specification. Based on the result from Ramsey RESET Test, the probability is 0.0063 which is lower than 0.10, 0.05 and 0.01. Therefore, null hypothesis is rejected and conclude that model specification is incorrect.

(b) Ramsey RESET Test for Stepwise Approach

The null hypothesis would be rejected when the P-value less than significant value of 10%, 5% and 1% to conclude the model specification. By comparing the Akaike info criterion (AIC) and Schwarz criterion (SC), lag 2 was taken to test the model specification. Based on the result from Ramsey RESET Test, the probability is 0.6554 which is higher than 0.10, 0.05 and 0.01. Therefore, null hypothesis is not rejected and conclude that model specification is correct. In this case, the previous model misspecification problem has been solved.

4.4 Logit Model (Refer to the table 4.4)

$$\ln \frac{\hat{p}_t}{1-\hat{p}_t} = \beta_0 + \beta_1 \text{CASHR} + \beta_2 \text{CR} + \beta_3 \text{DR} + \beta_4 \text{DTC} + \beta_5 \text{DTE} + \beta_6 \text{GPM} + \beta_7 \text{IT} + \beta_8 \text{QR} + \beta_9 \text{ROA} + \beta_{10} \text{ROE} + \beta_{11} \text{RT} + \beta_{12} \text{TAT}$$

Interpretation of β

$$\beta_{\text{CASHR}}=6.780748$$

For every one percentage point increase in cash ratio, on average, In odd ratio for a firm to have financial distress increase by 6.780748, holding other variable constant.

$$\beta_{\text{CR}}=4.127684$$

For every one percentage point increase in current ratio, on average, In odd ratio for a firm to have financial distress increase by 4.127684, holding other variable constant.

$$\beta_{\text{DR}}=0.297763$$

For every one percentage point increase in debt ratio, on average, In odd ratio for a firm to have financial distress increase by 0.297763, holding other variable constant.

$$\beta_{\text{DTC}}=-4.444538$$

For every one percentage point increase in debt to capital ratio, on average, In odd ratio for a firm to have financial distress decrease by 4.444538, holding other variable constant.

$$\beta_{\text{DTE}}=2.76956$$

For every one percentage point increase in debt to equity ratio, on average, In odd ratio for a firm to have financial distress increase by 2.76956, holding other variable constant.

$$\beta_{\text{GPM}}=9.646651$$

For every one percentage point increase in gross profit margin, on average, In odd ratio for a firm to have financial distress increase by 9.646651, holding other variable constant.

$$\beta_{IT} = -0.005545$$

For every one percentage point increase in inventory turnover ratio, on average, ln odd ratio for a firm to have financial distress decrease by 0.005545, holding other variable constant.

$$\beta_{QR} = -5.634443$$

For every one percentage point increase in quick ratio, on average, ln odd ratio for a firm to have financial distress decrease by 5.634443, holding other variable constant.

$$\beta_{ROA} = 2.178106$$

For every one percentage point increase in return on asset ratio, on average, ln odd ratio for a firm to have financial distress increase by 2.178106, holding other variable constant.

$$\beta_{ROE} = -20.37336$$

For every one percentage point increase in return on equity ratio, on average, ln odd ratio for a firm to have financial distress decrease by 20.37336, holding other variable constant.

$$\beta_{RT} = -0.106474$$

For every one percentage point increase in receivable turnover ratio, on average, ln odd ratio for a firm to have financial distress decrease by 0.106474, holding other variable constant.

$$\beta_{TAT} = 2.283978$$

For every one percentage point increase in total asset turnover ratio, on average, ln odd ratio for a firm to have financial distress increase by 2.283978, holding other variable constant.

4.4.1 Individual T- Test

$$\ln \frac{\hat{p}_t}{1-\hat{p}_t} = -3.040086 + 6.780748\text{CASHR}(0.0116) + 4.127684\text{CR}(0.0132) + 0.297763\text{DR}(0.9531) - 4.444538\text{DTC}(0.1706) + 2.769564\text{DTE}(0.4242) + 9.646651\text{GPM}(0.0776) - 0.005545\text{IT}(0.9194) - 5.634443\text{QR}(0.0093) + 2.178106\text{ROA}(0.9018) - 20.37336\text{ROE}(0.0517) - 0.106474\text{RT}(0.1945) + 2.283978\text{TAT}(0.0549)$$

CASHR=Cash Ratio

If the result of p- value less than α , we rejects H_0 , otherwise, do not reject it. According to the table 4.4.1, the p-value of the t-test is 0.0116 is less than the significant values which are 0.10, 0.05 and 0.01. There is sufficient evidence conclude that there is significant relationship between cash ratio and the financial distress at the significant level 0.10, 0.05 and 0.01.

CR=Current Ratio

If the result of p-value less than α , it will reject H_0 , otherwise, do not reject it. According to the table 4.4.1, the p-value of the t-test is 0.0132 is less than significant value which are 0.10, 0.05 but higher than 0.01. In short, there is sufficient evidence to conclude that there is significant relationship between current ratio and financial distress at the significant level of 0.10 and 0.05.

DR=Debt Ratio

If the result of p-value less than α , it will reject H_0 , Otherwise, do not reject it. According to the table 4.4.1, the p-value of T-test is 0.9531 is greater than 0.10, 0.05 and 0.01. Therefore, there is insufficient evidence conclude that there is significant relationship between debt ratio and financial distress.

DTC=Debt to Capital Ratio

It will reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 . According to the table 4.4.1, the result of p-value of individual t- test is 0.1706 is greater than the significant level of 0.10, 0.05 and 0.01. In conclusion, there is insufficient evidence to conclude that there is significant relationship between debt to capital and financial distress when the significant level is 0.10, 0.05 and 0.01.

DTE=Debt to Equity Ratio

It will reject H_0 if the p-value is less than α , otherwise do not reject H_0 . According to the table 4.4.1, the result of p-value of individual t- test is 0.4242 which is greater than the significant level of 0.10, 0.05 and 0.01. So, there is insufficient proof to conclude there is significant relationship between debt to equity ratio and financial distress when the significant level is 0.10, 0.05 and 0.01.

GPM=Gross Profit Margin

It will reject H_0 if the p-value is less than α , otherwise do not reject H_0 . According to the table 4.4.1, the result of p-value of individual t- test is 0.0776 which is less than the significant level of 0.10, but higher than 0.05 and 0.01. In conclusion, there is sufficient evidence to conclude that there is significant relationship between gross profit margin and financial distress when the significant level at 0.10.

IT=Inventory Turnover

It will reject H_0 if the p-value is less than α . Otherwise do not reject H_0 . According to the table 4.4.1, the p-value of individual t test is 0.9194 which is greater than 0.10, 0.05 and 0.01. Therefore, there is insufficient evidence to conclude that there is significant relationship between inventory turnover and financial distress when the significant level at 0.10, 0.05 and 0.01.

QR=Quick Ratio

It will reject H_0 if the p-value less than α , otherwise do not reject H_0 . According to the table 4.4.1, the p-value of individual t- test is 0.0093 which is less than 0.10, 0.05 and 0.01. Therefore, there is sufficient evidence conclude that there is significant relationship between quick ratio and financial distress when the significant level at 0.10, 0.05 and 0.01.

ROA=Return on Asset

It will reject H_0 if the p-value less than α , otherwise do not reject H_0 . According to the table 4.4.1, the p-value of individual t- test is 0.9018 which is greater than 0.10, 0.05 and 0.01. So, there is insufficient evidence to conclude that there is significant relationship between return on asset and financial distress when the significant level at 0.10, 0.05 and 0.01

ROE=Return on Equity

It will reject H_0 if the p-value less than α , otherwise do not reject H_0 . According to the table 4.4.1, the p-value of individual t- test is 0.0517 which is less than 0.10 but greater than 0.05 and 0.01. In conclusion, there is sufficient to conclude that there is significant relationship between return on equity and financial distress when the significant level at 0.10.

RT=Receivable Turnover

It will reject H_0 if the p-value less than α , otherwise do not reject H_0 . According to the table 4.4.1, the p-value of individual t-test is 0.1945 which is greater than 0.10, 0.05 and 0.01. The result proves that is insufficient evidence to conclude that there is significant relationship between receivable turnover and financial distress when the significant level at 0.10, 0.05 and 0.01.

TAT=Total Asset Turnover

It will reject H_0 if the p-value less than α , otherwise do not reject H_0 . According to the table 4.4.1, the p-value of individual t-test is 0.0549 is less than 0.10 but greater than 0.05 and 0.01. So, we can conclude that is significant relationship between total asset turnover and financial distress when the significant level at 0.10, but not significant relationship at 0.05 and 0.01.

4.4.2 F Test

If the p-value is less than α , reject H_0 , otherwise do not reject H_0 . According to the e-view result, the p-value is 0.0000 and we reject H_0 since the p-value is less than 0.10, 0.05 and 0.01. We can conclude that Logit model is significant at the significant level at 0.10, 0.05 and 0.01.

4.4.3 Logit Model with Stepwise Approach

$$\ln \frac{\hat{p}_t}{1-\hat{p}_t} = - 3.711782 + 5.560802\text{CASHR}(0.0035) + 3.516270\text{CR}(0.0106) + 9.914357\text{GPM}(0.0638) - 4.373587\text{QR}(0.0120) - 20.85785\text{ROE}(0.0002) + 1.486220\text{TAT}(0.0550)$$

Interpretation of β

$$\beta_{\text{CASHR}}=5.560802$$

For every one percentage point increase in cash ratio, on average, In odd ratio for a firm to have financial distress increase by 5.560802, holding other variable constant.

$$\beta_{\text{CR}}=3.516270$$

For every one percentage point increase in current ratio, on average, In odd ratio for a firm to have financial distress increase by 3.516270, holding other variable constant.

$$\beta_{\text{GPM}}=9.914357$$

For every one percentage point increase in gross profit margin, on average, In odd ratio for a firm to have financial distress increase by 9.914357, holding other variable constant.

$$\beta_{\text{QR}}=-4.373587$$

For every one percentage point increase in quick ratio, on average, In odd ratio for a firm to have financial distress decrease by 4.373587, holding other variable constant.

$$\beta_{ROE} = -20.85785$$

For every one percentage point increase in return on equity ratio, on average, In odd ratio for a firm to have financial distress decrease by 20.85785, holding other variable constant.

$$\beta_{TAT} = 1.486220$$

For every one percentage point increase in total asset turnover ratio, on average, In odd ratio for a firm to have financial distress increase by 1.486220, holding other variable constant.

(a) Individual T- Test

Cash Ratio

If the result of p- value less than α , we rejects H_0 , otherwise, do not reject it. According to the table 4.4.2, the p-value of the t-test is 0.0035 is less than the significant values which are 0.10, 0.05 and 0.01. There is sufficient evidence conclude that there is significant relationship between cash ratio and the financial distress at the significant level 0.10, 0.05 and 0.01, holding other variable constant.

Current Ratio

If the result of p-value less than α , it will reject H_0 , otherwise, do not reject it. According to the table 4.4.2, the p-value of the t-test is 0.0106 is less than significant value which are 0.10, 0.05 but higher than 0.01. In short, there is sufficient evidence to conclude that there is significant relationship between current ratio and financial distress at the significant level of 0.10 and 0.05.

Gross Profit Margin

It will reject H_0 if the p-value is less than α , otherwise do not reject H_0 . According to the table 4.4.2, the result of p-value of individual t- test is 0.0638 which is less than the significant level of 0.10, but higher than 0.05 and 0.01. In conclusion, there is sufficient evidence to conclude that there is significant relationship between gross profit margin and financial distress when the significant level at 0.10.

Quick Ratio

It will reject H_0 if the p-value less than α , otherwise do not reject H_0 . According to the table 4.4.2, the p-value of individual t- test is 0.0120 which is less than the significant level of 0.10 and 0.05, but higher than 0.01. In conclusion, there is sufficient evidence to conclude that there is significant relationship between quick ratio and financial distress when the significant level at 0.10 and 0.05.

Return on Equity

It will reject H_0 if the p-value less than α , otherwise do not reject H_0 . According to the table 4.4.2, the p-value of individual t- test is 0.0002 is less than the significant values which are 0.10, 0.05 and 0.01. There is sufficient evidence conclude that there is significant relationship between return on equity and the financial distress at the significant level 0.10, 0.05 and 0.01, holding other variable constant.

Total Asset Turnover

It will reject H_0 if the p-value less than α , otherwise do not reject H_0 . According to the table 4.4.2, the p-value of individual t-test is 0.0550 is less than 0.10 but greater than 0.05 and 0.01. So, we can conclude that is significant relationship between total asset turnover and financial distress when the significant level at 0.10, but not significant relationship at 0.05 and 0.01.

(b) F Test

If the p-value is less than α , reject H_0 , otherwise do not reject H_0 . According to the table 4.4.2, the p-value is 0.0000 and we reject H_0 since the p-value is less than 0.10, 0.05 and 0.01. We can conclude that Logit model is significant at the significant level at 0.10, 0.05 and 0.01.

4.5 Conclusion

In conclusion, there are half number of the independent variables were significant to explain the prediction of financial distress. The data sets used to conduct the regression model were good and fit. Overall, the problems of the **OLS** model were autocorrelation and model misspecification. The multi-collinearity problem is not serious which adjustment is not necessary to do. After excluding all insignificant independent variables, the model misspecification problem has been solved. Hence, a Logit model with all significant independent variables is produced and it is considered as the best model in this research.

CHAPTER 5: DISCUSSION, CONCLUSION AND IMPLICATIONS

5.0 Introduction of Chapter

After carrying out several tests and diagnostic checking in chapter four, this chapter aims to provide major findings, implications of study and limitations of this research. To solve the limitation of this project, recommendation for future research would also be provided in this chapter.

5.1 Summary

For this research, panel data is used by taking annual report of 10 companies from 5 different type of business sector from year 2006 to 2015. To predict the financial distress, five type of financial ratio had been taken into accounts which are profitability ratio, leverage ratio, activity ratio, liability ratio and solvency ratio. Each type of these ratios consists of 3 sub-ratios and each factor inside formula was taken from every year annual report. Before computing the **OLS** model or any other model, the normality of data sets should be confirmed. Jarque-Bera Normality test can be used to measure the normality of data sets. This research has conducted the Normality test as shown in Chapter 4, figure 4.1. The data sets in this research are normally distributed. So, the data is able to conduct model and other tests. Although the result from F-test shown both **OLS** and Logit model are significant to explain the probability of financial distress, but R^2 have proved that Logit model is much better than **OLS** model in the prediction of financial distress. Other than comparing the R^2 , the result of the dependent variable either falls on 0 or 1. If **OLS** model were used, the result would have an unlimited range. Logit model is better because the dependent variable no longer be Y but \log_e odd ratio, the range of the result would be limited between 0 and 1. In that case, it would give a better result in prediction for financial distress.

Next, diagnostic checking for the model was conducted. The reason behind is because there might be problems like multi-collinearity or heteroscedasticity will affect the quality of conclusions drawn from fitted models (Zeiles & Hothorn, n.d.). The first diagnostic checking conducted is to test for the multi-collinearity problem. There are several indicators to show the seriousness of the multi-collinearity problem. The first indicator is having a high R^2 but few significant independent variables. After conducting the diagnostic checking, the result obtained

was a moderate R^2 but half of the independent variables are significant. The second way to detect multi-collinearity problem is by using the high pair-wise correlation among independent variable. Through table 2, it shows that most of the independent variables were less correlated with each other. This indicates that the seriousness of the multi-collinearity problem is not very serious. The third method to detect for multi-collinearity is to calculate the **variance inflation factor (VIF)**. If the result is higher than 10, this shows that there is a serious problem. The result obtained was 1.8; this means the multi-collinearity problem is not severe. Lastly, by calculating the **tolerance (TOL)**, the problem of multi-collinearity can also be detected. This method takes **VIF** into account. As the result show in **VIF** does not have a serious multi-collinearity problem, the **TOL** is also showing the same result which is, 0.5535. The result is neither close to 0 nor 1; it is just in the middle between 0 and 1. All of these assumptions had proven that this study is saved from serious multi-collinearity problem.

Furthermore, White test is also used to test the possibility of heteroscedasticity problem. Heteroscedasticity problem is the absence of homoscedasticity. Homoscedasticity show that a vector of random variables has the same finite variance. If the variance of random variables has different variability from others, it would conclude to have heteroscedasticity problem. By referring to table 4, it shows that the model is homoscedasticity. This indicates a sign that the variance of the error term is being constant.

Apart from that, the result from Breusch-Godfrey Serial Correlation LM test shows that the model tends to have autocorrelation problem. Autocorrelation is also known as serial correlation, is the correlation of a signal with the copy of itself compute from the delayed function. Moreover, based on the Akaike info criterion and Schwarz criterion in Ramsey RESET test, an appropriate functional form for the model had been found at lag 4. Based on the result tabulated from Ramsey RESET test, the model is having a misspecification.

For solving model misspecification problem, all the insignificant independent variables were excluded and produce a new model. The model is known as Stepwise approach. Based on the result of Ramsey RESET test, the model specification problem can be solved by taking out all the insignificant independent variables in the Stepwise approach. In conclusion, the Logit model which includes current ratio, debt ratio, debt to equity ratio, quick ratio, return on asset ratio and total asset turnover is the best model for the prediction of financial distress among companies.

5.2 Major Findings

5.2.1 Profitability Ratio

Return on Equity, which is to measure profitability ratio of companies is negatively significant to bankruptcy. Return on asset and return on equity are the most important financial ratios used to predict financial distress of companies (Al-khatib & Al-Horani, n.d.). Apart from this variable, gross profit margin is another negatively significant variable for measuring the profitability ratio. Based on the research of Platt and Platt (2002), it shows that the gross profit margin is negatively related to the probability that a firm would experience financial distress but the result in this research was inverted. However, the difference between these two researchers is Platt and Platt (2002) used Logit regression analysis to produce the model.

5.2.2 Liquidity Ratio

Liquidity ratio shows the ability of a company to meet the debt obligation. The liquidity ratio can be further divided into three ratios which are cash ratio, current ratio, and quick ratio. This study is based on **OLS** model; the individual T-test shows that the quick ratio has a significant relationship with the financial distress. The quick ratio shows the short-term liquidity of the asset in the company. According to Laitinen and Laitinen, (2000 as cited in Lakshan & Wijekoon 2013) and Laitinen, (2005 as cited in Lakshan & Wijekoon 2013), quick ratio was significant to predict the financial distress. In other words, the quick ratio is a better ratio used for the prediction of financial distress. The test shows a negative relationship between quick ratio and the financial distress. It means that the lower the quick ratio, the higher the financial distress. Moreover, the cash ratio shows the ability of company to meet the liability obligation by having available cash in the company. According to the result tabulated, the cash ratio was not significant in the relationship in order to predict financial distress.

5.2.3 Leverage Ratio

The variables used to measure the leverage ratio are debt ratio and debt-to-equity. The result in this research shows that debt ratio is positively significant to financial distress and debt to equity ratio is negatively significant to financial distress. As stated in Beaver, (1966 as cited in Lakshan & Wijekoon 2013), debt ratio is a significant variable in differentiating **PN17** companies from the normal companies. Dambolena and Khoury, (1980 as cited in Lakshan & Wijekoon 2013) also found out that debt ratio is one of the good significant variable to predict financial distress. This shows that the higher the debt ratio, the higher the probability of financial distress. However, Lakshan & Wijekoon (2013) found out that there is no statistical difference between PN 17 companies and normal companies when referring to the debt to equity ratio. This can illustrate that debt to equity ratio is not suitable for predicting the probability of the company from facing financial distress.

5.2.4 Activity Ratio

The relatively poor performance of income-based test variables over these longer time horizon indicates that income-based activity ratios like stakeholder and fee-for-service may not be useful additions to early warning models of bank failure (DeYoung & Toma, 2013). On the other hand, based on Vochozka, Rowland and Vrbka (2016), activity ratio is suitable for financial analysis on Transportation Company. There are some differences with this study because the data used in this study is mainly taken from other sector but not from transportation sector. Another reasonable argument is that the objectives of two researchers are different hence the results obtained from the two researchers are also different. In this research, activity ratio would not be able to detect the probability of financial distress. There are three sub-ratios under activity ratio which are total asset turnover, inventory turnover and receivable turnover. Out of these three sub-ratios, only total assets turnover is significant to predict the financial distress of a company.

In this research, total asset turnover, inventory turnover and receivable turnover are the activity ratios that were taken into account for the prediction of financial distress. Total asset turnover is the only one which is significant to the prediction, and is positively

related. Through the Mann-Whitney U-test, it was found that all of the financial indicators except for inventory turnover ratio, receivable turnover ratio, price to book value ratio, and Tobin's Q ratio were significant to predict financial distress at the 5% of significant level (Bao, Tao & FU, 2014). This result seems similar with this study which has insignificant result of inventory turnover and receivable turnover. Other than that, the poor Z-score of the company can be attributed to the declining of total asset turnover, decreasing market value of shares, inadequate proportion of **EBIT** to total assets and insufficient liquid assets (negative working capital) during the period of study. It can be predicted from the declining Z-scores that the company is going to bankrupt in near future (Panda & Behera, 2015). There is a negative relationship between total asset turnover and prediction of financial distress, the lower the total asset turnover and the higher chances of facing bankruptcy in the near future. There are some differences between the study conducted with the journal done by Panda and Behera (2015). The result shows that the total assets turnover is positively determine the probability of facing a financial distress. There are some inconsistency with Panda and Behera (2015) research because the method and the data used are different. Therefore, the results tend to have differences with the original relationship.

5.2.5 Solvency Ratio

Debt-to capital ratio is used to measure the solvency ratio which has a positively significant relationship with financial distress. This shows that the lower the solvency ratio, the lower the probability of facing financial distress. According to Brindescu-olariu (2016), solvency ratio has relevant potential to for predicting corporate bankruptcy. According to Brindescu-olairu (2016), "although this potential is not high enough to allow for a sure diagnose, it can offer useful information about the level of risk" (p.263).

5.2.6 Stepwise Approach

According to the previous model's testing result, this research found that gross profit margin, return on equity, current ratio, account receivable turnover, inventory turnover and debt to capital ratio are insignificant to predict the financial distress among companies. After eliminating the insignificant variable, stepwise approach for Ramsey RESET test and Logit model is carried out. After eliminating all the insignificant variables, the model specification problem has been solved. On the other hand, for Logit Stepwise approach, all variable and constant value is significant for the prediction of financial distress among companies.

5.3 Implications of Study

5.3.1 Fiscal and Monetary Policies

Businesses can be directly and indirectly affected by the monetary and fiscal policy, therefore it is important for companies to figure out and observe the changes in government policies. Central bank usually uses the fiscal and monetary policies as tools to stabilize the nation's economy.

(a) Expansionary Fiscal Policy

Fiscal policy can be further divide into two categories. The two categories are expansionary fiscal policy and contracting fiscal policy. Expansionary fiscal policies can be done by the government. The government will basically increases their spending or by lowering the taxes. The main objective for the government to take such actions is to relieve the economy from a recession. The decrease of taxes will help to boost consumerism to help businesses and the overall economy. On the other hand, by increasing the spending of government will also cause an increase in the nation's growth rate or the nation's gross domestic product (**GDP**). In addition, the government will also imply less restrictive legislation on business operations. It will have a contribution towards the companies' cost saving plans. Besides that, the less restrictive legislation will increase the job growth. This can be further explained by the expansion of their operations and meet new demand; new workers will be hired to support their business growth. Reducing the legislation will definitely increase the consumer spending and business investment. Companies which are currently having financial distress can have a comeback. Company performance will be improved and will exit for the list of **PN17**.

(b) Increasing Monetary Policy

Monetary policy can also be another tool for the central bank to boost the economy. Increasing monetary policy lowers the interest rates and increases the money supply. Bank Negara Malaysia (**BNM**), Malaysia's central bank will decrease the interest rates. Alternatively, Bank Negara Malaysia can also purchase bonds from the Treasury in order to increase the money supply. The increase of money supply will enable the central bank

to collect more money without adjusting the taxes. Apart from that, the decrease of interest rates will help businesses. Firms that are facing financial distress can enjoy much cheaper loans or lower credit rates. However there is still a drawback in this policy, which is the inflation on goods and services. Although there is inflation, but there will still be a boost in the economic and a great help for the firms which are currently facing financial distress.

(c) Contracting Monetary Policy

As for the contracting monetary policy, it serves the same purpose with the contracting fiscal policy. The main objective is to prevent the occurrence of an economic bubble. Bank Negara Malaysia will increase the interest rates in order to control the money supply. Selling bonds and decreasing the money supply will help to control the rate of money being lent. Outcomes like reduction of the inflation rate and minimize the government spending will likely to occur. The reduction of inflation will help manufacturers which are currently facing financial distress to reduce cost. This is due to the reduction of raw material's price may help financial distressed manufacturers to produce more products in a much cheaper cost.

5.3.2 Dividend Policy

Dividend policy can also be implemented on firms which are financially distress. It is a guidelines used by firms in deciding how much of its earning will pay out to shareholders and how much of its earning will be used for business expansion (Few, Mutalip, Shahrin & Othman, n.d.). With the presence of the optimal dividend policy, the firm is able to cope between current dividends and future growth and maximizes the firm's stock price. If the dividend paid to investor increases, the lesser the funds will be available for investment. For firms which are currently facing financial distress, it is advisable that this policy should be implemented. This can be further explained by having an optimal dividend policy, financially distressed firms can pay lesser dividend to their shareholders and funds will be funded to the firm itself in order to solve further financial problems.

5.3.3 Regularization Plan

Companies which are enlisted in the PN 17 list must regularize and restructure the structure of the firm. Therefore, firms must submit plan named regularization plan to Bursa Malaysia Berhad for amendments. The regularization plan must be able to resolve all problems that the firms are facing. This also includes the retrenchment of employee of the firms. This action can help firms with financial distress to decrease the cost implied. For example, financial problem or problems that caused the company to be enlisted in the PN 17 list. The regularization plan must also be able to regularize the financial condition and also the level of operations. The main purpose of preparing the regularization plan is to convince the shareholder's perspective towards the company. Furthermore, the shareholder value will also increase. By doing so, the listed firms will be able to exit the PN 17 list as soon as possible.

5.4 Limitation of Study

Throughout the research of the prediction of financial distress among company in Malaysia, there are some limitations faced. The first limitation is insufficiency of industrial sectors studied. This study only includes manufacturing sector, food and beverages sector, plantation sector and construction sector. There are other sectors such as hotel, technology; trading and services sector can be included in this study. This is because the result obtained will be more accurate and better for the sample size used is larger. Furthermore, companies which are enlisted in PN 17 do not include all industrial sectors that can be found in Malaysia. Therefore, there are limited source of industrial sectors which can be used in this study. The larger the sample size, the more accurate the data will be (Roslan, n.d.).

Limitation like insufficient of company's annual report can also affect the result of the research. Annual report of PN 17 listed company will be uploaded by Bursa Malaysia Berhad. Without the annual report of the company, the company will not be chosen to conduct this study. The annual report is important to this research because financial ratio were used as independent variables. Without the presence of selected data, test cannot be run efficiently.

Apart from that, there is a similarity between the formulas used to calculate the ratio. Overlapping of formula will be misleading to researchers. For example, leverage ratio and solvency ratio can be calculated using the formula of total debt divided by total asset. In order to prevent the duplication of data while carrying out the test, several formulas must be omitted. The omission of formulas will cause the data to be inaccurate because lesser data has been taken into account. Therefore, this is also considered as one of the limitations faced throughout this research.

Data collected may not directly answer the research questions. For example, profitability ratio could not be obtained in an annual report of a company. Calculation must be done in order to obtain the ratio needed for this study. During the process of calculation, decimal places may affect the accuracy of the data. Therefore, this study can only obtained through self-calculation and not readily prepared (Boslaugh, 2007).

There are no specific theories to prove that using financial ratio can predict financial distress among companies. Previous researchers only refer to Altman and Beaver's works in using

financial ratios to predict financial distress level in companies. Before including the Stepwise approach, there are six independent variables which are insignificant to explain the financial distress in both **OLS** and Logit model. In Stepwise approach, only significant independent variables are included to compute model.

5.5 Recommendation of Study

Several recommendations can be proposed in order to solve the limitation faced during this research. As for the first limitation, sectors covered in this research are considered less. A survey should be conducted about the available sectors that can be found in Malaysia. Malaysia is considered as one of the developing country in the eyes of the world. Many multinational companies were set up in this land. Hence, a wide area of sectors can be included in this research.

Two limitation as mentioned above which are insufficient of company's annual report and not being able to involve in the data collection process can be solved by e-mailing the selected company. The missing annual report should be obtained from the company itself. This is because the information will be more accurate compare to online sources. The authenticity of data is guaranteed by the company itself. Moreover, there is an involvement in the data collection process. A hard copy of the annual report can be requested from the company. It will be a good evidence to support the accuracy of this research.

Apart from that, problem like overlapping of formula can be solved. Eliminating the same formula or substituting overlapped formula with another formula will not solve the problem. This solution was used in this study. However, this solution cannot fully settle the existing problem. In fact, more ratios should be included in this research. This will minimize the chances of two financial ratios form having the same formula. By having more financial ratios as independent variable, it will improve the degree of exactitude of the result.

On the other hand, financial ratio cannot be obtained from an annual report of each company. Thus several calculations must be done to get the final answer. Decimal placing might be the cause of inaccuracy of data. Therefore, increasing the decimal places for every financial ratio can definitely make a great difference.

Moreover, in this research Logit model is suggested. This is because Logit model produced a result within 0 to 1. Besides, the constant value is also significant in Stepwise Logit approach. There are six independent variables which are significant in Stepwise approach in Logit model. The six significant independent variables include cash ratio, current ratio, gross profit margin, quick ratio, return on equity and total asset turnover. As a conclusion, profitability, liquidity and activity ratio are suitable ratio for future researcher.

Last but not least, future researcher may use different model for the prediction of financial distress among companies. Future researcher should also use different variable such as cooperate governance for explaining the model. Macroeconomic variable like Gross Domestic Product (GDP), unemployment rate and inflation rate can also be included by future researcher into model to predict financial distress among companies.

5.6 Conclusion

The study successfully helps to enhance the understanding of prediction of financial distress levels among companies in Malaysia. The results show that Logit model is a better model to explain the prediction of financial distress while **OLS** model is slightly unsuitable because the model is said to have a model specification bias. Lastly, this study also found out that profitability ratio, liquidity ratio and activity ratio are significant in predicting financial distress of companies. On the other hand, leverage ratio and solvency ratio are not significant for the prediction of financial distress.

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PREDICTION OF FINANCIAL DISTRESS AMONG COMPANIES IN MALAYSIA

APPENDICES

Appendix A: Calculation of Financial Ratio over 10 Years from 10 Different Companies

Construction Sector

CN ASIA						
Main Ratio	Sub- Ratio	2015	2014	2013	2012	2011
Profitability Ratio	Gross Profit Margin (gross profit/net sales)	(0.10)	(0.02)	0.16	0.12	(0.04)
	Return on Assets (net income/total assets)	(0.18)	(0.11)	(0.02)	(0.04)	(0.10)
	Return on Equity (net income/shareholders' equity)	(0.36)	(0.18)	(0.03)	(0.06)	(0.13)
Liquidity Ratio	Current Ratio (current assets/current liabilities)	0.46	0.75	0.99	0.97	0.96
	Quick Ratio (quick assets/current liabilities)	0.22	0.48	0.62	0.57	0.67
	Cash Ratio [(sum of cash+marketable securities)/current liabilities]	0.03	0.03	0.05	0.10	0.08
Leverage Ratio	Debt Ratio (total debt/ total asset)	0.49	0.39	0.33	0.27	0.28
	Debt To Equity (total debt/total equity)	0.94	0.64	0.50	0.37	0.39
	Return In Equity (net income/shareholders' equity)	(0.36)	(0.18)	(0.03)	(0.06)	(0.13)
Activity Ratio	Inventory Turnover (cost of good sold/average inventory)	3.67	3.55	3.40	4.97	3.24
	Receivable Turnover (net income/average account receivable)	4.71	4.57	5.92	5.15	3.51
	Total Asset Turnover (sales/total assets)	0.39	0.41	0.44	0.53	0.33
Solvency ratio	Debt To Assets (total debt/ total assets)	0.49	0.39	0.33	0.27	0.28
	Debt To Capital (total debt/ total capital)	0.49	0.39	0.33	0.27	0.28
	Debt To Equity (total debt/total equity)	0.94	0.64	0.50	0.37	0.39

2010	2009	2008	2007	2006
0.00	0.15	0.15	0.17	0.20
(0.09)	0.00	0.01	0.02	0.02
(0.12)	0.00	0.02	0.03	0.02
1.31	1.70	1.41	1.29	1.25
0.70	1.08	0.78	0.77	0.72
0.18	0.30	0.20	0.08	0.23
0.23	0.20	0.28	0.34	0.28
0.31	0.25	0.40	0.52	0.39
(0.12)	0.00	0.02	0.03	0.02
2.69	2.77	2.87	3.13	3.15
5.20	4.42	3.19	3.81	4.21
0.34	0.47	0.55	0.52	0.47
0.23	0.20	0.28	0.34	0.28
0.23	0.20	0.28	0.34	0.28
0.31	0.25	0.40	0.52	0.39

GROSS PROFIT	\$ (1,323,777.00)	\$ (253,211.00)	\$ 2,943,284.00	\$ 2,532,700.00	\$ (584,094.00)	\$ 19,753.00	\$ 3,164,871.00	\$ 4,424,434.00	\$ 4,925,225.00	\$ 4,755,593.00
NET SALES	\$ 13,113,741.00	\$ 15,592,700.00	\$ 18,414,559.00	\$ 20,392,784.00	\$ 13,559,322.00	\$ 14,623,583.00	\$ 21,797,321.00	\$ 28,680,784.00	\$ 29,275,086.00	\$ 23,659,134.00
TOTAL ASSETS	\$ 33,542,768.00	\$ 38,464,582.00	\$ 41,461,669.00	\$ 38,746,691.00	\$ 40,696,669.00	\$ 43,476,412.00	\$ 46,610,951.00	\$ 52,001,515.00	\$ 55,917,000.00	\$ 50,214,400.00
NET PROFIT	\$ (6,199,092.00)	\$ (4,237,935.00)	\$ (725,963.00)	\$ (1,579,391.00)	\$ (3,951,447.00)	\$ (4,023,832.00)	\$ 100,279.00	\$ 689,143.00	\$ 927,653.00	\$ 770,187.00
SHAREHOLDERS' EQUITY	\$ 17,266,105.00	\$ 23,465,197.00	\$ 27,615,186.00	\$ 28,334,913.00	\$ 29,328,004.00	\$ 33,279,451.00	\$ 37,303,283.00	\$ 37,203,004.00	\$ 36,704,131.00	\$ 36,003,391.00
CURRENT ASSETS	\$ 7,364,003.00	\$ 10,864,184.00	\$ 13,281,265.00	\$ 10,072,362.00	\$ 10,214,494.00	\$ 12,261,455.00	\$ 14,242,502.00	\$ 18,557,870.00	\$ 21,661,961.00	\$ 16,489,441.00
CURRENT LIABILITIES	\$ 15,880,919.00	\$ 14,510,884.00	\$ 13,428,461.00	\$ 10,362,779.00	\$ 10,695,420.00	\$ 9,390,450.00	\$ 8,363,017.00	\$ 13,208,282.00	\$ 16,832,422.00	\$ 13,179,893.00
QUICK ASSETS	\$ 3,449,430.00	\$ 6,901,591.00	\$ 8,325,504.00	\$ 5,917,170.00	\$ 7,180,451.00	\$ 6,375,184.00	\$ 9,056,436.00	\$ 10,269,127.00	\$ 13,033,248.00	\$ 9,544,688.00
SUM OF CASH+MARKETABLE SECURITIES	\$ 421,374.00	\$ 388,960.00	\$ 628,382.00	\$ 1,014,136.00	\$ 827,863.00	\$ 1,675,144.00	\$ 2,497,792.00	\$ 2,625,654.00	\$ 1,383,872.00	\$ 2,970,536.00
TOTAL DEBT	\$ 16,276,663.00	\$ 14,999,385.00	\$ 13,846,483.00	\$ 10,411,778.00	\$ 11,368,665.00	\$ 10,196,961.00	\$ 9,307,668.00	\$ 14,798,511.00	\$ 19,212,869.00	\$ 14,211,009.00
COST OF GOOD SOLD	\$ 14,437,518.00	\$ 15,845,911.00	\$ 15,471,275.00	\$ 17,860,084.00	\$ 14,143,416.00	\$ 14,603,830.00	\$ 18,632,450.00	\$ 24,256,350.00	\$ 24,349,861.00	\$ 18,903,541.00
AVERAGE INVENTORY	\$ 3,938,583.00	\$ 4,459,177.00	\$ 4,555,476.50	\$ 3,594,617.50	\$ 4,360,157.00	\$ 5,436,168.50	\$ 6,737,404.50	\$ 8,458,728.00	\$ 7,786,733.00	\$ 5,994,343.00
AVERAGE ACCOUNT RECEIVABLE	\$ 2,783,615.00	\$ 3,414,693.50	\$ 3,110,497.00	\$ 3,957,276.00	\$ 3,858,663.50	\$ 2,812,252.00	\$ 4,932,750.50	\$ 8,994,626.00	\$ 7,681,723.00	\$ 5,617,300.00
TOTAL EQUITY	\$ 17,266,105.00	\$ 23,465,197.00	\$ 27,615,186.00	\$ 28,334,913.00	\$ 29,328,004.00	\$ 33,279,451.00	\$ 37,303,283.00	\$ 37,203,004.00	\$ 36,704,131.00	\$ 36,003,391.00
SALES	\$ 13,113,741.00	\$ 15,592,700.00	\$ 18,414,559.00	\$ 20,392,784.00	\$ 13,559,322.00	\$ 14,623,583.00	\$ 21,797,321.00	\$ 28,680,784.00	\$ 29,275,086.00	\$ 23,659,134.00
TOTAL CAPITAL	\$ 33,542,768.00	\$ 38,464,582.00	\$ 41,461,669.00	\$ 38,746,691.00	\$ 40,696,669.00	\$ 43,476,412.00	\$ 46,610,951.00	\$ 52,001,515.00	\$ 55,917,000.00	\$ 50,214,400.00

PREDICTION OF FINANCIAL DISTRESS AMONG COMPANIES IN MALAYSIA

GAMUDA						
Main Ratio	Sub-Ratio	2015	2014	2013	2012	2011
Profitability Ratio	Gross Profit Margin (gross profit/net sales)	0.25	0.22	0.13	0.19	0.14
	Return on Assets (net income/total assets)	0.05	0.07	0.06	0.07	0.06
	Return on Equity (net income/shareholders' equity)	0.11	0.12	0.17	0.13	0.11
Liquidity Ratio	Current Ratio (current assets/current liabilities)	2.13	2.62	8.12	1.68	2.10
	Quick Ratio (quick assets/current liabilities)	2.05	2.46	7.98	1.66	2.08
	Cash Ratio [(sum of cash+marketable securities)/current liabilities]	0.38	0.49	0.18	0.43	0.48
Leverage Ratio	Debt Ratio (total debt/ total asset)	0.50	0.40	0.19	0.50	0.49
	Debt To Equity (total debt/total equity)	0.99	0.68	0.60	0.99	0.94
	Return In Equity (net income/shareholders' equity)	0.11	0.12	0.17	0.13	0.11
Activity Ratio	Inventory Turnover (cost of good sold/average inventory)	7.90	10.27	42.24	50.71	41.03
	Receivable Turnover (net income/average account receivable)	1.47	1.50	2.19	1.85	1.71
	Total Asset Turnover (sales/total assets)	0.18	0.22	0.40	0.36	0.35
Solvency ratio	Debt To Assets (total debt/ total assets)	0.50	0.40	0.19	0.50	0.49
	Debt To Capital (total debt/ total capital)	0.50	0.40	0.19	0.50	0.49
	Debt To Equity (total debt/total equity)	0.99	0.68	0.60	0.99	0.94

	2010	2009	2008	2007	2006
	0.11	0.07	0.13	0.11	0.11
	0.04	0.03	0.06	0.04	0.04
	0.09	0.06	0.11	0.08	0.07
	2.18	2.30	1.88	1.54	1.93
	2.14	2.23	1.81	1.44	1.79
	0.60	0.81	0.53	0.67	0.60
	0.50	0.45	0.46	0.41	0.41
	0.98	0.83	0.86	0.68	0.70
	0.09	0.06	0.11	0.08	0.07
	24.75	24.44	16.96	11.10	15.48
	1.60	1.77	1.91	1.78	1.59
	0.37	0.46	0.42	0.30	0.31
	0.50	0.45	0.46	0.41	0.41
	0.50	0.45	0.46	0.41	0.41
	0.98	0.83	0.86	0.68	0.70

GROSS PROFIT	\$ 601,987.00	\$ 488,340.00	\$ 512,187.00	\$ 584,469.00	\$ 380,874.00	\$ 259,852.00	\$ 183,781.00	\$ 322,302.00	\$ 167,356.00	\$ 132,852.00
NET SALES	\$ 2,399,918.00	\$ 2,229,572.00	\$ 3,883,120.00	\$ 3,087,003.00	\$ 2,673,208.00	\$ 2,455,143.00	\$ 2,727,302.00	\$ 2,403,660.00	\$ 1,516,359.00	\$ 1,226,897.00
TOTAL ASSETS	\$ 13,325,699.00	\$ 10,352,793.00	\$ 9,809,165.00	\$ 8,498,928.00	\$ 7,551,298.00	\$ 6,550,910.00	\$ 5,878,459.00	\$ 5,774,301.00	\$ 5,038,482.00	\$ 3,902,137.00
NET PROFIT	\$ 725,458.00	\$ 735,083.00	\$ 550,059.00	\$ 565,991.00	\$ 432,945.00	\$ 289,488.00	\$ 204,154.00	\$ 338,928.00	\$ 224,813.00	\$ 168,558.00
SHAREHOLDERS' EQUITY	\$ 6,693,213.00	\$ 6,161,687.00	\$ 3,144,789.00	\$ 4,268,871.00	\$ 3,886,906.00	\$ 3,307,723.00	\$ 3,207,774.00	\$ 3,097,483.00	\$ 2,994,383.00	\$ 2,291,352.00
CURRENT ASSETS	\$ 5,234,003.00	\$ 4,715,427.00	\$ 5,716,548.00	\$ 5,229,183.00	\$ 4,545,632.00	\$ 4,203,173.00	\$ 3,279,213.00	\$ 2,993,611.00	\$ 2,263,704.00	\$ 1,467,830.00
CURRENT LIABILITIES	\$ 2,459,263.00	\$ 1,799,433.00	\$ 704,236.00	\$ 3,106,509.00	\$ 2,166,435.00	\$ 1,930,241.00	\$ 1,427,451.00	\$ 1,594,033.00	\$ 1,470,239.00	\$ 759,711.00
QUICK ASSETS	\$ 5,048,420.00	\$ 4,420,351.00	\$ 5,620,282.00	\$ 5,162,702.00	\$ 4,511,527.00	\$ 4,123,435.00	\$ 3,178,131.00	\$ 2,883,489.00	\$ 2,123,209.00	\$ 1,357,327.00
SUM OF CASH+MARKETABLE SECURITIES	\$ 928,059.00	\$ 882,031.00	\$ 125,587.00	\$ 1,337,355.00	\$ 1,048,968.00	\$ 1,165,550.00	\$ 1,154,029.00	\$ 845,610.00	\$ 980,269.00	\$ 456,855.00
TOTAL DEBT	\$ 6,632,486.00	\$ 4,191,106.00	\$ 1,875,888.00	\$ 4,230,057.00	\$ 3,664,392.00	\$ 3,243,187.00	\$ 2,670,685.00	\$ 2,676,818.00	\$ 2,044,099.00	\$ 1,610,785.00
COST OF GOOD SOLD	\$ 1,898,460.00	\$ 2,003,127.00	\$ 3,436,984.00	\$ 2,550,553.00	\$ 2,335,421.00	\$ 2,237,484.00	\$ 2,581,200.00	\$ 2,125,794.00	\$ 1,393,565.00	\$ 1,110,293.00
AVERAGE INVENTORY	\$ 240,329.50	\$ 194,978.00	\$ 81,373.50	\$ 50,293.00	\$ 56,921.50	\$ 90,410.00	\$ 105,602.00	\$ 125,308.50	\$ 125,499.00	\$ 71,728.50
AVERAGE ACCOUNT RECEIVABLE	\$ 1,636,093.00	\$ 1,486,327.50	\$ 1,776,850.50	\$ 1,669,726.50	\$ 1,567,277.00	\$ 1,533,453.00	\$ 1,541,752.00	\$ 1,256,227.50	\$ 852,352.00	\$ 772,166.50
TOTAL EQUITY	\$ 6,693,213.00	\$ 6,161,687.00	\$ 3,144,789.00	\$ 4,268,871.00	\$ 3,886,906.00	\$ 3,307,723.00	\$ 3,207,774.00	\$ 3,097,483.00	\$ 2,994,383.00	\$ 2,291,352.00
SALES	\$ 2,399,918.00	\$ 2,229,572.00	\$ 3,883,120.00	\$ 3,087,003.00	\$ 2,673,208.00	\$ 2,455,143.00	\$ 2,727,302.00	\$ 2,403,660.00	\$ 1,516,359.00	\$ 1,226,897.00
TOTAL CAPITAL	\$ 13,325,699.00	\$ 10,352,793.00	\$ 9,809,165.00	\$ 8,498,928.00	\$ 7,551,298.00	\$ 6,550,910.00	\$ 5,878,459.00	\$ 5,774,301.00	\$ 5,038,482.00	\$ 3,902,137.00

PREDICTION OF FINANCIAL DISTRESS AMONG COMPANIES IN MALAYSIA

Food and Beverage Sector

		KFMB				
Main Ratio	Sub- Ratio	2015	2014	2013	2012	2011
Profitability Ratio	Gross Profit Margin (gross profit/net sales)	(0.24)	(0.03)	0.01	(0.02)	0.06
	Return on Assets (net income/total assets)	(0.72)	(0.07)	(0.15)	(0.19)	(0.03)
	Return on Equity (net income/shareholders' equity)	(13.13)	(0.13)	(0.28)	(0.33)	(0.05)
Liquidity Ratio	Current Ratio (current assets/current liabilities)	0.40	0.86	0.85	1.07	0.90
	Quick Ratio (quick assets/current liabilities)	0.12	0.68	0.67	0.63	0.51
	Cash Ratio [(sum of cash+marketable securities)/current liabilities]	0.03	0.11	0.09	0.13	0.08
Leverage Ratio	Debt Ratio (total debt/ total asset)	0.95	0.45	0.47	0.43	0.51
	Debt To Equity (total debt/total equity)	17.28	0.82	0.88	0.75	1.05
	Return In Equity (net income/shareholders' equity)	(13.13)	(0.13)	(0.28)	(0.33)	(0.05)
Activity Ratio	Inventory Turnover (cost of good sold/average inventory)	7.41	16.90	9.36	6.95	8.20
	Receivable Turnover (net income/average account receivable)	6.76	5.39	5.62	6.39	5.55
	Total Asset Turnover (sales/total assets)	1.06	1.38	1.39	1.29	1.42
Solvency ratio	Debt To Assets (total debt/ total assets)	0.95	0.45	0.47	0.43	0.51
	Debt To Capital (total debt/ total capital)	13.08	0.78	0.83	0.72	0.98
	Debt To Equity (total debt/total equity)	17.28	0.82	0.88	0.75	1.05

	2010	2009	2008	2007	2006
	0.03	0.02	0.13	0.10	0.05
	(0.08)	(0.09)	0.04	(0.02)	(0.06)
	(0.16)	(0.02)	0.07	(0.04)	(0.13)
	1.06	1.50	2.38	1.49	1.18
	0.76	1.15	1.60	1.08	0.84
	0.08	0.11	0.15	0.11	0.06
	0.52	0.52	0.46	0.51	0.53
	1.08	1.09	0.85	1.03	1.11
	(0.16)	(0.02)	0.07	(0.04)	(0.13)
	12.89	12.90	8.06	7.55	6.16
	4.98	5.74	4.43	3.65	3.45
	1.80	2.08	1.63	1.49	1.15
	0.52	0.52	0.46	0.51	0.53
	0.92	0.80	0.60	0.84	1.10
	1.08	1.09	0.85	1.03	1.11

GROSS PROFIT	RM (5,875,417.00)	RM (1,108,262.00)	RM 295,111.00	RM (1,228,803.00)	RM 3,936,061.00	RM 2,237,552.00	RM 1,957,083.00	RM12,573,579.00	RM 9,286,921.00	RM 3,660,869.00
NET SALES	RM 24,863,847.00	RM41,655,418.00	RM48,812,973.00	RM53,798,248.00	RM63,159,431.00	RM86,312,129.00	RM116,679,044.00	RM95,707,608.00	RM89,539,932.00	RM75,160,875.00
TOTAL ASSETS	RM 23,503,793.00	RM30,116,867.00	RM35,176,124.00	RM41,810,321.00	RM44,562,517.00	RM48,015,385.00	RM 56,080,823.00	RM58,750,196.00	RM60,107,610.00	RM65,158,727.00
NET PROFIT	RM(16,844,855.00)	RM (2,193,044.00)	RM (5,205,735.00)	RM (7,875,795.00)	RM(1,177,172.00)	RM (3,796,748.00)	RM (4,980,016.00)	RM 2,255,291.00	RM (1,259,253.00)	RM (4,144,903.00)
SHAREHOLDERS' EQUITY	RM 1,282,554.00	RM16,554,543.00	RM18,751,416.00	RM23,957,155.00	RM21,781,256.00	RM23,029,433.00	RM268,261,818.00	RM31,806,197.00	RM29,550,906.00	RM30,810,157.00
CURRENT ASSETS	RM 8,793,148.00	RM10,953,221.00	RM13,182,661.00	RM18,160,991.00	RM19,093,827.00	RM21,955,755.00	RM 29,612,786.00	RM33,061,990.00	RM35,293,109.00	RM40,060,826.00
CURRENT LIABILITIES	RM 21,805,769.00	RM12,809,681.00	RM15,425,446.00	RM16,900,253.00	RM21,281,278.00	RM20,728,719.00	RM 19,707,030.00	RM13,897,358.00	RM23,672,880.00	RM33,870,711.00
QUICK ASSETS	RM 2,705,687.00	RM 8,748,605.00	RM10,325,603.00	RM10,651,506.00	RM10,764,038.00	RM15,848,563.00	RM 22,670,659.00	RM22,219,367.00	RM25,512,178.00	RM28,575,320.00
SUM OF CASH+MARKETABLE SECURITIES	RM 687,384.00	RM 1,420,824.00	RM 1,440,635.00	RM 2,149,770.00	RM 1,647,587.00	RM 1,688,659.00	RM 2,173,288.00	RM 2,044,617.00	RM 2,504,739.00	RM 2,042,309.00
TOTAL DEBT	RM 22,218,201.00	RM13,558,495.00	RM16,424,708.00	RM17,853,166.00	RM22,781,259.00	RM24,985,952.00	RM 29,254,642.00	RM26,943,999.00	RM30,556,704.00	RM34,348,568.00
COST OF GOOD SOLD	RM 30,739,264.00	RM42,763,680.00	RM48,517,862.00	RM55,027,051.00	RM59,223,370.00	RM84,074,577.00	RM114,721,961.00	RM83,134,029.00	RM80,253,011.00	RM71,500,006.00
AVERAGE INVENTORY	RM 4,146,038.00	RM 2,530,837.00	RM 5,183,271.50	RM 7,919,637.00	RM 7,218,490.50	RM 6,524,661.00	RM 8,892,376.50	RM10,311,777.00	RM10,633,218.00	RM11,604,868.00
AVERAGE ACCOUNT RECEIVABLE	RM 3,680,256.00	RM 7,732,203.00	RM 8,679,140.00	RM 8,424,204.00	RM11,374,191.50	RM17,328,636.00	RM 20,336,059.00	RM21,591,094.50	RM24,522,383.50	RM21,780,180.00
TOTAL EQUITY	RM 1,285,592.00	RM16,558,372.00	RM18,751,416.00	RM23,957,155.00	RM21,781,258.00	RM23,029,433.00	RM 26,826,181.00	RM31,806,197.00	RM29,550,906.00	RM30,810,159.00
SALES	RM 24,863,847.00	RM41,655,418.00	RM48,812,973.00	RM53,798,248.00	RM63,159,431.00	RM86,312,129.00	RM116,679,044.00	RM95,707,608.00	RM89,539,932.00	RM75,160,875.00
TOTAL CAPITAL	RM 1,698,024.00	RM17,307,186.00	RM19,750,678.00	RM24,910,068.00	RM23,281,239.00	RM27,286,666.00	RM 36,373,798.00	RM44,852,838.00	RM36,434,728.00	RM31,288,016.00

PREDICTION OF FINANCIAL DISTRESS AMONG COMPANIES IN MALAYSIA

PPB						
Main Ratio	Sub-Ratio	2015	2014	2013	2012	2011
Profitability Ratio	Gross Profit Margin (gross profit/net sales)	0.14	0.16	0.16	0.15	0.15
	Return on Assets (net income/total assets)	0.05	0.05	0.06	0.06	0.07
	Return on Equity (net income/shareholders' equity)	0.05	0.05	0.06	0.06	0.07
Liquidity Ratio	Current Ratio (current assets/current liabilities)	2.52	2.48	3.15	3.34	4.27
	Quick Ratio (quick assets/current liabilities)	1.94	1.81	2.42	2.62	3.34
	Cash Ratio [(sum of cash+marketable securities)/current liabilities]	0.24	0.24	0.24	0.14	0.17
Leverage Ratio	Debt Ratio (total debt/ total asset)	0.06	0.07	0.05	0.05	0.04
	Debt To Equity (total debt/total equity)	0.07	0.07	0.05	0.06	0.04
	Return In Equity (net income/shareholders' equity)	0.05	0.05	0.06	0.06	0.07
Activity Ratio	Inventory Turnover (cost of good sold/average inventory)	4.96	5.07	5.66	5.4	5.84
	Receivable Turnover (net income/average account receivable)	7.71	7.96	7.46	7.97	8.95
	Total Asset Turnover (sales/total assets)	0.18	0.2	0.19	0.19	0.18
Solvency ratio	Debt To Assets (total debt/ total assets)	0.06	0.07	0.05	0.05	0.04
	Debt To Capital (total debt/ total capital)	0.06	0.07	0.05	0.05	0.04
	Debt To Equity (total debt/total equity)	0.07	0.07	0.05	0.06	0.04

	2010	2009	2008	2007	2006
	0.21	0.15	0.19	0.18	0.09
	0.14	0.11	0.1	0.58	0.1
	0.14	0.11	0.1	0.61	0.13
	4.88	3.52	2.53	5.33	2.69
	3.96	2.94	1.49	3.84	1.84
	0.17	0.07	0.12	0.2	0.08
	0.03	0.05	0.06	0.03	0.24
	0.03	0.06	0.07	0.04	0.32
	0.14	0.11	0.1	0.61	0.13
	5.18	3.14	4.71	3.39	11.33
	8.98	6.89	9.91	7.69	29.04
	0.16	0.13	0.26	0.25	1.58
	0.03	0.05	0.06	0.03	0.24
	0.03	0.05	0.06	0.03	0.24
	0.03	0.06	0.07	0.04	0.32

GROSS PROFIT	RM571,332.00	RM590,078.00	RM526,459.00	RM453,345.00	RM402,092.00	RM473,900.00	RM301,124.00	RM641,810.00	RM535,370.00	RM1,008,120.00
NET SALES	RM4,048,314.00	RM3,701,008.00	RM3,312,917.00	RM3,017,926.00	RM2,710,539.00	RM2,274,036.00	RM2,005,429.00	RM3,462,024.00	RM2,989,442.00	RM11,519,767.00
TOTAL ASSETS	RM21,925,474.00	RM18,605,179.00	RM17,065,430.00	RM15,379,349.00	RM15,199,156.00	RM13,914,090.00	RM15,066,960.00	RM13,216,245.00	RM11,984,045.00	RM7,288,922.00
NET PROFIT	RM1,076,119.00	RM938,917.00	RM990,939.00	RM868,197.00	RM1,012,508.00	RM1,900,770.00	RM1,629,039.00	RM1,293,424.00	RM7,002,512.00	RM694,250.00
SHAREHOLDERS' EQUITY	RM20,552,571.00	RM17,381,316.00	RM16,191,897.00	RM14,765,371.00	RM14,565,126.00	RM13,459,510.00	RM14,259,359.00	RM12,392,879.00	RM11,567,053.00	RM5,531,325.00
CURRENT ASSETS	RM2,937,701.00	RM2,666,841.00	RM2,214,143.00	RM2,198,958.00	RM2,177,785.00	RM1,687,239.00	RM2,296,239.00	RM1,725,599.00	RM1,747,111.00	RM3,017,808.00
CURRENT LIABILITIES	RM1,164,508.00	RM1,076,560.00	RM703,851.00	RM657,831.00	RM509,477.00	RM345,776.00	RM653,236.00	RM683,059.00	RM327,665.00	RM1,120,886.00
QUICK ASSETS	RM2,255,491.00	RM1,948,234.00	RM1,705,650.00	RM1,722,731.00	RM1,703,626.00	RM1,370,501.00	RM1,918,404.00	RM1,019,155.00	RM1,257,209.00	RM2,060,857.00
SUM OF CASH+MARKETABLE SECURITIES	RM278,240.00	RM254,549.00	RM170,162.00	RM93,433.00	RM85,877.00	RM59,820.00	RM47,769.00	RM79,558.00	RM66,338.00	RM88,744.00
TOTAL DEBT	RM1,372,903.00	RM1,223,863.00	RM873,533.00	RM813,978.00	RM634,030.00	RM454,580.00	RM807,601.00	RM823,366.00	RM416,992.00	RM1,757,597.00
COST OF GOOD SOLD	RM3,476,982.00	RM3,110,930.00	RM2,786,458.00	RM2,564,581.00	RM2,308,447.00	RM1,800,136.00	RM1,704,305.00	RM2,820,214.00	RM2,454,072.00	RM10,511,647.00
AVERAGE INVENTORY	RM700,408.50	RM613,550.00	RM492,360.00	RM475,193.00	RM395,448.50	RM347,286.50	RM542,139.50	RM598,173.00	RM723,426.50	RM928,080.00
AVERAGE ACCOUNT RECEIVABLE	RM524,745.00	RM464,689.50	RM444,357.00	RM378,583.00	RM302,927.50	RM253,227.50	RM290,983.50	RM349,206.00	RM388,579.00	RM396,691.00
TOTAL EQUITY	RM20,552,571.00	RM17,381,316.00	RM16,191,897.00	RM14,765,371.00	RM14,565,126.00	RM13,459,510.00	RM14,259,359.00	RM12,392,879.00	RM11,567,053.00	RM5,531,325.00
SALES	RM4,048,314.00	RM3,701,008.00	RM3,312,917.00	RM3,017,926.00	RM2,710,539.00	RM2,274,036.00	RM2,005,429.00	RM3,462,024.00	RM2,989,442.00	RM11,519,767.00
TOTAL CAPITAL	RM21,925,474.00	RM18,605,179.00	RM17,065,430.00	RM15,379,349.00	RM15,199,156.00	RM13,914,090.00	RM15,066,960.00	RM13,216,245.00	RM11,984,045.00	RM7,288,922.00

PREDICTION OF FINANCIAL DISTRESS AMONG COMPANIES IN MALAYSIA

Manufacturing Sector

Stone Master Corporation Bhd						
Main Ratio	Sub-Ratio	2015	2014	2013	2012	2011
Profitability Ratio	Gross Profit Margin (gross profit/net sales)	0.12	0.10	0.10	0.10	0.16
	Return on Assets (net income/total assets)	(0.13)	(0.05)	(0.08)	(0.13)	(0.09)
	Return on Equity (net income/shareholders' equity)	(0.50)	(0.25)	(0.33)	(0.55)	(0.34)
Liquidity Ratio	Current Ratio (current assets/current liabilities)	0.97	1.01	1.08	1.19	0.87
	Quick Ratio (quick assets/current liabilities)	0.85	0.79	0.81	0.88	0.54
	Cash Ratio [(sum of cash+marketable securities)/current liabilities]	0.03	0.04	0.03	0.00	0.08
Leverage Ratio	Debt Ratio (total debt/ total asset)	0.75	0.78	0.76	0.75	0.73
	Debt To Equity (total debt/total equity)	2.93	3.51	3.15	3.07	2.68
	Return In Equity (net income/shareholders' equity)	(0.50)	(0.25)	(0.33)	(0.55)	(0.34)
Activity Ratio	Inventory Turnover (cost of good sold/average inventory)	(10.93)	(9.97)	(6.86)	(6.53)	(2.67)
	Receivable Turnover (net income/average account receivable)	7.15	3.64	3.05	4.84	2.79
	Total Asset Turnover (sales/total assets)	1.13	1.36	1.18	1.78	0.75
Solvency ratio	Debt To Assets (total debt/ total assets)	0.75	0.78	0.76	0.75	0.73
	Debt To Capital (total debt/ total capital)	2.07	1.75	1.49	1.64	2.29
	Debt To Equity (total debt/total equity)	2.93	3.51	3.15	3.07	2.68

	2010	2009	2008	2007	2006
	0.15	0.14	0.15	0.18	0.15
	(0.06)	(0.09)	(0.04)	(0.02)	(0.01)
	(0.19)	(0.28)	(0.12)	(0.05)	(0.02)
	0.95	0.95	1.06	1.13	1.21
	0.59	0.60	0.68	0.72	0.82
	0.08	0.04	0.04	0.04	0.03
	0.67	0.67	0.58	0.64	0.63
	2.04	2.02	1.65	1.81	1.73
	(0.19)	(0.28)	(0.12)	(0.05)	(0.02)
	(2.36)	(2.93)	(2.33)	(2.45)	(2.47)
	2.22	2.34	1.79	1.72	1.47
	0.68	0.81	0.65	0.66	0.63
	0.67	0.67	0.58	0.64	0.63
	1.78	1.73	1.41	1.46	1.41
	2.04	2.02	1.65	1.81	1.73

GROSS PROFIT	\$ 9,439,000.00	\$ 8,271,000.00	\$ 6,774,000.00	\$ 10,841,000.00	\$ 9,762,000.00	\$ 9,478,000.00	\$ 12,635,000.00	\$ 12,961,000.00	\$ 16,995,948.00	\$ 13,550,062.00
NET SALES	\$ 76,330,000.00	\$ 80,898,000.00	\$ 67,051,000.00	\$ 105,090,000.00	\$ 62,659,000.00	\$ 62,759,000.00	\$ 88,537,000.00	\$ 83,936,000.00	\$ 95,279,166.00	\$ 93,097,318.00
TOTAL ASSETS	\$ 67,655,000.00	\$ 59,334,000.00	\$ 56,907,000.00	\$ 59,048,000.00	\$ 83,695,000.00	\$ 92,204,000.00	\$ 109,071,000.00	\$ 129,649,000.00	\$ 144,805,425.00	\$ 147,421,926.00
NET PROFIT	\$ (8,548,000.00)	\$ (3,263,000.00)	\$ (4,492,000.00)	\$ (7,971,000.00)	\$ (7,617,000.00)	\$ (5,790,000.00)	\$ (10,237,000.00)	\$ (5,508,000.00)	\$ (2,693,159.00)	\$ (857,233.00)
SHAREHOLDERS' EQUITY	\$ 17,208,000.00	\$ 13,158,000.00	\$ 13,710,000.00	\$ 14,493,000.00	\$ 22,724,000.00	\$ 30,341,000.00	\$ 36,131,000.00	\$ 45,845,000.00	\$ 51,581,092.00	\$ 53,954,061.00
CURRENT ASSETS	\$ 42,004,000.00	\$ 32,542,000.00	\$ 30,152,000.00	\$ 38,053,000.00	\$ 49,975,000.00	\$ 54,405,000.00	\$ 63,720,000.00	\$ 79,954,000.00	\$ 91,266,491.00	\$ 97,950,668.00
CURRENT LIABILITIES	\$ 43,299,000.00	\$ 32,365,000.00	\$ 27,916,000.00	\$ 31,946,000.00	\$ 57,142,000.00	\$ 57,389,000.00	\$ 66,818,000.00	\$ 75,762,000.00	\$ 81,069,879.00	\$ 81,212,750.00
QUICK ASSETS	\$ 36,761,000.00	\$ 25,540,000.00	\$ 22,578,000.00	\$ 28,051,000.00	\$ 31,101,000.00	\$ 33,608,000.00	\$ 40,179,000.00	\$ 51,640,000.00	\$ 58,540,787.00	\$ 66,871,658.00
SUM OF CASH+MARKETABLE SECURITIES	\$ 1,491,000.00	\$ 1,240,000.00	\$ 901,000.00	\$ 151,000.00	\$ 4,672,000.00	\$ 4,738,000.00	\$ 2,666,000.00	\$ 2,677,000.00	\$ 3,626,053.00	\$ 2,487,773.00
TOTAL DEBT	\$ 50,447,000.00	\$ 46,176,000.00	\$ 43,197,000.00	\$ 44,555,000.00	\$ 60,791,000.00	\$ 61,863,000.00	\$ 72,940,000.00	\$ 75,762,000.00	\$ 93,224,333.00	\$ 93,467,865.00
COST OF GOOD SOLD	\$ (66,891,000.00)	\$ (72,627,000.00)	\$ (60,277,000.00)	\$ (94,249,000.00)	\$ (52,897,000.00)	\$ (52,281,000.00)	\$ (75,902,000.00)	\$ (70,975,000.00)	\$ (78,283,218.00)	\$ (79,547,256.00)
AVERAGE INVENTORY	\$ 6,122,500.00	\$ 7,288,000.00	\$ 8,788,000.00	\$ 14,438,000.00	\$ 19,835,500.00	\$ 22,169,000.00	\$ 25,927,500.00	\$ 30,520,000.00	\$ 31,902,357.00	\$ 32,192,921.50
AVERAGE ACCOUNT RECEIVABLE	\$ 10,676,295.00	\$ 22,249,500.00	\$ 21,951,500.00	\$ 21,729,000.00	\$ 22,452,000.00	\$ 28,305,500.00	\$ 37,863,000.00	\$ 46,862,500.00	\$ 55,288,946.00	\$ 63,350,629.50
TOTAL EQUITY	\$ 17,208,000.00	\$ 13,158,000.00	\$ 13,710,000.00	\$ 14,493,000.00	\$ 22,724,000.00	\$ 30,341,000.00	\$ 36,131,000.00	\$ 45,845,000.00	\$ 51,581,092.00	\$ 53,954,061.00
SALES	\$ 76,330,000.00	\$ 80,898,000.00	\$ 67,051,000.00	\$ 105,090,000.00	\$ 62,659,000.00	\$ 62,759,000.00	\$ 88,537,000.00	\$ 83,936,000.00	\$ 95,279,166.00	\$ 93,097,318.00
TOTAL CAPITAL	\$ 24,356,000.00	\$ 26,316,000.00	\$ 28,991,000.00	\$ 27,102,000.00	\$ 26,553,000.00	\$ 34,815,000.00	\$ 42,253,000.00	\$ 53,887,000.00	\$ 63,735,546.00	\$ 66,209,176.00

PREDICTION OF FINANCIAL DISTRESS AMONG COMPANIES IN MALAYSIA

Favelle Favco Berhad						
Main Ratio	Sub- Ratio	2015	2014	2013	2012	2011
Profitability Ratio	Gross Profit Margin (gross profit/net sales)	0.28	0.22	0.20	0.17	0.22
	Return on Assets (net income/total assets)	0.01	0.07	0.07	0.07	0.07
	Return on Equity (net income/shareholders' equity)	0.17	0.18	0.16	0.18	0.20
Liquidity Ratio	Current Ratio (current assets/current liabilities)	1.48	1.31	1.36	1.29	1.31
	Quick Ratio (quick assets/current liabilities)	1.20	1.01	1.02	0.96	0.88
	Cash Ratio [(sum of cash+marketable securities)/cu]	0.50	0.32	0.27	0.19	0.27
Leverage Ratio	Debt Ratio (total debt/ total asset)	0.06	0.59	0.58	0.62	0.65
	Debt To Equity (total debt/total equity)	1.23	1.47	1.38	1.61	1.83
	Return In Equity (net income/shareholders' equity)	0.17	0.18	0.16	0.18	0.20
Activity Ratio	Inventory Turnover (cost of good sold/average inven	(2.97)	(3.17)	(3.28)	(3.15)	(2.33)
	Receivable Turnover (net income/average account re	2.69	2.89	2.64	3.25	3.19
	Total Asset Turnover (sales/total assets)	0.07	0.70	0.80	0.77	0.71
Solvency ratio	Debt To Assets (total debt/ total assets)	0.06	0.59	0.58	0.62	0.65
	Debt To Capital (total debt/ total capital)	1.21	1.45	1.35	1.56	1.75
	Debt To Equity (total debt/total equity)	1.23	1.47	1.38	1.61	1.83

	2010	2009	2008	2007	2006
	0.19	0.17	0.14	0.16	0.16
	0.04	0.04	0.04	0.04	0.02
	0.11	0.15	0.14	0.14	0.09
	1.24	1.19	1.19	1.20	1.25
	0.88	0.87	0.87	0.87	1.25
	0.22	0.26	0.12	0.19	0.09
	0.67	0.72	0.74	0.75	0.73
	2.03	2.61	2.79	3.05	2.77
	0.11	0.15	0.14	0.14	0.09
	(2.13)	(3.06)	(3.79)	(3.53)	(3.67)
	2.17	2.85	3.84	4.03	3.81
	0.65	0.78	0.95	0.86	0.82
	0.67	0.72	0.74	0.75	0.73
	1.90	2.42	2.54	2.69	2.21
	2.03	2.61	2.79	3.05	2.77

GROSS PROFIT	\$ 218,739,000.00	\$ 179,008,000.00	\$ 152,837,000.00	\$ 117,232,000.00	\$ 105,772,000.00	\$ 74,234,000.00	\$ 92,516,000.00	\$ 82,713,000.00	\$ 70,420,000.00	\$ 58,268,000.00
NET SALES	\$ 792,431,000.00	\$ 797,895,000.00	\$ 764,185,000.00	\$ 696,747,000.00	\$ 482,353,000.00	\$ 385,468,000.00	\$ 534,747,000.00	\$ 581,125,000.00	\$ 453,896,000.00	\$ 357,956,000.00
TOTAL ASSETS	\$ 11,219,695,000.00	\$ 1,134,376,000.00	\$ 955,008,000.00	\$ 902,504,000.00	\$ 680,563,000.00	\$ 592,248,000.00	\$ 685,922,000.00	\$ 610,279,000.00	\$ 529,907,000.00	\$ 434,269,000.00
NET PROFIT	\$ 93,866,000.00	\$ 84,012,000.00	\$ 64,995,000.00	\$ 61,155,000.00	\$ 48,459,000.00	\$ 21,406,000.00	\$ 27,783,000.00	\$ 21,824,000.00	\$ 18,935,000.00	\$ 9,868,000.00
SHAREHOLDERS' EQUITY	\$ 547,615,000.00	\$ 459,729,000.00	\$ 401,366,000.00	\$ 346,188,000.00	\$ 240,538,000.00	\$ 195,608,000.00	\$ 189,879,000.00	\$ 161,127,000.00	\$ 130,921,000.00	\$ 115,123,000.00
CURRENT ASSETS	\$ 983,307,000.00	\$ 876,767,000.00	\$ 741,839,000.00	\$ 706,836,000.00	\$ 561,003,000.00	\$ 476,439,000.00	\$ 573,248,000.00	\$ 515,078,000.00	\$ 457,107,000.00	\$ 362,691,000.00
CURRENT LIABILITIES	\$ 663,907,000.00	\$ 668,219,000.00	\$ 543,780,000.00	\$ 546,511,000.00	\$ 428,614,000.00	\$ 383,770,000.00	\$ 480,774,000.00	\$ 433,284,000.00	\$ 381,516,000.00	\$ 289,544,000.00
QUICK ASSETS	\$ 798,308,000.00	\$ 675,306,000.00	\$ 553,341,000.00	\$ 522,270,000.00	\$ 377,180,000.00	\$ 337,414,000.00	\$ 420,020,000.00	\$ 379,049,000.00	\$ 330,204,000.00	\$ 362,600,457.00
SUM OF CASH+MARKETABLE SECURITIES	\$ 333,979,000.00	\$ 210,774,000.00	\$ 147,896,000.00	\$ 102,867,000.00	\$ 114,896,000.00	\$ 84,430,000.00	\$ 126,509,000.00	\$ 53,163,000.00	\$ 73,531,000.00	\$ 27,208,000.00
TOTAL DEBT	\$ 672,080,000.00	\$ 674,647,000.00	\$ 553,642,000.00	\$ 556,316,000.00	\$ 440,025,000.00	\$ 396,640,000.00	\$ 496,043,000.00	\$ 449,152,000.00	\$ 398,986,000.00	\$ 319,146,000.00
COST OF GOOD SOLD	\$ (573,692,000.00)	\$ (618,887,000.00)	\$ (611,348,000.00)	\$ (579,515,000.00)	\$ (376,581,000.00)	\$ (311,234,000.00)	\$ (442,231,000.00)	\$ (498,412,000.00)	\$ (383,476,000.00)	\$ (299,688,000.00)
AVERAGE INVENTORY	\$ 193,230,000.00	\$ 194,979,500.00	\$ 186,532,000.00	\$ 184,194,500.00	\$ 161,424,000.00	\$ 146,126,500.00	\$ 144,628,500.00	\$ 131,466,000.00	\$ 108,723,000.00	\$ 81,696,500.00
AVERAGE ACCOUNT RECEIVABLE	\$ 295,015,500.00	\$ 276,033,000.00	\$ 289,789,500.00	\$ 214,429,000.00	\$ 151,440,500.00	\$ 177,779,500.00	\$ 187,725,500.00	\$ 151,213,000.00	\$ 112,650,500.00	\$ 93,947,500.00
TOTAL EQUITY	\$ 547,615,000.00	\$ 459,729,000.00	\$ 401,366,000.00	\$ 346,188,000.00	\$ 240,538,000.00	\$ 195,608,000.00	\$ 189,879,000.00	\$ 161,127,000.00	\$ 130,921,000.00	\$ 115,123,000.00
SALES	\$ 792,431,000.00	\$ 797,895,000.00	\$ 764,185,000.00	\$ 696,747,000.00	\$ 482,353,000.00	\$ 385,468,000.00	\$ 534,747,000.00	\$ 581,125,000.00	\$ 453,896,000.00	\$ 357,956,000.00
TOTAL CAPITAL	\$ 555,788,000.00	\$ 466,157,000.00	\$ 411,228,000.00	\$ 355,993,000.00	\$ 251,949,000.00	\$ 208,478,000.00	\$ 205,148,000.00	\$ 176,995,000.00	\$ 148,391,000.00	\$ 144,725,000.00

PREDICTION OF FINANCIAL DISTRESS AMONG COMPANIES IN MALAYSIA

Steel Manufacturing Sector

		LION DIVERSIFIED				
Main Ratio	Sub-Ratio	2015	2014	2013	2012	2011
Profitability Ratio	Gross Profit Margin (gross profit/net sales)	0.07	(0.04)	0.07	0.08	0.11
	Return on Assets (net income/total assets)	(0.20)	(0.16)	(0.08)	(0.08)	(0.02)
	Return on Equity (net income/shareholders' equity)	(0.98)	(2.67)	(0.18)	(0.17)	(0.03)
Liquidity Ratio	Current Ratio (current assets/current liabilities)	0.80	0.47	0.91	0.88	1.19
	Quick Ratio (quick assets/current liabilities)	0.66	0.25	0.73	0.75	1.04
	Cash Ratio [(sum of cash+marketable securities)/current liabilities]	0.21	0.12	0.25	0.14	0.20
Leverage Ratio	Debt Ratio (total debt/ total asset)	0.80	0.94	0.56	0.50	0.43
	Debt To Equity (total debt/total equity)	3.91	15.93	1.28	1.01	0.77
	Return In Equity (net income/shareholders' equity)	(0.98)	(2.67)	(0.18)	(0.17)	(0.03)
Activity Ratio	Inventory Turnover (cost of good sold/average inventory)	2.25	3.04	6.78	9.22	6.38
	Receivable Turnover (net income/average account receivable)	3.56	10.97	2.58	2.18	1.50
	Total Asset Turnover (sales/total assets)	0.55	0.50	0.50	0.50	0.39
Solvency ratio	Debt To Assets (total debt/ total assets)	0.80	0.94	0.56	0.50	0.43
	Debt To Capital (total debt/ total capital)	0.80	0.94	0.56	0.50	0.43
	Debt To Equity (total debt/total equity)	3.91	15.93	1.28	1.01	0.77

	2010	2009	2008	2007	2006
	0.22	0.14	0.12	0.10	0.08
	0.05	(0.18)	0.03	0.12	0.14
	0.11	(0.38)	0.05	0.24	0.21
	0.90	1.25	1.38	2.13	1.84
	0.74	1.17	1.09	1.92	1.57
	0.13	0.18	0.26	1.39	1.07
	0.49	0.52	0.42	0.50	0.31
	0.96	1.10	0.71	1.01	0.46
	0.11	(0.38)	0.05	0.24	0.21
	8.64	7.92	6.28	18.91	12.50
	2.52	2.88	5.07	30.73	32.55
	0.45	0.36	0.48	0.82	1.02
	0.49	0.52	0.42	0.50	0.31
	0.49	0.52	0.42	0.50	0.31
	0.96	1.10	0.71	1.01	0.46

GROSS PROFIT	RM 79,435.00	RM (100,275.00)	RM 96,469.00	RM 128,548.00	RM 137,168.00	RM 353,630.00	RM 178,297.00	RM 194,725.00	RM 510,558.00	RM 253,871.00
NET SALES	RM 1,208,672.00	RM 2,730,352.00	RM 1,420,731.00	RM 1,516,718.00	RM 1,279,211.00	RM 1,590,465.00	RM 1,248,815.00	RM 1,616,836.00	RM 5,171,682.00	RM 3,367,544.00
TOTAL ASSETS	RM 2,200,667.00	RM 5,407,335.00	RM 2,860,161.00	RM 3,011,981.00	RM 3,295,665.00	RM 3,572,558.00	RM 3,443,183.00	RM 3,392,564.00	RM 6,309,175.00	RM 3,308,642.00
NET PROFIT	RM (438,258.00)	RM (852,911.00)	RM (220,865.00)	RM (249,329.00)	RM (52,118.00)	RM 192,356.00	RM (623,731.00)	RM 89,589.00	RM 738,040.00	RM 470,875.00
SHAREHOLDERS' EQUITY	RM 447,955.00	RM 319,308.00	RM 1,256,971.00	RM 1,501,753.00	RM 1,864,502.00	RM 1,826,898.00	RM 1,641,932.00	RM 1,984,186.00	RM 3,135,390.00	RM 2,269,273.00
CURRENT ASSETS	RM 1,198,681.00	RM 1,800,644.00	RM 1,156,104.00	RM 1,204,929.00	RM 1,178,858.00	RM 1,390,940.00	RM 1,192,998.00	RM 1,111,650.00	RM 2,715,658.00	RM 1,755,293.00
CURRENT LIABILITIES	RM 1,491,620.00	RM 3,799,539.00	RM 1,267,501.00	RM 1,364,135.00	RM 993,067.00	RM 1,547,183.00	RM 953,085.00	RM 804,223.00	RM 1,274,297.00	RM 953,962.00
QUICK ASSETS	RM 979,222.00	RM 966,852.00	RM 924,718.00	RM 1,028,310.00	RM 1,028,577.00	RM 1,139,728.00	RM 1,118,950.00	RM 879,605.00	RM 2,440,815.00	RM 1,496,661.00
SUM OF CASH+MARKETABLE SECURITIES	RM 311,663.00	RM 469,769.00	RM 313,164.00	RM 197,394.00	RM 201,098.00	RM 203,914.00	RM 167,820.00	RM 207,313.00	RM 1,774,573.00	RM 1,016,045.00
TOTAL DEBT	RM 1,752,712.00	RM 5,088,027.00	RM 1,603,190.00	RM 1,510,228.00	RM 1,431,163.00	RM 1,745,660.00	RM 1,801,251.00	RM 1,408,378.00	RM 3,173,785.00	RM 1,039,369.00
COST OF GOOD SOLD	RM 1,183,532.00	RM 2,903,366.00	RM 1,383,497.00	RM 1,506,740.00	RM 1,281,713.00	RM 1,405,393.00	RM 1,211,881.00	RM 1,592,681.00	RM 5,043,301.00	RM 3,257,784.00
AVERAGE INVENTORY	RM 526,625.50	RM 953,683.50	RM 204,002.50	RM 163,450.50	RM 200,746.50	RM 162,630.50	RM 153,046.50	RM 253,444.50	RM 266,737.50	RM 260,704.50
AVERAGE ACCOUNT RECEIVABLE	RM 339,481.00	RM 248,977.50	RM 550,477.00	RM 694,938.50	RM 854,986.50	RM 631,121.00	RM 434,264.50	RM 318,968.00	RM 168,285.50	RM 103,453.00
TOTAL EQUITY	RM 447,955.00	RM 319,308.00	RM 1,256,971.00	RM 1,501,753.00	RM 1,864,502.00	RM 1,826,898.00	RM 1,641,932.00	RM 1,984,186.00	RM 3,135,390.00	RM 2,269,273.00
SALES	RM 1,208,672.00	RM 2,730,352.00	RM 1,420,731.00	RM 1,516,718.00	RM 1,279,211.00	RM 1,590,465.00	RM 1,248,815.00	RM 1,616,836.00	RM 5,171,682.00	RM 3,367,544.00
TOTAL CAPITAL	RM 2,200,667.00	RM 5,407,335.00	RM 2,860,161.00	RM 3,011,981.00	RM 3,295,665.00	RM 3,572,558.00	RM 3,443,183.00	RM 3,392,564.00	RM 6,309,175.00	RM 3,308,642.00

PREDICTION OF FINANCIAL DISTRESS AMONG COMPANIES IN MALAYSIA

MALAYSIA STEEL WORKS (KL) BHD		2015	2014	2013	2012	2011
Main Ratio	Sub-Ratio					
Profitability Ratio	Gross Profit Margin (gross profit/net sales)	0.04	0.07	0.06	0.06	0.07
	Return on Assets (net income/total assets)	(0.04)	0.01	0.03	0.03	0.03
	Return on Equity (net income/shareholders' equity)	(0.10)	0.03	0.05	0.05	0.05
Liquidity Ratio	Current Ratio (current assets/current liabilities)	0.96	1.16	1.20	1.25	1.23
	Quick Ratio (quick assets/current liabilities)	0.30	0.81	0.69	0.76	0.75
	Cash Ratio [(sum of cash+marketable securities)/current liabilities]	0.01	0.07	0.11	0.08	0.08
Leverage Ratio	Debt Ratio (total debt/ total asset)	0.54	0.47	0.45	0.43	0.44
	Debt To Equity (total debt/total equity)	1.20	0.89	0.83	0.77	0.78
	Return In Equity (net income/shareholders' equity)	(0.10)	0.03	0.05	0.05	0.05
Activity Ratio	Inventory Turnover (cost of good sold/average inventory)	4.01	7.04	6.42	7.24	7.53
	Receivable Turnover (net income/average account receivable)	4.70	5.07	5.96	6.17	6.55
	Total Asset Turnover (sales/total assets)	0.98	1.34	1.36	1.41	1.41
Solvency ratio	Debt To Assets (total debt/ total assets)	0.54	0.47	0.45	0.43	0.44
	Debt To Capital (total debt/ total capital)	1.08	0.83	0.80	0.72	0.70
	Debt To Equity (total debt/total equity)	1.20	0.89	0.83	0.77	0.78

	2010	2009	2008	2007	2006
	0.09	0.05	0.15	0.17	0.18
	0.03	(0.01)	0.11	0.07	0.05
	0.06	(0.02)	0.18	0.12	0.10
	1.45	1.20	1.81	1.42	0.95
	0.88	0.60	0.90	0.79	0.58
	0.17	0.12	0.13	0.19	0.14
	0.42	0.44	0.41	0.45	0.38
	0.73	0.80	0.71	0.82	0.72
	0.06	(0.02)	0.18	0.12	0.10
	5.96	4.06	5.35	4.71	4.45
	6.85	5.54	7.19	5.61	5.08
	1.22	0.92	1.20	0.85	0.64
	0.42	0.44	0.41	0.45	0.38
	0.62	0.69	0.55	0.63	0.61
	0.73	0.80	0.71	0.82	0.72

GROSS PROFIT	RM 45,107,000.00	RM 98,540,000.00	RM 86,791,000.00	RM 75,153,000.00	RM 82,778,000.00	RM 91,764,000.00	RM 33,360,000.00	RM 135,222,000.00	RM 91,444,950.00	RM 63,997,244.00
NET SALES	RM 1,143,694,000.00	RM 1,456,279,000.00	RM 1,375,441,000.00	RM 1,312,189,000.00	RM 1,253,365,000.00	RM 1,004,786,000.00	RM 687,263,000.00	RM 881,224,000.00	RM 548,028,692.00	RM 362,228,030.00
TOTAL ASSETS	RM 1,163,751,000.00	RM 1,089,343,000.00	RM 1,014,039,000.00	RM 929,905,000.00	RM 888,700,000.00	RM 826,171,000.00	RM 749,615,000.00	RM 734,521,000.00	RM 646,277,816.00	RM 567,867,680.00
NET PROFIT	RM (50,403,000.00)	RM 15,828,000.00	RM 27,014,000.00	RM 24,346,000.00	RM 24,351,000.00	RM 28,094,000.00	RM (8,092,000.00)	RM 79,301,000.00	RM 44,333,909.00	RM 30,009,562.00
SHAREHOLDERS' EQUITY	RM 529,896,000.00	RM 576,843,000.00	RM 553,283,000.00	RM 525,875,000.00	RM 499,859,000.00	RM 478,554,000.00	RM 417,319,000.00	RM 430,308,000.00	RM 355,386,462.00	RM 301,268,190.00
CURRENT ASSETS	RM 553,139,000.00	RM 543,753,000.00	RM 523,000,000.00	RM 461,780,000.00	RM 410,369,000.00	RM 377,310,000.00	RM 317,749,000.00	RM 326,658,000.00	RM 260,128,657.00	RM 201,495,850.00
CURRENT LIABILITIES	RM 577,867,000.00	RM 468,444,000.00	RM 435,551,000.00	RM 368,582,000.00	RM 334,529,000.00	RM 261,129,000.00	RM 264,896,000.00	RM 180,160,000.00	RM 182,669,265.00	RM 212,823,536.00
QUICK ASSETS	RM 170,874,000.00	RM 378,600,000.00	RM 302,382,000.00	RM 280,722,000.00	RM 249,600,000.00	RM 230,072,000.00	RM 159,223,000.00	RM 162,996,000.00	RM 145,133,035.00	RM 122,570,006.00
SUM OF CASH+MARKETABLE SECURITIES	RM 3,615,000.00	RM 31,217,000.00	RM 45,978,000.00	RM 29,575,000.00	RM 27,689,000.00	RM 44,166,000.00	RM 31,628,000.00	RM 23,993,000.00	RM 34,496,445.00	RM 29,802,868.00
TOTAL DEBT	RM 633,855,000.00	RM 512,500,000.00	RM 460,756,000.00	RM 404,030,000.00	RM 388,841,000.00	RM 347,617,000.00	RM 332,296,000.00	RM 304,213,000.00	RM 290,891,354.00	RM 216,201,490.00
COST OF GOOD SOLD	RM 1,098,587,000.00	RM 1,357,739,000.00	RM 1,288,650,000.00	RM 1,237,036,000.00	RM 1,170,587,000.00	RM 913,022,000.00	RM 653,903,000.00	RM 746,002,000.00	RM 456,583,742.00	RM 298,230,786.00
AVERAGE INVENTORY	RM 273,709,000.00	RM 192,885,500.00	RM 200,838,000.00	RM 170,913,500.00	RM 154,303,500.00	RM 153,182,000.00	RM 161,094,000.00	RM 139,328,500.00	RM 96,960,733.00	RM 66,986,816.50
AVERAGE ACCOUNT RECEIVABLE	RM 243,219,000.00	RM 287,040,000.00	RM 230,824,500.00	RM 212,615,000.00	RM 191,413,000.00	RM 146,728,500.00	RM 124,070,000.00	RM 122,559,500.00	RM 97,601,042.00	RM 71,331,664.50
TOTAL EQUITY	RM 529,896,000.00	RM 576,843,000.00	RM 553,283,000.00	RM 525,875,000.00	RM 499,859,000.00	RM 478,554,000.00	RM 417,319,000.00	RM 430,308,000.00	RM 355,386,462.00	RM 301,268,190.00
SALES	RM 1,143,694,000.00	RM 1,456,279,000.00	RM 1,375,441,000.00	RM 1,312,189,000.00	RM 1,253,365,000.00	RM 1,004,786,000.00	RM 687,263,000.00	RM 881,224,000.00	RM 548,028,692.00	RM 362,228,030.00
TOTAL CAPITAL	RM 585,884,000.00	RM 620,899,000.00	RM 578,488,000.00	RM 561,323,000.00	RM 554,171,000.00	RM 585,022,000.00	RM 484,729,000.00	RM 554,361,000.00	RM 463,608,551.00	RM 355,044,144.00

PREDICTION OF FINANCIAL DISTRESS AMONG COMPANIES IN MALAYSIA

Plantation Sector

JAVA Berhad						
Main Ratio	Sub- Ratio	2015	2014	2013	2012	2011
Profitability Ratio	Gross Profit Margin (gross profit/net sales)	(2.12)	(0.39)	(0.54)	(0.28)	0.11
	Return on Assets (net income/total assets)	(0.55)	(0.22)	(0.27)	(0.21)	(0.05)
	Return on Equity (net income/shareholders' equity)	(1.65)	(0.40)	(0.41)	(0.27)	(0.05)
Liquidity Ratio	Current Ratio (current assets/current liabilities)	0.05	1.13	1.16	1.87	4.42
	Quick Ratio (quick assets/current liabilities)	0.05	0.42	0.37	0.83	2.14
	Cash Ratio [(sum of cash+marketable securities)/current liabilities]	0.00	0.01	0.02	0.06	0.29
Leverage Ratio	Debt Ratio (total debt/ total asset)	0.67	0.44	0.35	0.24	0.11
	Debt To Equity (total debt/total equity)	2.01	0.77	0.55	0.31	0.12
	Return In Equity (net income/shareholders' equity)	(1.65)	(0.40)	(0.41)	(0.27)	(0.05)
Activity Ratio	Inventory Turnover (cost of good sold/average inventory)	(3.78)	(1.47)	(1.18)	(1.73)	(0.74)
	Receivable Turnover (net income/average account receivable)	3.09	3.74	1.89	3.26	2.93
	Total Asset Turnover (sales/total assets)	0.19	0.26	0.20	0.34	0.22
Solvency ratio	Debt To Assets (total debt/ total assets)	0.67	0.44	0.35	0.24	0.11
	Debt To Capital (total debt/ total capital)	2.01	0.61	0.51	0.31	0.12
	Debt To Equity (total debt/total equity)	2.01	0.77	0.55	0.31	0.12

	2010	2009	2008	2007	2006
	0.27	0.16	0.18	0.33	0.19
	0.03	(0.04)	0.06	0.24	0.15
	0.03	(0.05)	0.07	0.30	0.25
	4.64	2.63	3.16	3.01	1.62
	2.13	1.05	1.83	1.65	1.16
	0.32	0.04	0.30	0.14	0.07
	0.13	0.23	1.00	0.22	0.42
	0.15	0.30	1.31	0.28	0.72
	0.03	(0.05)	0.07	0.30	0.25
	(1.21)	(1.48)	(2.64)	(3.53)	(7.66)
	5.84	3.04	4.65	6.19	10.10
	0.49	0.48	0.82	1.02	1.54
	0.13	0.23	1.00	0.22	0.42
	0.14	0.29	1.21	0.28	0.70
	0.15	0.30	1.31	0.28	0.72

GROSS PROFIT	RM (40,013,000.00)	RM (15,871,000.00)	RM (20,863,000.00)	RM (21,292,000.00)	RM 5,935,000.00	RM 36,022,000.00	RM 22,254,000.00	RM 47,253,000.00	RM 102,188,000.00	RM 49,926,000.00
NET SALES	RM 18,895,000.00	RM 40,214,000.00	RM 38,438,000.00	RM 76,456,000.00	RM 53,161,000.00	RM 131,017,000.00	RM 140,586,000.00	RM 259,173,000.00	RM 313,824,000.00	RM 263,095,000.00
TOTAL ASSETS	RM 97,955,000.00	RM 154,366,000.00	RM 188,833,000.00	RM 226,273,000.00	RM 245,869,000.00	RM 265,657,000.00	RM 232,688,000.00	RM 315,892,000.00	RM 308,838,000.00	RM 170,766,000.00
NET PROFIT	RM (53,768,000.00)	RM (34,440,000.00)	RM (50,542,000.00)	RM (46,877,000.00)	RM (11,901,000.00)	RM 6,899,000.00	RM (11,245,000.00)	RM 17,446,000.00	RM 72,882,000.00	RM 25,172,000.00
SHAREHOLDERS' EQUITY	RM 32,516,000.00	RM 87,132,000.00	RM 122,138,000.00	RM 172,680,000.00	RM 219,557,000.00	RM 231,458,000.00	RM 224,559,000.00	RM 241,873,000.00	RM 241,437,000.00	RM 99,422,000.00
CURRENT ASSETS	RM 2,797,000.00	RM 49,780,000.00	RM 66,464,000.00	RM 98,153,000.00	RM 112,767,000.00	RM 128,757,000.00	RM 145,789,000.00	RM 172,288,000.00	RM 194,897,000.00	RM 112,195,000.00
CURRENT LIABILITIES	RM 59,783,000.00	RM 44,014,000.00	RM 57,204,000.00	RM 52,406,000.00	RM 25,503,000.00	RM 27,777,000.00	RM 55,462,000.00	RM 54,568,000.00	RM 64,711,000.00	RM 69,205,000.00
QUICK ASSETS	RM 2,771,000.00	RM 18,662,000.00	RM 21,078,000.00	RM 43,326,000.00	RM 54,541,000.00	RM 59,162,000.00	RM 58,067,000.00	RM 99,651,000.00	RM 106,743,000.00	RM 80,466,000.00
SUM OF CASH+MARKETABLE SECURITIES	RM 113,000.00	RM 644,000.00	RM 910,000.00	RM 2,940,000.00	RM 7,507,000.00	RM 8,961,000.00	RM 2,064,000.00	RM 16,252,000.00	RM 9,142,000.00	RM 4,657,000.00
TOTAL DEBT	RM 65,439,000.00	RM 67,234,000.00	RM 66,695,000.00	RM 53,593,000.00	RM 26,312,000.00	RM 34,199,000.00	RM 68,129,000.00	RM 315,892,000.00	RM 67,401,000.00	RM 71,344,000.00
COST OF GOOD SOLD	RM (58,908,000.00)	RM (56,085,000.00)	RM (53,301,000.00)	RM (97,748,000.00)	RM (47,226,000.00)	RM (94,995,000.00)	RM (118,332,000.00)	RM (211,938,000.00)	RM (211,636,000.00)	RM (213,169,000.00)
AVERAGE INVENTORY	RM 15,572,000.00	RM 38,252,000.00	RM 50,106,500.00	RM 58,526,500.00	RM 63,910,500.00	RM 78,658,500.00	RM 80,179,500.00	RM 80,395,500.00	RM 59,941,500.00	RM 27,843,500.00
AVERAGE ACCOUNT RECEIVABLE	RM 6,108,500.00	RM 10,752,000.00	RM 20,309,500.00	RM 23,476,500.00	RM 18,135,000.00	RM 22,430,500.00	RM 46,232,500.00	RM 55,695,500.00	RM 50,683,000.00	RM 26,037,292.00
TOTAL EQUITY	RM 32,516,000.00	RM 87,132,000.00	RM 122,138,000.00	RM 172,680,000.00	RM 219,557,000.00	RM 231,458,000.00	RM 224,559,000.00	RM 241,873,000.00	RM 241,437,000.00	RM 99,422,000.00
SALES	RM 18,895,000.00	RM 40,214,000.00	RM 38,438,000.00	RM 76,456,000.00	RM 53,161,000.00	RM 131,017,000.00	RM 140,586,000.00	RM 259,173,000.00	RM 313,824,000.00	RM 263,095,000.00
TOTAL CAPITAL	RM 32,521,656.00	RM 110,352,000.00	RM 131,629,000.00	RM 173,867,000.00	RM 220,366,000.00	RM 237,680,000.00	RM 237,226,000.00	RM 261,324,000.00	RM 244,127,000.00	RM 101,561,000.00

PREDICTION OF FINANCIAL DISTRESS AMONG COMPANIES IN MALAYSIA

Main Ratio	NPC					
	Sub-Ratio	2015	2014	2013	2012	2011
Profitability Ratio	Gross Profit Margin (gross profit/net sales)	0.16	0.16	0.15	0.16	0.21
	Return on Assets (net income/total assets)	0.02	0.04	(0.04)	(0.01)	0.08
	Return on Equity (net income/shareholders' equity)	0.05	0.09	(0.09)	(0.02)	0.13
Liquidity Ratio	Current Ratio (current assets/current liabilities)	0.32	0.47	0.80	0.81	1.20
	Quick Ratio (quick assets/current liabilities)	0.22	0.35	0.65	0.49	1.17
	Cash Ratio ((sum of cash+marketable securities)/cu)	0.03	0.21	0.39	0.11	0.38
Leverage Ratio	Debt Ratio (total debt/ total asset)	0.62	0.56	0.52	0.43	0.35
	Debt To Equity (total debt/total equity)	1.63	1.27	1.08	0.77	0.53
	Return In Equity (net income/shareholders' equity)	0.05	0.09	(0.09)	(0.02)	0.13
Activity Ratio	Inventory Turnover (cost of good sold/average inven	(11.46)	(21.23)	(14.34)	(10.39)	(13.41)
	Receivable Turnover (net income/average account	15.32	22.99	19.05	17.77	21.81
	Total Asset Turnover (sales/total assets)	0.39	0.72	0.71	0.76	1.00
Solvency ratio	Debt To Assets (total debt/ total assets)	0.62	0.56	0.52	0.43	0.35
	Debt To Capital (total debt/ total capital)	0.90	0.56	0.65	0.54	0.41
	Debt To Equity (total debt/total equity)	1.63	1.27	1.08	0.77	0.53

	2010	2009	2008	2007	2006
	0.23	0.27	0.25	0.19	0.17
	0.09	0.10	0.13	0.12	0.08
	0.13	0.15	0.20	0.18	0.12
	0.76	0.77	0.70	0.85	0.73
	0.46	0.48	0.50	0.53	0.49
	0.17	0.16	0.22	0.21	0.11
	0.33	0.32	0.31	0.34	0.34
	0.49	0.47	0.46	0.52	0.52
	0.13	0.15	0.20	0.18	0.12
	(15.21)	(15.67)	(21.64)	(17.77)	(13.48)
	22.37	20.41	28.96	20.50	16.20
	0.98	0.10	0.13	1.05	0.79
	0.33	0.32	0.31	0.34	0.34
	0.40	0.39	0.38	0.41	0.42
	0.49	0.47	0.46	0.52	0.52

GROSS PROFIT	RM 49,917,000.00	RM 74,728,000.00	RM 34,690,921.00	RM 62,590,646.00	RM 96,706,459.00	RM 93,027,273.00	RM 83,452,615.00	RM 99,256,377.00	RM 60,454,776.00	RM 34,320,326.00
NET SALES	RM 317,758,000.00	RM 479,562,000.00	RM 418,821,153.00	RM 400,162,204.00	RM 458,862,880.00	RM 396,328,299.00	RM 314,646,693.00	RM 401,755,051.00	RM 313,749,810.00	RM 205,468,271.00
TOTAL ASSETS	RM 809,209,000.00	RM 668,458,000.00	RM 593,848,646.00	RM 529,925,474.00	RM 458,408,378.00	RM 404,055,861.00	RM 355,955,203.00	RM 319,560,663.00	RM 299,274,090.00	RM 260,455,846.00
NET PROFIT	RM 14,776,000.00	RM 25,126,000.00	RM (25,577,752.00)	RM (6,545,972.00)	RM 37,486,821.00	RM 36,531,346.00	RM 36,902,496.00	RM 43,045,776.00	RM 35,910,702.00	RM 21,293,434.00
SHAREHOLDERS' EQUITY	RM 307,382,000.00	RM 294,316,000.00	RM 283,287,031.00	RM 298,017,633.00	RM 299,154,441.00	RM 271,067,620.00	RM 242,872,842.00	RM 219,173,258.00	RM 196,920,574.00	RM 171,463,803.00
CURRENT ASSETS	RM 80,399,000.00	RM 82,156,000.00	RM 91,409,899.00	RM 80,993,002.00	RM 86,440,072.00	RM 53,779,884.00	RM 49,552,253.00	RM 38,812,638.00	RM 44,249,253.00	RM 34,713,515.00
CURRENT LIABILITIES	RM 251,113,000.00	RM 174,434,000.00	RM 114,409,223.00	RM 100,206,557.00	RM 72,091,122.00	RM 70,948,594.00	RM 64,394,613.00	RM 55,601,566.00	RM 52,052,848.00	RM 47,553,193.00
QUICK ASSETS	RM 54,762,000.00	RM 61,044,000.00	RM 74,387,514.00	RM 48,613,230.00	RM 84,699,366.00	RM 32,346,594.00	RM 31,104,666.00	RM 27,753,824.00	RM 27,355,944.00	RM 23,096,635.00
SUM OF CASH+MARKETABLE SECURITIES	RM 8,043,000.00	RM 35,894,000.00	RM 45,146,247.00	RM 10,953,997.00	RM 27,077,796.00	RM 12,001,593.00	RM 10,166,407.00	RM 12,183,202.00	RM 10,912,029.00	RM 5,351,653.00
TOTAL DEBT	RM 501,714,000.00	RM 374,316,000.00	RM 306,854,896.00	RM 229,177,465.00	RM 159,253,937.00	RM 132,988,241.00	RM 113,082,361.00	RM 100,387,405.00	RM 102,353,516.00	RM 88,992,043.00
COST OF GOOD SOLD	RM (267,841,000.00)	RM (404,834,000.00)	RM (354,130,238.00)	RM (337,571,558.00)	RM (362,156,421.00)	RM (303,301,026.00)	RM (231,194,078.00)	RM (302,498,674.00)	RM (253,295,034.00)	RM (171,147,945.00)
AVERAGE INVENTORY	RM 23,374,500.00	RM 19,067,000.00	RM 24,701,078.50	RM 32,480,180.50	RM 27,006,939.50	RM 19,940,438.50	RM 14,753,200.50	RM 13,976,061.50	RM 14,255,094.50	RM 12,695,044.50
AVERAGE ACCOUNT RECEIVABLE	RM 19,957,000.00	RM 20,860,500.00	RM 21,982,631.00	RM 22,523,728.50	RM 21,040,373.50	RM 17,715,557.50	RM 15,412,900.50	RM 13,874,466.00	RM 15,305,750.50	RM 12,683,360.50
TOTAL EQUITY	RM 307,382,000.00	RM 294,316,000.00	RM 283,287,031.00	RM 298,017,633.00	RM 299,154,441.00	RM 271,067,620.00	RM 242,872,842.00	RM 219,173,258.00	RM 196,920,574.00	RM 171,463,803.00
SALES	RM 317,758,000.00	RM 479,562,000.00	RM 418,821,153.00	RM 400,162,204.00	RM 458,862,880.00	RM 396,328,299.00	RM 36,902,496.00	RM 43,045,776.00	RM 313,749,810.00	RM 205,468,271.00
TOTAL CAPITAL	RM 558,096,000.00	RM 668,458,000.00	RM 475,732,698.00	RM 426,988,561.00	RM 386,317,256.00	RM 333,107,267.00	RM 291,560,590.00	RM 263,959,097.00	RM 247,221,242.00	RM 212,902,647.00

PREDICTION OF FINANCIAL DISTRESS AMONG COMPANIES IN MALAYSIA

Appendix B: Results

	FINDIS	CASHR	CR	DR	DTC	DTE	GPM	IT	QR	ROA	ROE	RT	TAT
FINDIS	1.000000	-0.21151	-0.21391	0.231905	0.117217	0.184409	-0.26375	-0.02982	-0.29992	-0.5006	-0.21449	-0.21744	0.179058
CASHR	-0.21151	1.000000	0.201775	-0.11455	-0.16472	-0.13208	0.181393	0.366914	0.292140	0.322034	0.149498	0.293018	-0.21227
CR	-0.21391	0.201775	1.000000	-0.55306	-0.27631	-0.27562	0.219360	0.376728	0.938376	0.443904	0.190205	-0.0636	-0.26234
DR	0.231905	-0.11455	-0.55306	1.000000	0.552327	0.595159	-0.15406	-0.12726	-0.45869	-0.42712	-0.33515	-0.18603	0.390848
DTC	0.117217	-0.16472	-0.27631	0.552327	1.000000	0.760157	-0.1804	-0.09264	-0.24983	-0.56188	-0.88404	-0.12193	0.215596
DTE	0.184409	-0.13208	-0.27562	0.595159	0.760157	1.000000	-0.1505	-0.05363	-0.23708	-0.52132	-0.81158	-0.04984	0.128793
GPM	-0.26375	0.181393	0.219360	-0.15406	-0.1804	-0.1505	1.000000	-0.01364	0.212198	0.637997	0.277456	0.117907	0.061201
IT	-0.02982	0.366914	0.376728	-0.12726	-0.09264	-0.05363	-0.01364	1.000000	0.490028	0.023314	-0.01585	-0.32907	-0.04833
QR	-0.29992	0.292140	0.938376	-0.45869	-0.24983	-0.23708	0.212198	0.490028	1.000000	0.430367	0.186601	-0.05563	-0.27114
ROA	-0.5006	0.322034	0.443904	-0.42712	-0.56188	-0.52132	0.637997	0.023314	0.430367	1.000000	0.660187	0.267296	-0.06969
ROE	-0.21449	0.149498	0.190205	-0.33515	-0.88404	-0.81158	0.277456	-0.01585	0.186601	0.660187	1.000000	0.039174	-0.06798
RT	-0.21744	0.293018	-0.0636	-0.18603	-0.12193	-0.04984	0.117907	-0.32907	-0.05563	0.267296	0.039174	1.000000	0.121592
TAT	0.179058	-0.21227	-0.26234	0.390848	0.215596	0.128793	0.061201	-0.04833	-0.27114	-0.06969	-0.06798	0.121592	1.000000

Table 4.1 (Correlation Analysis)

PREDICTION OF FINANCIAL DISTRESS AMONG COMPANIES IN MALAYSIA

Dependent Variable: FINDIS

Method: Panel Least Squares

Date: 02/07/17 Time: 11:03

Sample: 2006 2015

Periods included: 10

Cross-sections included: 10

Total panel (balanced) observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CASHR	0.262848	0.262581	1.001016	0.3196
CR	0.338802	0.119241	2.841320	0.0056
DR	0.733696	0.414662	1.769385	0.0803
DTC	-0.286005	0.098464	-2.904679	0.0047
DTE	-0.030555	0.042139	-0.725109	0.4703
GPM	0.251268	0.218504	1.149944	0.2533
IT	-0.003874	0.006005	-0.645074	0.5206
QR	-0.367750	0.140548	-2.616543	0.0105
ROA	-2.104694	0.631347	-3.333655	0.0013
ROE	-0.212272	0.132959	-1.596521	0.1140
RT	-0.012623	0.009221	-1.368922	0.1745
TAT	0.224470	0.117718	1.906847	0.0598
C	0.161274	0.196495	0.820751	0.4140
R-squared	0.446484	Mean dependent var		0.500000
Adjusted R-squared	0.370137	S.D. dependent var		0.502519
S.E. of regression	0.398819	Akaike info criterion		1.120118
Sum squared resid	13.83789	Schwarz criterion		1.458790
Log likelihood	-43.00588	Hannan-Quinn criter.		1.257184
F-statistic	5.848091	Durbin-Watson stat		0.401692
Prob(F-statistic)	0.000000			

Table 4.2 (OLS Model)

Individual t-test

X_1 = Cash Ratio

1. H_0 : There is no significant relationship between cash ratio and financial distress.
 H_1 : There is significant relationship between cash ratio and financial distress.
2. Significant Value: 0.10/ 0.05/ 0.01
3. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .
4. P- value: 0.3196
5. Decision Making: Do not reject H_0 since the p-value (0.3196) is greater than α (0.10/0.05/0.01).
6. Conclusion: There is insufficient evidence to conclude that there is significant relationship between cash ratio and financial distress at significant level of 0.10, 0.05 and 0.01.

X_2 = Current Ratio

1. H_0 : There is no significant relationship between current ratio and financial distress.
 H_1 : There is significant relationship between current ratio and financial distress.
2. Significant Value: 0.10/ 0.05/ 0.01
3. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .
4. P- value: 0.0056
5. Decision Making: Reject H_0 since the p-value (0.0056) is less than α (0.10/0.05/0.01).
6. Conclusion: There is sufficient evidence to conclude that there is significant relationship between current ratio and financial distress at significant level of 0.10, 0.05 and 0.01.

X_3 = Debt Ratio

1. H_0 : There is no significant relationship between debt ratio and financial distress.
 H_1 : There is significant relationship between debt ratio and financial distress.
2. Significant Value: 0.10/ 0.05/ 0.01
3. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .
4. P- value: 0.0803
5. Decision Making: Reject H_0 when the significant level is at 0.10, but do not reject when significant level is at 0.05/0.01 since the p-value (0.0803) is less than α 0.10 but greater than 0.05 and 0.01.
6. Conclusion: There is sufficient evidence to conclude that there is significant relationship between debt ratio and financial distress when the significant level is at 0.10 but insufficient evidence to conclude the relationship when significant level is at 0.05 and 0.01.

X_4 = Debt to Capital Ratio

1. H_0 : There is no significant relationship between debt to capital ratio and financial distress.
 H_1 : There is significant relationship between debt to capital ratio and financial distress.
2. Significant Value: 0.10/ 0.05/ 0.01
3. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .
4. P- value: 0.0047
5. Decision Making: Reject H_0 since the p-value (0.0047) is less than α (0.10/0.05/0.01).
6. Conclusion: There is sufficient evidence to conclude that there is significant relationship between debt to capital ratio and financial distress when the significant level at 0.10, 0.05 and 0.01.

X_5 = Debt to Equity Ratio

1. Ho: There is no significant relationship between debt to equity ratio and financial distress.
H₁: There is significant relationship between debt to equity ratio and financial distress.
2. Significant Value: 0.10/ 0.05/ 0.01
3. Decision Rule: Reject Ho if the p-value is less than α . Otherwise, do not reject Ho.
4. P- value: 0.4703
5. Decision Making: Do not reject H₀ since the p-value (0.4703) is greater than α (0.10/0.05/0.01).
6. Conclusion: There is insufficient evidence to conclude that there is significant relationship between debt to equity ratio and financial distress when the significant level at 0.10, 0.05 and 0.01.

X_6 = Gross Profit Margin

1. Ho: There is no significant relationship between gross profit margin and financial distress.
H₁: There is significant relationship between gross profit margin and financial distress.
2. Significant Value: 0.10/ 0.05/ 0.01
3. Decision Rule: Reject Ho if the p-value is less than α . Otherwise, do not reject Ho.
4. P- value: 0.2533
5. Decision Making: Do not reject H₀ since the p-value (0.2533) is greater than α (0.10/0.05/0.01).
6. Conclusion: There is insufficient evidence to conclude that there is significant relationship between gross profit margin and financial distress when the significant level at 0.10, 0.05 and 0.01.

X_7 = Inventory Turnover

1. H_0 : There is no significant relationship between Inventory turnover and financial distress.
 H_1 : There is significant relationship between Inventory turnover and financial distress.
2. Significant Value: 0.10/ 0.05/ 0.01
3. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .
4. P- value: 0.5206
5. Decision Making: Do not reject H_0 since the p-value (0.5206) is greater than α (0.10/0.05/0.01).
6. Conclusion: There is insufficient evidence to conclude that there is significant relationship between Inventory turnover and financial distress when the significant level at 0.10, 0.05 and 0.01.

X_8 = Quick Ratio

1. H_0 : There is no significant relationship between Quick Ratio and financial distress.
 H_1 : There is significant relationship between Quick Ratio and financial distress.
2. Significant Value: 0.10/ 0.05/ 0.01
3. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .
4. P- value: 0.0105
5. Decision Making: Reject H_0 since the p-value (0.0105) is less than 0.10 and 0.05, but do not reject H_0 when significant level is at 0.01 because 0.0105 is greater than 0.01.
6. Conclusion: There is sufficient evidence to conclude that there is significant relationship between quick ratio and financial distress when the significant level at 0.10 and 0.05, but insufficient evidence to conclude when significant level at 0.01.

X_9 = Return on Asset

1. H_0 : There is no significant relationship between Return on Asset and financial distress.
 H_1 : There is significant relationship between Return on Asset and financial distress.
2. Significant Value: 0.10/ 0.05/ 0.01
3. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .
4. P- value: 0.0013
5. Decision Making: Reject H_0 since the p-value (0.0013) is less than 0.10, 0.05 and 0.01.
6. Conclusion: There is sufficient evidence to conclude that there is significant relationship between Return on Asset and financial distress when the significant level at 0.10, 0.05 and 0.01.

X_{10} = Return on Equity

1. H_0 : There is no significant relationship between Return on Equity and financial distress.
 H_1 : There is significant relationship between Return on Equity and financial distress.
2. Significant Value: 0.10/ 0.05/ 0.01
3. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .
4. P- value: 0.1140
5. Decision Making: Do not reject H_0 since the p-value (0.1140) is greater than 0.10, 0.05 and 0.01.
6. Conclusion: There is insufficient evidence to conclude that there is significant relationship between Return on Equity and financial distress when the significant level at 0.10, 0.05 and 0.01.

X_{11} = Receivable Turnover

1. H_0 : There is no significant relationship between Receivable Turnover and financial distress.
 H_1 : There is significant relationship between Receivable Turnover and financial distress.
2. Significant Value: 0.10/ 0.05/ 0.01
3. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .
4. P- value: 0.1745
5. Decision Making: Do not reject H_0 since the p-value (0.1745) is greater than 0.10, 0.05 and 0.01.
6. Conclusion: There is insufficient evidence to conclude that there is significant relationship between Receivable Turnover and financial distress when the significant level at 0.10, 0.05 and 0.01.

X_{12} = Total Asset Turnover

1. H_0 : There is no significant relationship between Total Asset Turnover and financial distress.
 H_1 : There is significant relationship between Total Asset Turnover and financial distress.
2. Significant Value: 0.10/ 0.05/ 0.01
3. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .
4. P- value: 0.0598
5. Decision Making: Reject H_0 since the p-value (0.0598) is less than 0.10, but do not reject since P-value is greater than 0.05 and 0.01.
6. Conclusion: There is sufficient evidence to conclude that there is significant relationship between Total Asset Turnover and financial distress when the significant level at 0.10, but insufficient evidence when significant level at 0.05 and 0.01.

F Test

1. Ho: The Ordinary Least Square(OLS) model is not significant
H₁: The Ordinary Least Square(OLS) model is significant
2. Significant Value: 0.10/ 0.05/ 0.01
3. Decision Rule: Reject Ho if the p-value is less than α . Otherwise, do not reject Ho.
4. P- value: 0.000
5. Decision Making: Reject H₀ since the p-value (0.000) is less than 0.10, 0.05 and 0.01
6. Conclusion: There is sufficient evidence to conclude that the Ordinary Least Square(OLS) model is significant at the significant level of 0.10, 0.05 and 0.01

	FINDIS	CASHR	CR	DR	DTC	DTE	GPM	IT	QR	ROA	ROE	RT	TAT
FINDIS	1.000000	-0.21151	-0.21391	0.231905	0.117217	0.184409	-0.26375	-0.02982	-0.29992	-0.5006	-0.21449	-0.21744	0.179058
CASHR	-0.21151	1.000000	0.201775	-0.11455	-0.16472	-0.13208	0.181393	0.366914	0.292140	0.322034	0.149498	0.293018	-0.21227
CR	-0.21391	0.201775	1.000000	-0.55306	-0.27631	-0.27562	0.219360	0.376728	0.938376	0.443904	0.190205	-0.0636	-0.26234
DR	0.231905	-0.11455	-0.55306	1.000000	0.552327	0.595159	-0.15406	-0.12726	-0.45869	-0.42712	-0.33515	-0.18603	0.390848
DTC	0.117217	-0.16472	-0.27631	0.552327	1.000000	0.760157	-0.1804	-0.09264	-0.24983	-0.56188	-0.88404	-0.12193	0.215596
DTE	0.184409	-0.13208	-0.27562	0.595159	0.760157	1.000000	-0.1505	-0.05363	-0.23708	-0.52132	-0.81158	-0.04984	0.128793
GPM	-0.26375	0.181393	0.219360	-0.15406	-0.1804	-0.1505	1.000000	-0.01364	0.212198	0.637997	0.277456	0.117907	0.061201
IT	-0.02982	0.366914	0.376728	-0.12726	-0.09264	-0.05363	-0.01364	1.000000	0.490028	0.023314	-0.01585	-0.32907	-0.04833
QR	-0.29992	0.292140	0.938376	-0.45869	-0.24983	-0.23708	0.212198	0.490028	1.000000	0.430367	0.186601	-0.05563	-0.27114
ROA	-0.5006	0.322034	0.443904	-0.42712	-0.56188	-0.52132	0.637997	0.023314	0.430367	1.000000	0.660187	0.267296	-0.06969
ROE	-0.21449	0.149498	0.190205	-0.33515	-0.88404	-0.81158	0.277456	-0.01585	0.186601	0.660187	1.000000	0.039174	-0.06798
RT	-0.21744	0.293018	-0.0636	-0.18603	-0.12193	-0.04984	0.117907	-0.32907	-0.05563	0.267296	0.039174	1.000000	0.121592
TAT	0.179058	-0.21227	-0.26234	0.390848	0.215596	0.128793	0.061201	-0.04833	-0.27114	-0.06969	-0.06798	0.121592	1.000000

Table 4.3.1 (Pair-wise Correlation)

PREDICTION OF FINANCIAL DISTRESS AMONG COMPANIES IN MALAYSIA

Heteroscedasticity Test: White

F-statistic	16.08831	Prob. F(90,9)	0.0001
Obs*R-squared	99.38227	Prob. Chi-Square(90)	0.2340
Scaled explained SS	47.79822	Prob. Chi-Square(90)	0.9999

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 02/10/17 Time: 09:34

Sample: 1 100

Included observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.480554	1.919893	-0.771165	0.4604
CASHR	0.810974	2.433955	0.333192	0.7466
CASHR^2	1.489162	0.944835	1.576107	0.1495
CASHR*CR	-0.550086	1.758237	-0.312862	0.7615
CASHR*DR	-12.52844	9.296485	-1.347653	0.2107
CASHR*DTC	-0.521064	4.025433	-0.129443	0.8999
CASHR*DTE	2.576346	3.866032	0.666406	0.5219
CASHR*GPM	9.207468	5.067013	1.817139	0.1026
CASHR*IT	0.071095	0.058825	1.208568	0.2576
CASHR*QR	0.217184	1.751891	0.123971	0.9041
CASHR*ROA	-50.29359	36.28553	-1.386051	0.1991
CASHR*ROE	19.49432	21.36983	0.912236	0.3854
CASHR*RT	0.031664	0.068970	0.459107	0.6570
CASHR*TAT	1.411535	2.225233	0.634331	0.5417
CR	1.171490	0.987722	1.186052	0.2660
CR^2	0.083868	0.422167	0.198661	0.8469
CR*DR	-1.703253	2.758138	-0.617537	0.5522

PREDICTION OF FINANCIAL DISTRESS AMONG COMPANIES IN MALAYSIA

CR*DTC	-0.189397	1.125204	-0.168322	0.8701
CR*DTE	0.776175	1.082765	0.716845	0.4917
CR*GPM	-0.949807	1.727270	-0.549889	0.5958
CR*IT	-0.072802	0.052003	-1.399942	0.1950
CR*QR	-0.331308	0.874339	-0.378924	0.7135
CR*ROA	20.49922	7.913459	2.590425	0.0292
CR*ROE	-10.58374	4.330429	-2.444040	0.0371
CR*RT	-0.118122	0.066238	-1.783290	0.1082
CR*TAT	0.411974	0.631005	0.652885	0.5302
DR	7.814873	7.770041	1.005770	0.3408
DR^2	-4.722057	4.601644	-1.026167	0.3316
DR*DTC	2.330277	5.460249	0.426771	0.6796
DR*DTE	-1.540481	5.144268	-0.299456	0.7714
DR*GPM	16.70480	13.91870	1.200169	0.2607
DR*IT	-0.370021	0.366521	-1.009551	0.3391
DR*QR	-0.366360	2.690749	-0.136155	0.8947
DR*ROA	81.46796	52.84829	1.541544	0.1576
DR*ROE	-14.98812	33.66883	-0.445163	0.6667
DR*RT	-0.025896	0.298025	-0.086894	0.9327
DR*TAT	-1.642833	3.565485	-0.460760	0.6559
DTC	-2.048763	2.575524	-0.795474	0.4468
DTC^2	-0.407786	1.738213	-0.234601	0.8198
DTC*DTE	-0.051464	2.587992	-0.019886	0.9846
DTC*GPM	12.76939	5.030893	2.538195	0.0318
DTC*IT	0.003751	0.048365	0.077567	0.9399
DTC*QR	0.642026	1.495445	0.429321	0.6778
DTC*ROA	-9.969988	16.73470	-0.595767	0.5660
DTC*ROE	0.128169	5.571599	0.023004	0.9821
DTC*RT	-0.065697	0.096881	-0.678125	0.5147
DTC*TAT	-0.182857	1.865446	-0.098023	0.9241
DTE	0.194278	3.898195	0.049838	0.9613

PREDICTION OF FINANCIAL DISTRESS AMONG COMPANIES IN MALAYSIA

DTE ²	0.330237	1.152795	0.286467	0.7810
DTE*GPM	-12.51650	7.339896	-1.705269	0.1223
DTE*IT	0.071858	0.105633	0.680263	0.5135
DTE*QR	-0.418774	1.211570	-0.345646	0.7376
DTE*ROA	-11.67658	19.91135	-0.586429	0.5720
DTE*ROE	5.005668	8.537184	0.586337	0.5721
DTE*RT	0.047465	0.099928	0.474986	0.6461
DTE*TAT	0.896221	1.836010	0.488135	0.6371
GPM	-5.311393	3.564217	-1.490199	0.1704
GPM ²	6.044833	3.418699	1.768168	0.1108
GPM*IT	0.294377	0.147260	1.999026	0.0767
GPM*QR	0.397993	2.881445	0.138123	0.8932
GPM*ROA	5.246654	19.97329	0.262683	0.7987
GPM*ROE	-7.430850	5.468776	-1.358778	0.2073
GPM*RT	0.255524	0.206849	1.235314	0.2480
GPM*TAT	-7.329319	3.812175	-1.922608	0.0867
IT	0.135277	0.082176	1.646184	0.1341
IT ²	-0.001112	0.000444	-2.503978	0.0336
IT*QR	0.072795	0.043149	1.687074	0.1259
IT*ROA	-0.329892	0.837774	-0.393772	0.7029
IT*ROE	-0.063087	0.355808	-0.177306	0.8632
IT*RT	0.000107	0.002881	0.037009	0.9713
IT*TAT	-0.035981	0.035805	-1.004926	0.3412
QR	-0.619115	1.434137	-0.431699	0.6761
QR ²	0.211356	0.419888	0.503362	0.6268
QR*ROA	-17.23803	9.228359	-1.867940	0.0946
QR*ROE	8.547844	5.375997	1.590002	0.1463
QR*RT	0.109212	0.074914	1.457835	0.1789
QR*TAT	-0.409270	0.737931	-0.554618	0.5927
ROA	-5.774446	15.92939	-0.362503	0.7253
ROA ²	-1.394862	48.28376	-0.028889	0.9776

PREDICTION OF FINANCIAL DISTRESS AMONG COMPANIES IN MALAYSIA

ROA*ROE	-10.50966	33.47897	-0.313918	0.7607
ROA*RT	1.736963	0.910871	1.906927	0.0889
ROA*TAT	-9.623172	12.50227	-0.769714	0.4612
ROE	-2.173969	8.824063	-0.246368	0.8109
ROE^2	4.615075	5.453737	0.846223	0.4194
ROE*RT	-1.267575	0.557731	-2.272737	0.0491
ROE*TAT	7.380213	6.280571	1.175086	0.2701
RT	0.034059	0.097268	0.350155	0.7343
RT^2	0.000818	0.002196	0.372514	0.7181
RT*TAT	0.011194	0.050905	0.219901	0.8309
TAT	0.544552	1.377352	0.395361	0.7018
TAT^2	0.005860	0.546388	0.010725	0.9917
<hr/>				
R-squared	0.993823	Mean dependent var		0.138379
Adjusted R-squared	0.932050	S.D. dependent var		0.156783
S.E. of regression	0.040869	Akaike info criterion		-4.144830
Sum squared resid	0.015033	Schwarz criterion		-1.774126
Log likelihood	298.2415	Hannan-Quinn criter.		-3.185363
F-statistic	16.08831	Durbin-Watson stat		2.356961
Prob(F-statistic)	0.000057			

Table 4.3.2 (Heteroscedasticity test)

Assume the significance level is 1% ($\alpha = 0.01$).

1. H_0 : There is homoscedasticity.

H_1 : There is heteroscedasticity.

2. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .

3. P- value: 0.2340

4. Decision Making: Do not reject H_0 since the p-value (0.2340) is greater than α (0.01).

5. Conclusion: We have insufficient evidence to conclude that there is heteroscedasticity.

Assume the significance level is 5% ($\alpha = 0.05$).

1. H_0 : There is homoscedasticity.

H_1 : There is heteroscedasticity.

2. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .

3. P- value: 0.2340

4. Decision Making: Do not reject H_0 since the p-value (0.2340) is greater than α (0.05).

5. Conclusion: We have insufficient evidence to conclude that there is heteroscedasticity.

Assume the significance level is 10% ($\alpha = 0.10$).

1. H_0 : There is homoscedasticity.

H_1 : There is heteroscedasticity.

2. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .

3. P- value: 0.2340

4. Decision Making: Do not reject H_0 since the p-value (0.2340) is greater than α (0.10).

5. Conclusion: We have insufficient evidence to conclude that there is heteroscedasticity.

PREDICTION OF FINANCIAL DISTRESS AMONG COMPANIES IN MALAYSIA

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	45.95458	Prob. F(2,85)	0.0000
Obs*R-squared	51.95274	Prob. Chi-Square(2)	0.0000

Test Equation:

Dependent Variable: RESID

Method: Least Squares

Date: 02/10/17 Time: 09:33

Sample: 1 100

Included observations: 100

Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CASHR	0.049018	0.185241	0.264620	0.7919
CR	-0.087416	0.084283	-1.037174	0.3026
DR	-0.425573	0.295580	-1.439788	0.1536
DTC	0.071718	0.070249	1.020907	0.3102
DTE	0.015275	0.029617	0.515757	0.6074
GPM	-0.323643	0.158259	-2.045024	0.0439
IT	0.001115	0.004255	0.261942	0.7940
QR	0.065757	0.099404	0.661506	0.5101
ROA	0.919039	0.455099	2.019429	0.0466
ROE	0.053821	0.093732	0.574200	0.5673
RT	0.000440	0.006511	0.067536	0.9463
TAT	0.068412	0.082885	0.825375	0.4115
C	0.141598	0.138631	1.021400	0.3100
RESID(-1)	0.688297	0.104154	6.608452	0.0000
RESID(-2)	0.150897	0.111226	1.356668	0.1785
R-squared	0.519527	Mean dependent var		1.53E-16
Adjusted R-squared	0.440391	S.D. dependent var		0.373867
S.E. of regression	0.279679	Akaike info criterion		0.427132
Sum squared resid	6.648728	Schwarz criterion		0.817908
Log likelihood	-6.356625	Hannan-Quinn criter.		0.585286
F-statistic	6.564940	Durbin-Watson stat		1.779222
Prob(F-statistic)	0.000000			

Table 4.3.3 (Autocorrelation)

Breusch-Godfrey Serial Correlation LM Test:

H_0 : No higher order autocorrelation.

H_1 : There is higher order autocorrelation.

Level of significance, α : 0.10/0.05/0.01

Decision Rule: Reject H_0 when the P-value is less than α , otherwise do not reject H_0 .

P-value: 0.0000

Decision Making: Reject the H_0 since the p-value of 0.0000 is smaller than α , 0.10, 0.05 and 0.01.

Conclusion: There is sufficient evidence to conclude that there is higher order autocorrelation at significant level of 10%, 5% and 1%.

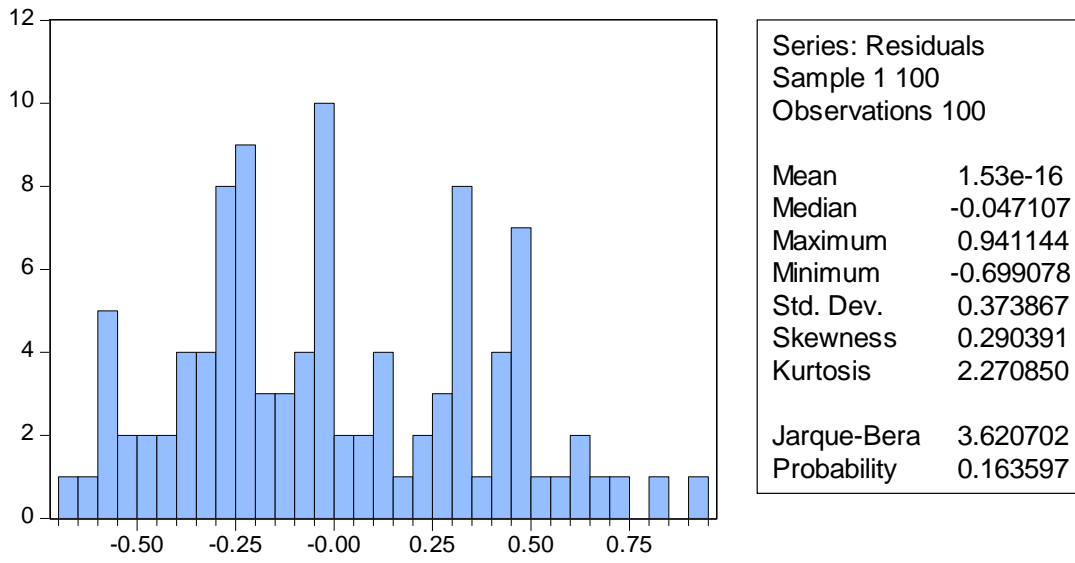


Table 4.3.4 (Normality Test)

Assume the significance level is 1% ($\alpha = 0.01$).

1. H_0 : The error term is normally distributed.

H_1 : The error term is not normally distributed.

2. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .

3. P- value: 0.163597

4. Decision Making: Do not reject H_0 since the p-value (0.163597) is greater than α (0.01).

5. Conclusion: We have sufficient evidence to conclude that the error term is normally distributed.

Assume the significance level is 5% ($\alpha = 0.05$).

1. H_0 : The error term is normally distributed.

H_1 : The error term is not normally distributed.

2. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .

3. P- value: 0.163597

4. Decision Making: Do not reject H_0 since the p-value (0.163597) is greater than α (0.05).

5. Conclusion: We have sufficient evidence to conclude that the error term is normally distributed.

Assume the significance level is 10% ($\alpha = 0.10$).

1. H_0 : The error term is normally distributed.

H_1 : The error term is not normally distributed.

2. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .

3. P- value: 0.163597

4. Decision Making: Do not reject H_0 since the p-value (0.163597) is greater than α (0.10).

5. Conclusion: We have sufficient evidence to conclude that the error term is normally distributed.

Goodness-of-Fit Test: Evaluation for Binary

Specification

Andrews and Hosmer-Lemeshow

Tests

Equation: UNTITLED

Date: 02/07/17 Time: 11:08

Grouping based upon predicted risk (randomize ties)

	Quantile of Risk		Dep=0		Dep=1		Total Obs	H-L Value
	Low	High	Actual	Expect	Actual	Expect		
1	7.E-07	0.0136	10	9.94126	0	0.05874	10	0.05909
2	0.0177	0.0499	9	9.65998	1	0.34002	10	1.32614
3	0.0518	0.1199	10	9.12360	0	0.87640	10	0.96059
4	0.1200	0.3172	7	7.83295	3	2.16705	10	0.40873
5	0.3283	0.4915	8	5.88308	2	4.11692	10	1.85025
6	0.4941	0.7203	4	4.38037	6	5.61963	10	0.05878
7	0.7481	0.8445	0	2.00358	10	7.99642	10	2.50559
8	0.8467	0.9459	2	1.02942	8	8.97058	10	1.02011
9	0.9494	0.9975	0	0.14303	10	9.85697	10	0.14510
10	0.9989	1.0000	0	0.00274	10	9.99726	10	0.00274
Total			50	50.0000	50	50.0000	100	8.33711
H-L Statistic			8.3371		Prob. Chi-Sq(8)		0.4013	
Andrews Statistic			37.9671		Prob. Chi-Sq(10)		0.0000	

Table 4.3.5 (Goodness of Fit)

Assume the significance level is 1% ($\alpha = 0.01$).

1. H_0 : Fit is sufficient.

H_1 : Fit is insufficient.

2. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .

3. P- value: 0.4013

4. Decision Making: Do not reject H_0 since the p-value (0.4013) is greater than α (0.01).

5. Conclusion: We have sufficient evidence to conclude that fit is sufficient.

Assume the significance level is 5% ($\alpha = 0.05$).

1. H_0 : Fit is sufficient.

H_1 : Fit is insufficient.

2. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .

3. P- value: 0.4013

4. Decision Making: Do not reject H_0 since the p-value (0.4013) is less than α (0.05).

5. Conclusion: We have sufficient evidence to conclude that fit is sufficient.

Assume the significance level is 10% ($\alpha = 0.10$).

1. H_0 : Fit is sufficient.

H_1 : Fit is insufficient.

2. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .

3. P- value: 0.4013

4. Decision Making: Reject H_0 since the p-value (0.4013) is less than α (0.10).

5. Conclusion: We have sufficient evidence to conclude that fit is sufficient.

PREDICTION OF FINANCIAL DISTRESS AMONG COMPANIES IN MALAYSIA

Ramsey RESET Test:

F-statistic	4.896716	Prob. F(3,84)	0.0035
Log likelihood ratio	16.11683	Prob. Chi-Square(3)	0.0011

Test Equation:

Dependent Variable: FINDIS

Method: Least Squares

Date: 02/10/17 Time: 09:31

Sample: 1 100

Included observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CASHR	0.250919	0.279014	0.899308	0.3711
CR	0.083667	0.261136	0.320396	0.7495
DR	-0.011124	0.583048	-0.019079	0.9848
DTC	0.024864	0.187663	0.132492	0.8949
DTE	0.012753	0.041896	0.304394	0.7616
GPM	0.286704	0.286176	1.001846	0.3193
IT	-8.01E-05	0.006021	-0.013308	0.9894
QR	-0.085794	0.261744	-0.327777	0.7439
ROA	-1.172706	1.855528	-0.632006	0.5291
ROE	0.085057	0.163540	0.520099	0.6044
RT	0.004979	0.010223	0.487031	0.6275
TAT	-0.059939	0.181208	-0.330777	0.7416
C	-0.110621	0.222524	-0.497119	0.6204
FITTED^2	2.107042	0.567274	3.714331	0.0004
FITTED^3	0.439566	1.437696	0.305743	0.7606
FITTED^4	-1.549835	1.137784	-1.362152	0.1768
R-squared	0.528876	Mean dependent var		0.500000

Adjusted R-squared	0.444746	S.D. dependent var	0.502519
S.E. of regression	0.374454	Akaike info criterion	1.018949
Sum squared resid	11.77811	Schwarz criterion	1.435777
Log likelihood	-34.94747	Hannan-Quinn criter.	1.187647
F-statistic	6.286461	Durbin-Watson stat	0.698513
Prob(F-statistic)	0.000000		

Table 4.3.6 (a) (Model Specification – Original Model)

Assume the significance level is 1% ($\alpha = 0.01$).

1. H_0 : Model specification is correct.

H_1 : Model specification is incorrect.

2. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .

3. P- value: 0.0035

4. Decision Making: Reject H_0 since the p-value (0.0035) is less than α (0.01).

5. Conclusion: We have sufficient evidence to conclude that the model specification is incorrect.

Assume the significance level is 5% ($\alpha = 0.05$).

1. H_0 : Model specification is correct.

H_1 : Model specification is incorrect.

2. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .

3. P- value: 0.0035

4. Decision Making: Reject H_0 since the p-value (0.0035) is less than α (0.05).

5. Conclusion: We have sufficient evidence to conclude that the model specification is incorrect.

Assume the significance level is 10% ($\alpha = 0.10$).

1. H_0 : Model specification is correct.

H_1 : Model specification is incorrect.

2. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .

3. P- value: 0.0035

4. Decision Making: Reject H_0 since the p-value (0.0035) is less than α (0.10).

5. Conclusion: We have sufficient evidence to conclude that the model specification is incorrect.

PREDICTION OF FINANCIAL DISTRESS AMONG COMPANIES IN MALAYSIA

Ramsey RESET Test:

F-statistic	0.183370	Prob. F(1,92)	0.6695
Log likelihood ratio	0.199117	Prob. Chi-Square(1)	0.6554

Test Equation:

Dependent Variable: FINDIS

Method: Least Squares

Date: 03/30/17 Time: 11:34

Sample: 1 100

Included observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CR	0.320783	0.166683	1.924501	0.0574
DR	0.441505	0.315111	1.401107	0.1645
DTC	-0.113246	0.051202	-2.211757	0.0295
QR	-0.345166	0.170292	-2.026901	0.0456
ROA	-2.015950	0.719538	-2.801730	0.0062
TAT	0.145370	0.100135	1.451734	0.1500
C	0.135498	0.168319	0.805005	0.4229
FITTED^2	0.104998	0.245198	0.428217	0.6695
R-squared	0.408890	Mean dependent var		0.500000
Adjusted R-squared	0.363914	S.D. dependent var		0.502519
S.E. of regression	0.400784	Akaike info criterion		1.085830
Sum squared resid	14.77775	Schwarz criterion		1.294243
Log likelihood	-46.29148	Hannan-Quinn criter.		1.170178
F-statistic	9.091338	Durbin-Watson stat		0.568594
Prob(F-statistic)	0.000000			

Table 4.3.6 (b) (Model Specification – Stepwise Approach)

Assume the significance level is 1% ($\alpha = 0.01$).

1. H_0 : Model specification is correct.
 H_1 : Model specification is incorrect.
2. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .
3. P- value: 0.6554
4. Decision Making: Reject H_0 since the p-value (0.6554) is greater than α (0.01).
5. Conclusion: We have sufficient evidence to conclude that the model specification is correct.

Assume the significance level is 5% ($\alpha = 0.05$).

1. H_0 : Model specification is correct.
 H_1 : Model specification is incorrect.
2. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .
3. P- value: 0.6554
4. Decision Making: Reject H_0 since the p-value (0.6554) is greater than α (0.05).
5. Conclusion: We have sufficient evidence to conclude that the model specification is correct.

Assume the significance level is 10% ($\alpha = 0.10$).

1. H_0 : Model specification is correct.
 H_1 : Model specification is incorrect.
2. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .
3. P- value: 0.6554
4. Decision Making: Reject H_0 since the p-value (0.6554) is greater than α (0.10).
5. Conclusion: We have sufficient evidence to conclude that the model specification is correct.

PREDICTION OF FINANCIAL DISTRESS AMONG COMPANIES IN MALAYSIA

Dependent Variable: FINDIS

Method: ML - Binary Logit (Quadratic hill climbing)

Date: 02/10/17 Time: 09:37

Sample: 1 100

Included observations: 100

Convergence achieved after 9 iterations

Covariance matrix computed using second derivatives

Variable	Coefficient	Std. Error	z-Statistic	Prob.
CASHR	6.780748	2.686342	2.524157	0.0116
CR	4.127684	1.665674	2.478087	0.0132
DR	0.297763	5.065319	0.058785	0.9531
DTC	-4.444538	3.243456	-1.370309	0.1706
DTE	2.769564	3.465746	0.799125	0.4242
GPM	9.646651	5.466710	1.764617	0.0776
IT	-0.005545	0.054792	-0.101196	0.9194
QR	-5.634443	2.165418	-2.602012	0.0093
ROA	2.178106	17.64983	0.123407	0.9018
ROE	-20.37336	10.47095	-1.945704	0.0517
RT	-0.106474	0.082073	-1.297312	0.1945
TAT	2.283978	1.189612	1.919936	0.0549
C	-3.040086	1.975578	-1.538834	0.1238
McFadden R-squared	0.534496	Mean dependent var		0.500000
S.D. dependent var	0.502519	S.E. of regression		0.336851
Akaike info criterion	0.905326	Sum squared resid		9.871787
Schwarz criterion	1.243998	Log likelihood		-32.26630
Hannan-Quinn criter.	1.042393	Restr. log likelihood		-69.31472
LR statistic	74.09683	Avg. log likelihood		-0.322663
Prob(LR statistic)	0.000000			
Obs with Dep=0	50	Total obs		100

Obs with Dep=1 50

Table 4.4 (Logit Model)

Individual t-test

X_1 = Cash Ratio

1. H_0 : There is no significant relationship between cash ratio and financial distress.
 H_1 : There is significant relationship between cash ratio and financial distress.
2. Significant Value: 0.10/ 0.05/ 0.01
3. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .
4. P- value: 0.0116
5. Decision Making: Reject H_0 since the p-value (0.0116) is less than α (0.10/0.05) but do not reject when $\alpha = 0.01$.
6. Conclusion: There is sufficient evidence to conclude that there is significant relationship between cash ratio and financial distress at significant level of 0.10 and 0.05.

X_2 = Current Ratio

1. H_0 : There is no significant relationship between current ratio and financial distress.
 H_1 : There is significant relationship between current ratio and financial distress.
2. Significant Value: 0.10/ 0.05/ 0.01
3. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .
4. P- value: 0.0132
5. Decision Making: Reject H_0 since the p-value (0.0132) is less than α (0.10/0.05), but do not reject when $\alpha = 0.01$.
6. Conclusion: There is sufficient evidence to conclude that there is significant relationship between current ratio and financial distress at significant level of 0.10 and 0.05.

X_3 = Debt Ratio

1. H_0 : There is no significant relationship between debt ratio and financial distress.
 H_1 : There is significant relationship between debt ratio and financial distress.
2. Significant Value: 0.10/ 0.05/ 0.01
3. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .
4. P- value: 0.9531
5. Decision Making: Do not reject H_0 since the p-value (0.9531) is greater than 0.10/0.05/0.01.
6. Conclusion: There is insufficient evidence to conclude that there is significant relationship between debt ratio and financial distress when the significant level is at 0.10, 0.05 and 0.01.

X_4 = Debt to Capital Ratio

1. H_0 : There is no significant relationship between debt to capital ratio and financial distress.
 H_1 : There is significant relationship between debt to capital ratio and financial distress.
2. Significant Value: 0.10/ 0.05/ 0.01
3. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .
4. P- value: 0.1706
5. Decision Making: Do not reject H_0 since the p-value (0.1706) is greater than α (0.10/0.05/0.01).
6. Conclusion: There is insufficient evidence to conclude that there is significant relationship between debt to capital ratio and financial distress when the significant level at 0.10, 0.05 and 0.01.

X_5 = Debt to Equity Ratio

1. H_0 : There is no significant relationship between debt to equity ratio and financial distress.
 H_1 : There is significant relationship between debt to equity ratio and financial distress.
2. Significant Value: 0.10/ 0.05/ 0.01
3. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .
4. P- value: 0.4242
5. Decision Making: Do not reject H_0 since the p-value (0.4242) is greater than α (0.10/0.05/0.01).
6. Conclusion: There is insufficient evidence to conclude that there is significant relationship between debt to equity ratio and financial distress when the significant level at 0.10, 0.05 and 0.01.

X_6 = Gross Profit Margin

1. H_0 : There is no significant relationship between gross profit margin and financial distress.
 H_1 : There is significant relationship between gross profit margin and financial distress.
2. Significant Value: 0.10/ 0.05/ 0.01
3. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .
4. P- value: 0.0776
5. Decision Making: Reject H_0 since the p-value (0.0776) is less than $\alpha = 0.10$, but do not reject when $\alpha = 0.05$ and 0.01.
6. Conclusion: There is sufficient evidence to conclude that there is significant relationship between gross profit margin and financial distress when the significant level at 0.10.

X_7 = Inventory Turnover

1. H_0 : There is no significant relationship between Inventory turnover and financial distress.
 H_1 : There is significant relationship between Inventory turnover and financial distress.
2. Significant Value: 0.10/ 0.05/ 0.01
3. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .
4. P- value: 0.9194
5. Decision Making: Do not reject H_0 since the p-value (0.9194) is greater than α 0.10, 0.05 and 0.01.
6. Conclusion: There is insufficient evidence to conclude that there is significant relationship between Inventory turnover and financial distress when the significant level at 0.10, 0.05 and 0.01.

X_8 = Quick Ratio

1. H_0 : There is no significant relationship between Quick Ratio and financial distress.
 H_1 : There is significant relationship between Quick Ratio and financial distress.
2. Significant Value: 0.10/ 0.05/ 0.01
3. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .
4. P- value: 0.0093
5. Decision Making: Reject H_0 since the p-value (0.0105) is less than 0.10, 0.05 and 0.01.
6. Conclusion: There is sufficient evidence to conclude that there is significant relationship between quick ratio and financial distress when the significant level at 0.10, 0.05 and 0.01.

X_9 = Return on Asset

1. H_0 : There is no significant relationship between Return on Asset and financial distress.
 H_1 : There is significant relationship between Return on Asset and financial distress.
2. Significant Value: 0.10/ 0.05/ 0.01
3. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .
4. P- value: 0.9018
5. Decision Making: Do not reject H_0 since the p-value (0.9018) is greater than 0.10, 0.05 and 0.01.
6. Conclusion: There is insufficient evidence to conclude that there is significant relationship between Return on Asset and financial distress when the significant level at 0.10, 0.05 and 0.01.

X_{10} = Return on Equity

1. H_0 : There is no significant relationship between Return on Equity and financial distress.
 H_1 : There is significant relationship between Return on Equity and financial distress.
2. Significant Value: 0.10/ 0.05/ 0.01
3. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .
4. P- value: 0.0517
5. Decision Making: Reject H_0 since the p-value (0.0517) is less than 0.10, but do not reject when $\alpha = 0.05$ and 0.01.
6. Conclusion: There is sufficient evidence to conclude that there is significant relationship between Return on Equity and financial distress when the significant level at 0.10.

X_{11} = Receivable Turnover

1. H_0 : There is no significant relationship between Receivable Turnover and financial distress.
 H_1 : There is significant relationship between Receivable Turnover and financial distress.
2. Significant Value: 0.10/ 0.05/ 0.01
3. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .
4. P- value: 0.1945
5. Decision Making: Do not reject H_0 since the p-value (0.1945) is greater than 0.10, 0.05 and 0.01.
6. Conclusion: There is insufficient evidence to conclude that there is significant relationship between Receivable Turnover and financial distress when the significant level at 0.10, 0.05 and 0.01.

X_{12} = Total Asset Turnover

1. H_0 : There is no significant relationship between Total Asset Turnover and financial distress.
 H_1 : There is significant relationship between Total Asset Turnover and financial distress.
2. Significant Value: 0.10/ 0.05/ 0.01
3. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .
4. P- value: 0.0549
5. Decision Making: Reject H_0 since the p-value (0.0549) is less than 0.10, but do not reject since P-value is greater than 0.05 and 0.01.
6. Conclusion: There is sufficient evidence to conclude that there is significant relationship between Total Asset Turnover and financial distress when the significant level at 0.10, but insufficient evidence when significant level at 0.05 and 0.01.

F Test

1. H_0 : The Logit model is not significant
 H_1 : The Logit model is significant
2. Significant Value: 0.10/ 0.05/ 0.01
3. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .
4. P- value: 0.000
5. Decision Making: Reject H_0 since the p-value (0.000) is less than 0.10, 0.05 and 0.01
6. Conclusion: There is sufficient evidence to conclude that the Logit model is significant at the significant level of 0.10, 0.05 and 0.01

Dependent Variable: FINDIS
 Method: ML - Binary Logit (Quadratic hill climbing)
 Date: 03/29/17 Time: 21:52
 Sample: 2006 2015
 Included observations: 100
 Convergence achieved after 6 iterations
 Covariance matrix computed using second derivatives

Variable	Coefficient	Std. Error	z-Statistic	Prob.
CASHR	5.560802	1.902222	2.923319	0.0035
CR	3.516270	1.376227	2.555007	0.0106
GPM	9.914357	5.348209	1.853771	0.0638
QR	-4.373587	1.741032	-2.512066	0.0120
ROE	-20.85785	5.550716	-3.757687	0.0002
TAT	1.486220	0.774562	1.918787	0.0550
C	-3.711782	1.496655	-2.480052	0.0131
McFadden R-squared	0.496455	Mean dependent var		0.500000
S.D. dependent var	0.502519	S.E. of regression		0.332709
Akaike info criterion	0.838061	Sum squared resid		10.29466
Schwarz criterion	1.020423	Log likelihood		-34.90306
Hannan-Quinn criter.	0.911866	Deviance		69.80612
Restr. deviance	138.6294	Restr. log likelihood		-69.31472
LR statistic	68.82332	Avg. log likelihood		-0.349031
Prob(LR statistic)	0.000000			

Table 4.4.3 (Logit Model for Stepwise Approach)

Individual t-test

X_1 = Cash Ratio

1. H_0 : There is no significant relationship between cash ratio and financial distress.
 H_1 : There is significant relationship between cash ratio and financial distress.
2. Significant Value: 0.10/ 0.05/ 0.01
3. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .
4. P- value: 0.0035
5. Decision Making: Reject H_0 since the p-value (0.0035) is less than α (0.10/0.05/0.01).
6. Conclusion: There is sufficient evidence to conclude that there is significant relationship between cash ratio and financial distress at significant level of 0.10 / 0.05 and 0.01.

X_2 = Current Ratio

1. H_0 : There is no significant relationship between current ratio and financial distress.
 H_1 : There is significant relationship between current ratio and financial distress.
2. Significant Value: 0.10/ 0.05/ 0.01
3. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .
4. P- value: 0.0106
5. Decision Making: Reject H_0 since the p-value (0.0106) is less than α (0.10/0.05), but do not reject H_0 when $\alpha=0.01$.
6. Conclusion: There is sufficient evidence to conclude that there is significant relationship between current ratio and financial distress at significant level of 0.10 / 0.05.

X_3 = Gross Profit Margin

1. H_0 : There is no significant relationship between gross profit margin and financial distress.
 H_1 : There is significant relationship between gross profit margin and financial distress.
2. Significant Value: 0.10/ 0.05/ 0.01
3. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .
4. P- value: 0.0638
5. Decision Making: Reject H_0 since the p-value (0.0638) is less than α (0.10), but do not reject H_0 when α (0.05/0.01).
6. Conclusion: There is sufficient evidence to conclude that there is significant relationship between gross profit margin and financial distress at significant level of 0.10.

X_4 = Quick Ratio

1. H_0 : There is no significant relationship between quick ratio and financial distress.
 H_1 : There is significant relationship between quick ratio and financial distress.
2. Significant Value: 0.10/ 0.05/ 0.01
3. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .
4. P- value: 0.0120
5. Decision Making: Reject H_0 since the p-value (0.0120) is less than α (0.10/0.05), but do not reject H_0 when α (0.01).
6. Conclusion: There is sufficient evidence to conclude that there is significant relationship between quick ratio and financial distress at significant level of 0.10 and 0.05.

X_5 = Return on Equity

1. H_0 : There is no significant relationship between return on equity and financial distress.
 H_1 : There is significant relationship between return on equity and financial distress.
2. Significant Value: 0.10/ 0.05/ 0.01
3. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .
4. P- value: 0.0002
5. Decision Making: Reject H_0 since the p-value (0.0002) is less than α (0.10/0.05/0.01).
6. Conclusion: There is sufficient evidence to conclude that there is significant relationship between return on equity and financial distress at significant level of 0.10/0.05/0.01.

X_6 = Total Asset turnover

1. H_0 : There is no significant relationship between total asset turnover and financial distress.
 H_1 : There is significant relationship between total asset turnover and financial distress.
2. Significant Value: 0.10/ 0.05/ 0.01
3. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .
4. P- value: 0.0550
5. Decision Making: Reject H_0 since the p-value (0.0550) is less than α (0.10), but do not reject H_0 when α (0.05/0.01).
6. Conclusion: There is sufficient evidence to conclude that there is significant relationship between total asset turnover and financial distress at significant level of 0.10.

F Test

1. H_0 : The Logit model is not significant
 H_1 : The Logit model is significant
2. Significant Value: 0.10/ 0.05/ 0.01
3. Decision Rule: Reject H_0 if the p-value is less than α . Otherwise, do not reject H_0 .
4. P- value: 0.000
5. Decision Making: Reject H_0 since the p-value (0.000) is less than 0.10, 0.05 and 0.01
6. Conclusion: There is sufficient evidence to conclude that the Logit model is significant at the significant level of 0.10, 0.05 and 0.01.