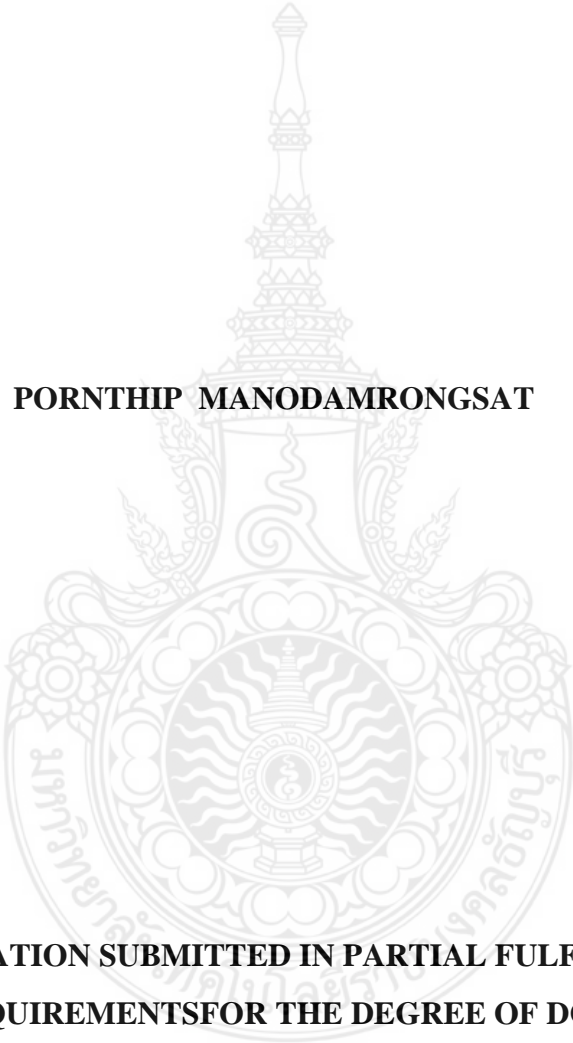


**EARLY WARNING SIGNS OF PROBLEM FIRMS
AND THEIR TURNAROUND STRATEGIES**


PORNTHIP MANODAMRONGSAT



**A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF
PHILOSOPHY PROGRAM IN BUSINESS ADMINISTRATION
FACULTY OF BUSINESS ADMINISTRATION
RAJAMANGALA UNIVERSITY OF TECHNOLOGY THANYABURI
ACADEMIC YEAR 2019
COPYRIGHT OF RAJAMANGALA UNIVERSITY
OF TECHNOLOGY THANYABURI**

**EARLY WARNING SIGNS OF PROBLEM FIRMS
AND THEIR TURNAROUND STRATEGIES**


PORNTHIP MANODAMRONGSAT




**A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF
PHILOSOPHY PROGRAM IN BUSINESS ADMINISTRATION
FACULTY OF BUSINESS ADMINISTRATION
RAJAMANGALA UNIVERSITY OF TECHNOLOGY THANYABURI
ACADEMIC YEAR 2019
COPYRIGHT OF RAJAMANGALA UNIVERSITY
OF TECHNOLOGY THANYABURI**


Dissertation Title Early Warning Signs of Problem Firms and Their
Turnaround Strategies
Name – Surname Miss Pornthip Manodamrongsat
Program Business Administration
Dissertation Advisor Assistant Professor Supa Tongkong, Ph.D.
Dissertation Co-advisor Assistant Professor Wachira Boonyanet, Ph.D.
Academic Year 2019


DISSERTATION COMMITTEE


..... Chairman
(Associate Professor Kanibhatti Nitirojntanad, D.B.A.)

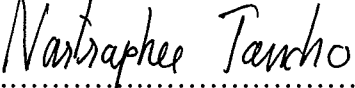

..... Committee
(Assistant Professor Kusuma Dampitakse, Ph.D.)


..... Committee
(Mr. Krisada Chienwattanasook, D.B.A.)


..... Committee
(Assistant Professor Wachira Boonyanet, Ph.D.)


..... Committee
(Assistant Professor Supa Tongkong, Ph.D.)

Approved by the Faculty of Business Administration Rajamangala University
of Technology Thanyaburi in Partial Fulfillment of the Requirements for the Degree of
Doctor of Philosophy


..... Dean of Faculty of Business Administration
(Assistant Professor Nartraphee Tancho, Ph.D.)

March 31, 2020

Dissertation Title	Early Warning Signs of Problem Firms and Their Turnaround Strategies
Name – Surname	Miss Pornthip Manodamrongsat
Program	Business Administration
Dissertation Advisor	Assistant Professor Supa Tongkong, Ph.D.
Dissertation Co-advisor	Assistant Professor Wachira Boonyanet, Ph.D.
Academic Year	2019

ABSTRACT

This research aimed to identify factors considered as pre-warning signs of problem firms in the Stock Exchange of Thailand (SET), and to explore successful turnaround strategies of problem firms.

The study employed a mixed-methods research methodology, including both quantitative and qualitative research. Potential factors used in this study were adopted from both previous studies and this present study, which covered two main areas, namely corporate governance mechanisms and financial ratios. The data collection used a matched pairs sample totalling 220 problem and non-problem firms during 2013-2018. For the qualitative research including documentary research, in-depth interview, and focus group interview were used as data collection tools. Statistical method for data analysis employed binary logistic regression to analyze quantitative data, while qualitative research adopted content analysis and used NVivo, which is designed for analyzing the qualitative data.

The quantitative research showed that at a significance level of 0.05, the financial ratios including current ratio, debt ratio, and return on assets could predict problem firms. However, corporate governance mechanisms were less likely to predict problem firms. The prediction accuracy rate of the 3-year prediction model equals 74.5%, 75.9% in the 2-year, and 78.2% in the 1-year before being marked as problem firms. Besides, the qualitative research suggested that the successful turnaround strategies could be prioritized investments in other businesses, finding a new capital group, negotiating with creditors for debt-to-equity conversion scheme, and reducing costs and expenses. The study results benefit regulators, investors, creditors, the board of directors, and executives in the area of early warning signs of financial distress, while successful turnaround strategies are recommended for problem firms.

Keywords: early warning signs, financial ratios, corporate governance, turnaround strategy, SET

Acknowledgements

First of all, I would like to express my sincere gratitude to Assistant Professor Dr. Supa Tongkong and co-advisor Assistant Professor Dr. Wachira Boonyanet for the knowledge, attention, encouragement, continuous support throughout the duration of my Ph.D.

In addition I would like to thank the thesis committee members: Associate Professor Dr. Kanibhatti Nitirojntanad, Assistant Professor Dr. Kusuma Dampitakse, and Dr. Krisada Chienwattanasook for ideas and methods throughout the thesis process.

Finally, I would like to thank Mr.Paisan Dittason for providing information, assistance, and convenience the duration of my Ph.D. study and also to thank Mr.Phoonsit Kaewphiphitapan for the convenience of using a computer for exams.

Pornthip Manodamrongsat

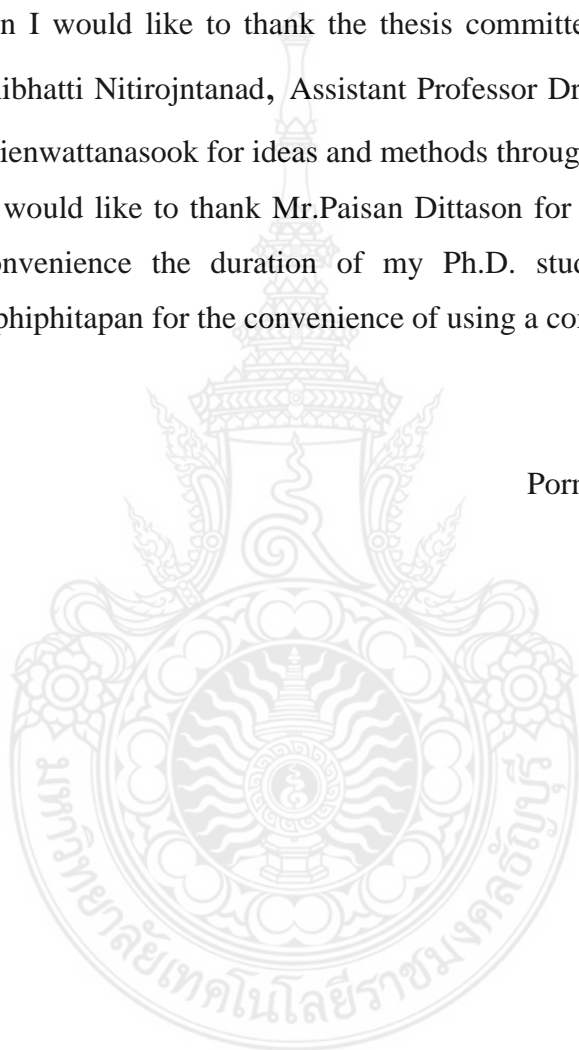


Table of Contents

	Page
Abstract.....	(3)
Declaration.....	(4)
Acknowledgements.....	(5)
Table of contents.....	(6)
List of Tables.....	(8)
List of Figures.....	(10)
CHAPTER 1 INTRODUCTION	11
1.1 Background and Statement of the Problem.....	11
1.2 Purpose of the Study.....	13
1.3 Research Questions and Hypotheses.....	14
1.4 Definitions of Terms.....	14
1.5 Scope of the Study.....	15
CHAPTER 2 REVIEW OF THE LITERATURE.....	17
2.1 Definition of Problem Firms.....	17
2.2 Analysis of Factors Determining Failure or Failure Forecasts....	20
2.3 Theories and Models Used for Research.....	26
2.4 Corporate Governance: Application as a Forecasting Tool Business Failure.....	30
2.5 Predictive Value of Accounting Information.....	51
2.6 Implementation of Accounting Information and Its Usefulness...	54
2.7 Concluding Remarks.....	61
2.8 Financial Failure Forecasting.....	62
2.9 Turnaround Strategies.....	77
CHAPTER 3 RESEARCH METHODOLOGY.....	98
3.1 Research Design.....	98
3.2 Population and Sampling.....	104
3.3 Statistic Methods Used in Present Study.....	104
3.4 Reliability and Validity.....	107

Table of Contents (Cont.)

	Page
CHAPTER 4 RESEARCH RESULTS.....	109
4.1 Data Preparation.....	109
4.2 Descriptive Statistics.....	110
4.3 Data Testing as Required by Logistic Regression.....	116
4.4 Logistic Regression Results.....	120
4.5 Model Accuracy.....	123
4.6 Qualitative Results.....	126
4.7 Summary Results of Early Warning Signs of Problem Firms.....	142
4.8 Summary Results of Successful Turnaround Strategies.....	144
CHAPTER 5 CONCLUSION AND RECOMMENDATION.....	146
5.1 Present Study Objectives and Research Design.....	146
5.2 Summary of the Significant Findings.....	148
5.3 Discussion and Conclusion of the Findings.....	149
5.4 Implications.....	152
5.5 Contributions of the Study.....	154
5.6 Limitations of the Study.....	154
5.7 Suggestions for Future Research.....	155
Bibliography.....	157
Biography.....	185

List of Tables

		Page
Table 2.1	Definitions of Problem Firms Used in the Past Studies.....	18
Table 2.2	Causes of Marking and Lifting Marks on listed companies’ Securities to Remind Investors.....	21
Table 2.3	Summary of Corporate Governance Used in Failure Prediction Studies.....	37
Table 2.4	Prediction of the Mean Value of Failed Firms and Non-Failed Firms.....	57
Table 2.5	Comparison of Accounting Methods of Going Concern Basis and Liquidation Basis	59
Table 2.6	Summary of Ratios Used in Failure Prediction Studies.....	69
Table 2.7	Financial Ratios Used in the Study of Failure Prediction.....	72
Table 2.8	Summary of Methods in Examination of Financial Failure.....	76
Table 3.1	Measurement Variables.....	102
Table 3.2	Format of Precision Test Results.....	107
Table 4.1	Descriptive Statistics for Corporate Governance.....	110
Table 4.2	Descriptive Statistics for Financial Ratios.....	114
Table 4.3	Correlation of the Variables of Corporate Governance and Financial Ratios in 3-year.....	116
Table 4.4	Correlation of the Variables of Corporate Governance and Financial Ratios in 2-year.....	117
Table 4.5	Correlation of the Variables of Corporate Governance and Financial Ratios in 1-year.....	118
Table 4.6	Omnibus Tests of Model Coefficients.....	119
Table 4.7	Model Summary and the R-square Tests.....	119
Table 4.8	Variables in the Equation of Model 1.....	121
Table 4.9	Variables in the Equation of Model 2.....	122
Table 4.10	Classification Table of Model 1.....	123
Table 4.11	Classification Table of Model 2.....	124
Table 4.12	Summary of Data Analysis from In-depth Interviews.....	127

List of Tables (Cont.)

	Page
Table 4.13 Summary of Data Analysis from Focus Group.....	134
Table 4.14 Summary of Data Analysis from Documentary Research.....	140
Table 4.15 Summarize the Results of the Early Warning Signs from Quantitative and Qualitative Research.....	143
Table 4.16 Summarize the Results of Turnaround Strategies from Qualitative Research.....	145



List of Figures

	Page
Figure 3.1 Conceptual Framework.....	99



CHAPTER 1

INTRODUCTION

1.1 Background and Statement of the Problem

In the capitalist economy, capital market plays an important role in the overall economy of the country. Generally, it can be defined as a source of money derived from debts that has been over a year or equity-backed securities that can be purchased and sold. The capital market is divided into 2 types including primary and secondary capital market. The primary capital market refers to the new security is issued and sold between the specific institutional investors and issuing companies. The money is used for various purposes such as business expansion. Meanwhile, the secondary capital market refers to issued securities that are traded between investors and traders, which the issuing companies will not take a part in this point. In other word, the secondary market is set up to act as a source of liquidity for securities trading. The largest market in Thailand is the Stock Exchange of Thailand (SET).

The Stock Exchange of Thailand is an important institution, which acts as a center for gathering the fund and securities and trading them between the investors and fund seekers such as public sectors and governmental agencies. It also has a duty to oversee listed companies that are significant to the country's economic and social development to operate and trade the fund and securities efficiently, flexibly, and equitably.

The companies that demand to be listed in the Stock Exchange of Thailand are required to have good business performance, good financial liquidity, no conflicts of interest according to SET regulation, good corporate management, and accountability in any terms. Nevertheless, some listed companies facing the hindrances from the highly competitive economic environment, political effects of free trade, globalization and other problematic phenomena, which could lead them to unproductive performance, can be delisted from the SET, As a result, the retail investors, institutional trade, payers, financial institutions as well as relevant stakeholders can be directly and indirectly affected.

In discussion, the number of failed companies to be continuously listed in the SET can be an important indicator for the health of the national economy because they

illustrate the picture of the companies' inability to continue operating the businesses, which can be affected by various economic, political, and social factors. In consequence, this situation can threaten the existing companies to fear of encountering the economic cost in terms of loss, taxes, and works (Ahn, Cho, & Kim, 2000). In addition, the companies' failure can also have a negative effect on all involved parties including investors, administrators, auditors, and government policymakers (Mckee, 2000).

According to the possibility to the listed companies' crisis, it is necessary to enable all stakeholders to be aware of precautionary measures by knowing more about the information measuring and warning signs related to the crisis causes in order to identify the problem prevention and solution and create effective business management. In order to access to proper problem prevention and solution, there are various warning signs, which they are significant and acceptable by plenty of academicians.

The first is the financial statement. This is one of warning signs that reflects the financial position of the company. The financial statement can show the status of the companies, especially when they are close to failures, for instance, they cannot pay their debts. This illustrates the signal that the business must prepare for business rehabilitation or dissolution. For listed companies, they may be temporarily suspended or finally delisting. Investors or stakeholders should be fully aware of the company's financial information before investing in these companies in order to avoid the related possible risks and find the right solution.

The second is the trading signs in the SET. The trading sign is another warning sign that can reflect the crisis of the company status. In order to ensure fair and efficient trading, SET uses special supervisory signs to regulate trading and inform investors of special situations and conditions that may affect the securities of a listed company. There are two signs being generally used in SET. The first sign is called as the SP (Trading Suspension), which it is a sign that the SET adopts it to temporarily suspend the inefficient companies. The other sign is called as the NC (Non-Compliance) referring to discontinuity of the listed company.

Previous researches such as McKee and Lensberg (2002), Ryu and Yue (2005), Shin, Lee, and Kim (2005) had investigated the pre-warning signals as financial failure predictors by using the financial analysis method. Because financial analysis uses

historical accounting data to help predict the direction and future of the business, so many researches use financial statements to analyze the financial ratios in conjunction with statistical techniques to model financial failure predictions.

This research has further explored the strategy improving a failed financial company to become a successful company again. However, there are also very few studies on problematic firms that are the samples from the listed companies in the Stock Exchange of Thailand's trading signs.

Therefore, this research aimed to investigate the early warning signs of the problematic firms listed in the SET and their turnaround strategies. The study result can be used to alarm the companies about the crisis and explore the related turnaround strategies for them. In this study, the researcher employed the financial ratios, which they can reflect financial status, business growth, risk and return on investment from the past and present to help predict the future situations. Moreover, the researcher used the trading signs from the SET criteria to supervise the traders and investors about security trading and special circumstances and conditions that may affect the securities. Indeed, the SET had publicly disclosed information on listed companies. The people or entities can access the information quickly and accurately.

In addition, this research also further studied the corporate governance because the corporate governance is a system representing the companies' governance and management. The concept of corporate governance separates the control and ownership in the company (Oman Khanlen & Taiwo, 2013) to prevent organizational failure and unethical business practices (Isaac, 2014). The integration of corporate governance can increase investor's confidence in the economy (Nworji, Adebayo, & David, 2011). Therefore, finding from many case studies perhaps help increase the profits and prevent the future business failures.

1.2 Purpose of the Study

The purpose of the study was (a) to identify the early warning signs from corporate governance and financial ratios of problematic companies that prohibit or warn the investors in the Stock Exchange of Thailand (SET), and (b) to find the strategies that can turn problematic firms to be successful listed companies.

1.3 Research Questions and Hypotheses

The research questions for this study are:

1. What are the early warning signs from corporate governance and financial ratios of problematic companies that prohibit or warn the investors in the Stock Exchange of Thailand (SET)?

This research created a predictive model, which the problem firms' early warning signs with a binary logistic regression analysis technique can identify the effect of independent variables on dependent variable.

There are two hypotheses, which can be described below:

H₁: Early warning signs from corporate governance can classify firms into problem and non-problem.

H₂: Early warning signs from financial ratios can classify firms into problem and non-problem.

2. What are turnaround strategies subsidizing the problematic firms to become successful listed companies?

This research investigated the factors that problematic firm was used to mark NC and removed from the SET. The qualitative research is used to study the turnaround strategies of problem firms.

1.4 Definitions of Terms

Problematic firms: It refers to the listed companies in the Stock Exchange of Thailand that have been marked with C, NC, SP, and NP.

Non-problem firms: It refers to the listed companies that are not marked by the Stock Exchange of Thailand, compared to the same industry, which total assets and revenues are closed to the companies marked with C, NC, SP, and NP.

C (Caution): It refers to the company encounters negative situations affecting its financial position and business operations.

NC (Non-Compliance): It refers to the listed securities of the company may be delisted from the Stock Exchange of Thailand.

SP (Trading Suspension): It refers to the company is temporarily suspended from trading. The SP sign is posted on the securities until the listed company is able to manage the any existing causes. Each period is longer than one trading session.

NP (Notice Pending): It refers to the company has information that must be reported and the Stock Exchange of Thailand is pending information from the company.

Corporate Governance: It is a system based on the governance and management of the company (Rehman & Mangla, 2012) and is a mechanism for controlling the relationship between agent and principal by limiting and managing potential conflicts between management and shareholders (Guo, Smallman, & Radford, 2013).

Liquidity ratios: It is a ratio that represents the agility of the business to pay the debt when it is due and pay the operating expenses.

Gearing ratios: It refers to the financial ratio that measures the risk of the entity from the external financing (liabilities) and capital provided by internality (capital).

Profitability ratios: It refers to the financial ratio that measures the profitability of the business. Financial analysts often use this measure to evaluate the performance of a company.

Efficiency ratios: It refers to the analysis of operating efficiency on how effectively all the assets of an entity are present in both current assets and non-current assets.

Turnaround Strategies: It refers to the strategy reversing the company with negative situation to make a profit to be successful company. The turnaround strategies are actions that manage the financial failures, unfavorable environments, or inefficient management (Pearce & Robbins, 1993). Cater and Schwab (2008) give the meaning of turnaround strategies as a decision that aims to turn a business crisis that threatens the company through strategic management.

1.5 Scope of the Study

This research was designed only for the companies listed in the Stock Exchange of Thailand. In addition, the information to be analyzed was derived from the SET Market Analysis and Reporting Tool, which its acronym is SETSMART. In this study, there were

113 companies that are marked as SP, C, NP, and NC. Moreover, the status of the 107 companies is considered as they are regularly in the same industry. In considering whether the companies can be turned around to be successful, this research used the information from the problematic firms that can withdraw themselves from the NC sign in order that the result of the study can illustrate what the business turnaround strategies can be adopted successfully during their recovery efforts.



CHAPTER 2

REVIEW OF THE LITERATURE

Introduction

In this chapter, this research aimed at reviewing the theories and concepts as well as definitions and factors related to warning signs of problem firms and their turnaround strategies, which there are nine main types of analysis. The first is to define problem firms. The second is to analyze factors determining failure or failure forecasts. The third is the theory and model in research. The fourth is corporate governance which included application as a forecasting tool business failure. The fifth is the predictive value of accounting information. The sixth is implementation of accounting information and its usefulness. The seventh is concluding remarks. The eighth is financial failure forecasting. Lastly, the ninth is turnaround strategies that turn the problem firms to a successful listed companies.

2.1 Definition of Problem Firms

There are many studies that examine the failure of each company over the last 40 years. Most studies try to identify factors that can be used to predict failure. In the study of problem firms, one of the most difficult tasks to analyze ‘problem firms’ is to define the definitions of problem firms based on different studies, depending on the objectives and scope of the study. The word ‘problem firms’ is both emotive subject and problematic issues with ambiguity (Storey, Keasey, Watson, & Wynarczyk, 2016).

Karels and Prakash (1987) explained the problem firms from different financial perspectives, namely negative net worth, non-payment of creditors, unable to pay back overdrafts, default payments bond, non-payment preferred stock dividends, receivership, etc.

In general, the problem firms will occur when a company cannot operate normally. Dimitras, Zanakis, and Zopounidis (1996) state that the company will not be able to continue to operate and will assume that the company is a problem firm if a company that is unable to pay the loans, pay back the preferred shareholders, or pay suppliers. Lensberg, Eilifsen, and McKee (2006) state that failure occurs because the

company does not have the capacity to manage sufficient resources to perform normal operations by identifying factors such as high costs, low sales, and falling financial management, which are the cause of economic distress.

Table 2.1 Definitions of Problem Firms Used in the Past Studies

Study	Definition
Beaver (1996)	The businesses that default on interest payments from debts, bank overdrafts or businesses declaring bankruptcy.
Altman (1968)	The businesses that filed bankruptcy requests under the Chapter 10 of the National Bankruptcy Act.
Altman (1969)	The businesses that have a significant return on investment and continuously compare with the return on investment in similar businesses.
Olsen, Bellas, and Kish (1983)	The businesses with negative cash flows, which accumulated for 6 consecutive months.
Cho (1994)	The businesses with a negative net profit for 3 or more consecutive years.
Lussier and Pfeifer (2000)	The company that was unable to make a profit in the last 3 years.
Shepherd (2003)	The company that is unable to continue under current ownership due to bankruptcy when has increased expenses or reduced revenue.
Lawless and Warren (2005)	The business that has financial loss for a long time, which it leads to the organization's inability to make a profit for its survival.
Lensberg, Eilifsen, and McKee (2006)	The inability of the company to manage resources sufficiently for normal operations, causes of problems such as high costs, low sales, and poor financial management.
Bose and Pal (2006)	The company that will be considered as failure if it has a lower current trading price than one cent.
Chi and Tang (2006)	The company that has got a bankruptcy.

Table 2.1 Definitions of Problem Firms Used in the Past Studies (Cont.)

Study	Definition
Youn (2008)	The company that is unable to fulfill its obligations when due. It can classify violence into economic failure, insolvency, or bankruptcy.
Wennberg, Wiklund, DeTienne, and Cardon (2010)	The business that got bankruptcy or insolvency caused by inability of business operators to earn revenue to cover the costs of the failed business.
Irabor (2014)	The operating losses lasting for four consecutive quarters or three consecutive fiscal years.

Tavlin, Moncarz, and Dumont (1989) categorized the problem firms into 3 types according to severity, including:

1. Economic Failure

It occurs when the company's expenses are higher than the revenue or the return on investment of the company is lower than the rate of return on investment in businesses that are significantly similar.

2. Technical Insolvency

It occurs when the company is unable to comply with the statutory requirements imposed by the creditor's prosecution when unable to repay the debt.

3. Bankruptcy

It occurs when the liabilities of the company are greater than the fair market valuation of assets, which represents a negative real net worth.

The least severe thing is an economic failure. It occurs when the company's expenses are higher than revenue or when the internal rate of return is lower than the company's capital cost. Technical insolvency occurs when the company is unable to pay the debt. In other words, the situation is that the company does not have sufficient liquidity to pay the debt. The most serious business failure is bankruptcy. When a company has a negative net worth, it can lead to a legal process of organizational restructuring or dissolution.

A recent study of Bongini, Ferri, and Hahm (2000) supports previous studies that not all companies facing financial difficulties will end up with reorganization or bankruptcy. The study of problem firms must find the difference between economic failure, technical insolvency, and bankruptcy, which may be temporary failures and can be corrected if the company decides to implement the good solution at the specified time. Johnsen and Melicher (1994) also pointed out that bankruptcy is the most severe failure. Financial distress is a continued failure due to the start of financial weakness until bankruptcy, which has many levels of financial weakness. Lensberg, Eilifsen, and McKee (2006) insisted that bankruptcy is just one of many possible outcomes of the economic distress of businesses, including dissolution, liquidation, merger, restructuring, or even ongoing operations.

Based on Cho (1994)'s study, the definition of problem firms is considered from the net income for 3 consecutive years or more. Lussier and Pfeifer (2000) have defined problem firms from companies that have 3 consecutive years of losses. Lawless and Warren (2005) have determined the problem firms from the financial loss of the business for a long time leads to the organization being unable to make a profit for survival. Lensberg, Eilifsen, and McKee (2006) studied problem firms from the inability of the company to manage resources sufficiently for normal operations, causes of problems such as high costs, low sales, and poor financial management. In addition, Irabor (2014) conducted a study of problem firms from operating losses for four consecutive quarters or three consecutive fiscal years. Therefore, this research will use the definition of problem firms as a result of economic failure which is the least severe failure by studying companies listed on the Stock Exchange of Thailand that have been marked C, NC, SP, and NP.

2.2 Analysis of Factors Determining Failure or Failure Forecasts

The Stock Exchange of Thailand (SET) using a computer system to help monitor the movement of the market called 'Stock Watch'. The system will detect the unusual price movement or trading volume of securities and send out a warning sign when something goes wrong and reassure investors in the accuracy and efficiency of trading securities. The SET uses special symbols to oversee trading and informs investors about

the situations and special conditions that may affect the securities. It is essential that investors know the meaning of these symbols when investing in the stock market.

This study examines only the signs that prohibit or warn investors to be cautious on such issues as:

1. C (Caution): It is a sign that a listed company has events that may affect its financial position and business operations.

2. NC (Non-Compliance): It is the sign to show that the company was possibly delisted from the SET.

3. SP (Trading Suspension): It is a prohibition of company's temporary trading. At the same time, it can be also used as the H sign, with each transaction having a duration of not more than one trading session. If each transaction has more than one trading session, the SP sign will be posted, which refers to inability to disclose financial statements to the SET due to the violated information, information failed to comply with the law or information failed to be sent within the specified time.

4. NP (Notice Pending): It is the sign to display that the company has information to report and the SET is waiting for information from the company.

Table 2.2 Causes of Marking and Lifting Marks on Listed Companies' Securities to Remind Investors

Sign Posting	Sign Lifting
C (Caution)	
Cause of financial position	
1. Shareholders' equity is less than 50% of the paid-up capital, less discount on a share (if any), based on audited or reviewed financial statements without amendment.	1. Shareholders' equity is 50% of the paid-up capital, less discount on a share (if any), based on audited or reviewed financial statements without amendment.

Table 2.2 Causes of Marking and Lifting Marks on Listed Companies' Securities to Remind Investors (Cont.)

Sign Posting	Sign Lifting
C (Caution)	
Cause of financial position	
<p>2. The financial institutions, securities companies, life insurance or non-life insurance companies are regulated by the regulator to amend their financial status or operations by suspending some action or not to expand business temporarily. This is a significant statement when considering the proportion of assets or operating income or profit from operations according to the latest quarterly financial statements, which it is greater or equal to 50% of the total of each item.</p> <p>3. The companies, creditors or regulators submit their applications for business rehabilitation and the court accepts the petition.</p> <p>4. The company is sued for bankruptcy by the creditors and the court accepts the complaint.</p>	<p>2. The financial status or operation has been resolved in accordance with the supervisory authorities.</p> <p>3. The court dismisses the petition for business rehabilitation or withdraws the petition.</p>
Cause of the financial statements	
<p>1. The report of the auditors is as follows:</p> <ul style="list-style-type: none"> - A disclaimer of opinion on the financial statements due to the limited scope of review or investigation by the company or its directors or management. - An adverse opinion on the financial statements 	<p>1. The company submitted financial statements without such characteristics.</p>

Table 2.2 Causes of Marking and Lifting Marks on Listed Companies' Securities to Remind Investors (Cont.)

Sign Posting	Sign Lifting
C (Caution)	
Cause of the financial statements	
2. The office of the Securities and Exchange Commission (SEC) instructs the company to amend its financial statements or issue a special audit order.	2. The company submits the amended financial statements or the special audit results as prescribed by the office of the SEC.
Cause of the nature of business	
1. The listed company has all or almost all assets in the form of cash or short-term securities (Cash Company).	1. The company has changed its name to Cash Company within the time limit.
NC (Non-Compliance)	
1. The financial position, disclosed in the latest audited financial statements or consolidated financial statements, indicates that the shareholders' equity is less than zero.	The listed companies must have all of the following qualifications: 1. Shareholder's equity (after reviewing the auditor's opinion) can be as follows: - It is not less than 20 million baht (in case of trading on mai). - It is not less than 300 million baht (in case of trading on the SET).
2. The auditor reported that disclaimer of opinion or adverse opinion for 3 consecutive years.	2. The company has a net profit from normal operations of its core business and can continue to operate in the future under the management of the same group of management for at least 1 year before applying for revocation based on the annual financial statements or the financial statements of the past four quarters audited by the auditor.

Table 2.2 Causes of Marking and Lifting Marks on Listed Companies' Securities to Remind Investors (Cont.)

Sign Posting	Sign Lifting
NC (Non-Compliance)	
	<p>- The case will be traded on mai, the company must have net profit and net profit in the accumulated period before filing an application for revocation.</p> <p>- In the case of trading in the SET, the net profit shall not be less than Baht 30 million and the net profit in the accumulated period before the application for revocation.</p>
3. The assets used in the operation are reducing or are going down in significant amounts.	3. Over 75% of the company's total debt can be repaid. The company can pay the debt to the creditors on the schedule in the fiscal period. The debt in restructuring plan is based on the benefits of minority shareholders. This means that the existing shareholders' equity is less than 10% of the paid-up capital after the restructuring.
4. The company has stopped operating entirely or almost entirely.	4. The company has a stable financial status and operating results consistent with its business condition and considering the cash flow from operations.
	5. The company is fully qualified according to the criteria of being listed company, except for the distribution of minority shareholders. The company must have a plan to resolve the situation.
	6. In the case of a rehabilitation under a bankruptcy court, the company has to go out of business rehabilitation with successful business rehabilitation.

Table 2.2 Causes of Marking and Lifting Marks on Listed Companies' Securities to Remind Investors (Cont.)

Sign Posting	Sign Lifting
SP (Trading Suspension)	
<p>1. In the case of articles 1 to 3 of the H mark, the company cannot immediately clarify the following points.</p> <p>1.1 There is important information or news that may affect the securities holders' benefits, investment decisions or changes in the price of securities.</p> <p>1.2 Trading of securities of any one company is suspected that some investors are aware of important information or news and are in the process of inquiring from the company. The Stock Exchange of Thailand (SET) allowed the company to clarify the trading immediately.</p> <p>1.3 The company requested the SET to suspend the trading of its securities temporarily.</p> <p>2. The company violated the securities and exchange commission.</p> <p>3. The company did not submit its financial statements at the time.</p> <p>4. The securities are under delisting or are in the process of improving status to be withdrawn.</p>	<p>The SP sign is a temporary suspension of trading of securities. Each period is longer than one trading session. When the SET has determined that the company discloses information, reports or has received sufficient clarification and published from the issuer, the SET will lift the SP sign.</p>

Table 2.2 Causes of Marking and Lifting Marks on Listed Companies' Securities to Remind Investors (Cont.)

Sign Posting	Sign Lifting
SP (Trading Suspension)	
5. The securities will be due for redemption, conversion or exercise of rights.	
6. There are events that may have a serious impact on trading.	
NP (Notice Pending)	
The SET is waiting for clarification, or additional information from the issuer, or awaiting the disclosure of financial statements, or any other report that the issuer has to report at the time specified by the SET.	The SET has received sufficient information, reports or clarification from the issuer and has published the information.

2.3 Theories and Models Used for Research

2.3.1 Signaling Theory

Signaling theory is a company's need to signalize the publics about the company's various operations. The company's disclosure reflects some of the causes of future events, such as increases or decreases in stock prices. This theory can be used to describe two types of voluntary disclosures. For traditional voluntary disclosure, executives disclose information to signalize the capital market about future expectations of the company's performance. Non-traditional voluntary disclosure, executives disclose social and environmental information to inform the publics that the company envisage the environment issues. This is considered good news. However, if the information cannot be disclosed, it seems that information is negative news, or bad news (Blacconiere & Patten, 1994).

Spence (1978) proposed a signaling theory that explains why a person or entity with more information is trying to signalize their own information to the other party. This

is because business is obligated to maintain their business status as trustworthy. Business may choose to act by providing false information or attempting to signalize the advantage of their competitors, misleading information, unrealistic information, or an attempt to disclose the truth to the minimum by reporting the financial information accurately but not completely, or another case is that the company chooses to report its own information to convey the advantages of the business.

Investors should use signaling theories to study the behavior that the company or major shareholder sends signals to the minor shareholders as both parties have different access to information. Stakeholders use company issues for voluntary disclosure in order to conclude on their intentions or actions. The signaling theory is used in corporate social responsibility reporting. The company will provide good signaling because it will reduce data imbalance. Voluntary disclosure of corporate social responsibility data may be an attempt to signalize values related to social and environmental issues. Voluntary disclosure is one way that the company's board of directors can communicate with stakeholders to know that the company attaches great importance to what impacts stakeholders in order to indicate the willingness of executives to voluntarily disclose information for a good corporate image.

2.3.2 Prediction Model

The multivariate analysis is a combination of different financial ratios into one weighted index (Laitinen, 1991). A multiple discriminant analysis (MDA) is similar to regression analysis which results in either accepting or rejecting the results. Research on business failure brings multivariate analysis to data analysis.

Logit and probit analysis are statistical techniques used for regression and categorizing observations, as nonlinear probability models. Logit analysis is similar to probit analysis except for the calculation of probability. Logit analysis uses the cumulative logistic function, while probit analysis uses the cumulative standard normal distribution. Many interesting business failures research applications use logit and probit to analyze data.

An interesting research study on business failure using logit and probit was Ohlson (1980) who initiated the use of multiple logistic regression to create a bankruptcy model for predicting business failures. The samples were selected from 105 failed

financial companies during 1970 to 1976 from the listed companies over the past 3 years before the bankruptcy. The study also included 2,058 non-failed firms. The purpose of Ohlson (1980)'s study is to develop three models for predicting financial failure for 3 years before the bankruptcy. The first model had 1-year data before the bankruptcy. The second and third models use 2 and 3 years data before the bankruptcy, respectively. The model included 9 independent variables with a holdout sample. It had a total accuracy rate of 85.1%, 87.6%, and 82.6% for the classification of bankrupt companies and non-bankrupt companies.

Another interesting research in the study of financial failure companies using logit and probit in data analysis was Gentry, Newbold, and Whitford (1985). The research used cash flow as a base for analyzing the differences between failed companies and non-failed companies. The sample of 33 bankrupt companies and 33 non-bankrupt companies during the period 1970 to 1981, using the industry and company size as a basis for matching companies. Each group consists of 21 manufacturing companies and 12 different industries.

Gentry et al. (1985) models consist of 8 independent variables to predict business failure including: net fund flow from operations over total net flow, networking capital over total net flow, other assets and liabilities flow over total net flow, financial flow over total net flow, fixed coverage expense over total net flow, capital expenditures over total net flow, dividends over total net flow, and total new flow over total assets. They use logit and probit analysis to determine the fund flow. The model has an overall accuracy rate of 83% for 1 year prior to failure and 77% within the last 3 years prior to failure. Gentry et al. (1985) concluded that the components of cash-based fund flow enhance predictive efficiency for the classification of business failures.

Li and Wang (2014) said that in the last 20 years, there has been a lot of research that studies the efficiency of intelligent models on financial early warning models. However, the logit model and multivariate discriminant analysis are still very popular because they are models that well-known for predicting financial early warning and easy to interpret and explain. Many logit models are used more often and more widely because they are less demanding than multivariate discriminant analysis (kaminsky, Lizondo, & Reinhart, 1998). Li and Wang (2014) use the logit model in research to predict financial

risk because (1) the logit model is widely used. It is a non-linear probability model that is suitable for a financial early warning because financial predictions are usually non-linear (Brezigar-Masten & Masten, 2012), (2) the logit model is quite easy to understand and is available in almost every software package. It does not assume multivariate normality but gives a clear relationship between the explanatory variable and the response based on the information received (Wang & Zhang, 2002). Logit model easily explains the reason why a financial crisis occurs or does not occur (Demirgüç-Kunt & Detragiache, 1998), (3) the logit model is more accurate and stable than many other models, and (4) the logit model does not require quality and complete data, so it can be used more applicable than intelligent techniques in situations where there is no high-quality data such as in the Chinese financial industry and other developing countries.

The Logit Function

The logit model is used to analyze the occurrence of an event. It helps consider how much chance of one or more variables that are expected to affect the event can occur. The response variable has 2 statuses and can only be one event per an event.

For the logit function, the dependent variable has only 2 values and the relationship between the independent variable and the dependent variable is not in the linear form. The sample group is divided into 2 groups: event occurrence represented by “1” and event inoccurrence represented by “0” (He, 2002, Neophytou & Molinero, 2004, Youn, 2008). The equation can be written as follows.

$$\text{Prob (event)} = \frac{1}{1 + e^{-w}}$$

When W is a linear combination, the equation is shown as follows.

$$W = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_p X_p$$

Given $\beta_0 \beta_1 \dots \beta_p$ = coefficient estimated from data

X = independent variable

e = natural logarithms with statistical estimation 2.718

And the likelihood of not occurring events is estimated from the following equation.

$$\text{Prob (No Event)} = 1 - \text{Prob (Event)}$$

In linear logistic regression analysis, the parameters in the model are estimated by using the least-squares method by selecting the regression coefficient that gives the

sum of the squares of the predictive error ($\sum (Y - \hat{Y})^2$) to be minimal. For logistic regression analysis, the parameters are estimated by the maximum-likelihood method, which is a recursive calculation (Iterative Algorithm) to obtain the approximation of the parameters closest to the most empirical data.

2.4 Corporate Governance: Application as a Forecasting Tool Business Failure

The creation of the forecasting model for the company's failure that has been developed for over 40 years. The main reason, which researchers are trying to invent a tool that can predict the business failure, is that companies and investors are affected by many inabilities to predict or evaluate situations that cause the company to fail.

Therefore, it is very good if investors, including various businesses, use appropriate, accurate and sufficient information to assess the ability of the business that may experience a failure in future operations. If an investor has already received this information, it will help reduce the investment risk. Then, the company is able to assess its operational situation and prepare solutions to problems that are related to the future failure of the business.

Corporate governance has played a greater role in predicting bankruptcy of the business due to the idea that good corporate governance will result in a value or added value for the business and shareholders. Many researchers, such as Alba, Claessens, and Djankov (1999), Simpson and Gleason (1999), Le (2006), Aljifri and Moustafa (2007) have tried to link the relationship of corporate governance mechanisms to the operational efficiency of the business. It is expected that the increased operational efficiency of the business will help reduce the bankruptcy of the business.

2.4.1 Definition of Corporate Governance

The Securities and Exchange Commission, Thailand (SEC) (2015) has defined the meaning of corporate governance (CG) as the management of a company that is efficient, transparent, auditable, and takes into account to all stakeholders. In the case of public companies listed on the stock exchange, the importance of CG can be clearly seen. Due to a large number of shareholders, the company board members are not able to closely manage the company. They must appoint a trusted person to be a director in order to supervise another company executive. In order to be confident and trustworthy as such,

the company must have good corporate governance. That is, the directors must perform their duties to fully protect the benefits of the company and shareholders, not using the power derived from the appointed position to exploit or take advantage of the company. In addition, they have to oversee executives and management to work effectively so that shareholders can get a worth return on the investment into the company. At the same time, the rights of shareholders must be acknowledged for the company's information, making a decision on important matters, including inspecting the directors and executives' performance.

Corporate Governance Code for listed companies 2017, prepared by the Securities and Exchange Commission, Thailand (SEC) (2017), defines the "Corporate Governance" as a regulatory relationship including the mechanism that measures the decisions of people in the organization to meet the objectives: (1) determining objectives and main goals, (2) formulating strategies, policies and consider approving plans and budgets, and (3) monitoring, evaluating and supervising the performance report.

"Good Corporate Governance" in accordance with this code of conduct means the company attempts to create value for the business sustainably as well as creating confidence for investors, which the results can be as followings.

1. The company can compete and have good performance by taking into account the long-term impact.
2. The company conducts business with ethics and right respect and have the responsibility to shareholders and stakeholders.
3. The company is doing things that are beneficial to society and developing or reducing environmental impacts.
4. The company can adjust itself under corporate resilience.

The term "governance" comes from the word "gubernare" in Latin, which means "to steer". Solomon (2007) implies that corporate governance is a direction of duty rather than control. Therefore, the regulatory role consists of (1) operating business, (2) supervising executives' operation, and (3) fulfilling legitimate expectations of responsibility (Tricker, 1984).

However, there are two paradigms in finding the concept of corporate governance, namely the stock market and welfare state capitalism (Dore, 2000). The

previous researches focus on responsibility to shareholders (La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 2002). Therefore, corporate governance is the structure, process, culture, and system (Keasey, Thompson, & Wright, 1997) to reduce the conflict of principal and agents (Mayer, 1997). In this way, it ensures that the company will proceed for the benefit of shareholders. However, long-term benefits will change from shareholders to stakeholders, such as employees. For this reason, welfare state capitalism uses a view of the responsibility of all stakeholders, which is a broader perspective (Tricker, 1984, Noteboom, 1999). Solomon (2007) said that corporate governance is an internal and external mechanism that ensure the company to be responsible for all stakeholders.

2.4.2 Empirical Research on Corporate Governance

Corporate governance is a system that the company is directed and managed. It influences the setting and achieving of the company's objectives, methods of monitoring and assessing risks, and ways to increase performance. Good corporate governance structure encourages companies to create value from business operations, innovation, development and exploration, creating accountability, and control systems that are in line with risk (Council, 2003). Corporate governance has become an important topic for at least two decades. The reason for this prominence comes from many events such as pension fund reform and private savings growth, regulatory easing and capital market integration, and the crisis in East Asia in 1998 that has focused on corporate governance in emerging markets (Becht, Bolton, & Roell, 2002). The bankruptcy of businesses in the late 1990s emphasized the need for good corporate governance and financial reporting quality.

There are a variety of studies and surveys concerning companies' corporate governance and its performance in many countries. Balatbat, Taylor, and Walter (2004) found that the composition of the board measured by outsider ownership is not related to operational efficiency. Meanwhile, the independence structure of board leadership correlates with the improved operational efficiency of the company. Bai, Liu, Lu, Song, and Zhang (2004), Li and Naughton (2007) received consistent research on the influence of the duality CEO on organizational performance, which is studied in the context of China. Lehmann and Weigand (2000) found that ownership concentration had a negative

impact on the company's profits in Germany. Claessens and Djankov (1999) examined the ownership structure and performance of the company in the Czech Republic and found that more concentration on the ownership can create higher productivity and profitability of the company. Hovey, Li, and Naughton (2003) insisted that ownership concentration is of little importance but the ownership structure is significant to the performance of the company. However, Xu and Wang (1999) argued that the concentration of stock ownership has a significant impact on the company's operations.

Price, Roman, and Rountree (2011) examined the influence of efforts to improve corporate governance on the efficiency and transparency of companies in Mexico during the years 2000-2004. The research showed no relationship between the corporate governance index and the company's performance, and there was also no correlation with transparency.

In the context of Thailand, there are a number of studies that examine the influence of corporate governance on corporate performance. Connelly, Limpaphayom, and Nagarajan (2012) examined the relationship between the quality of corporate governance practices and the value of companies in Thailand, which often had a complex ownership structure. Research showed that good corporate governance would be ineffective when the ownership structure was not transparent.

Suehiro (2001) has explore the relationship between ownership patterns, organizational structures, and economic performance by studying 448 listed companies in Thailand between 1996 and 2000, and found that family business is not the major cause of the financial crisis, and do not hinder a recovery. Consistent with the research of Wiwattanakantang (2001), which examines the effects of controlling shareholders on the organization's performance. The results from the database of companies in Thailand found that controlling shareholders were associated with higher operational efficiency measured by ROA and the sales-asset ratio. However, participation in the management of controlling shareholders has a negative impact on operations. The negative impact is more apparent when the controlling shareholders and manager's ownership is 25-50% and the research results also show that companies controlled by families have significantly higher operating results.

From the previous researches, the findings show that many corporate governance structures are related to financial distress or possibility of survival of the company. Lee, Yeh, and Liu (2003) collected variables such as accounting, corporate governance, and macroeconomics to create a binary logistic regression model for forecasting companies experiencing financial distress. They found that the significant variables in corporate governance, namely the proportion of directors that are controlled by major shareholders, the involvement of the management, and the percentage of shares pledged for loans by large shareholders, had a positive effect on the financial distress probability. Filatotchev and Toms (2003) examined the influence of ownership structure and the nature of the board on the strategic response of the textile industry by using failed companies and non-failed companies as study samples. It showed that non-failed companies tend to be large institutions and board directors' ownership, which tends to have more board diversity. These corporate governance factors involve higher investment, improved performance, and higher growth.

2.4.3 The Relationship between Corporate Governance Structure and Business Failure

Agency theory's development has found that there is a link between corporate governance and company performance (Audretsch & Lehmann, 2005). If corporate governance influences organizational performance, it should affect business failures (Goktan, Kieschnick, & Moussawi, 2006). There are many pieces of literature to explore the relationship between corporate governance structure and business failure as follows:

Lee and Yeh (2004) presented the link between corporate governance and financial distress. They emphasized that companies with weak corporate governance can be in economic downturn risk since previous empirical evidence supports the assumption that the controlling shareholders can be likely to force the interests of minority shareholders to reduce the value of a company. They used 3 variables to study: (1) the proportion of directors who are controlling shareholders, (2) the controlling shareholders shareholding proportion pledged for bank loans (pledge ratio), and (3) the deviation of control away from cash flow rights by using binary logistic regressions to create predictive models and study from listed companies in Taiwan as study samples. The results showed that all three variables mentioned above were positively correlated with

the financial distress risk, even after controlling the possible financial consequences. In addition, the study found that one year of corporate governance was worse before financial distress occurred. In general, companies with weak corporate governance may be risky for economic downturn and have possibility to fall into financial distress when corporate governance is reduced. It implied that the early warning system will not be complete without the corporate governance variables.

Lakshan and Wijekoon (2012) studied the influence of corporate governance on company failure from 70 failed firms and 70 non-failed firms listed on the Colombo stock market during 2002-2008 as study samples and used logistic regression analysis for data analysis. The corporate governance variables consist of board size, CEO duality, outside directors, outsiders' ownership, auditor's opinion, presence of an audit committee, and remuneration of board members. The study found that outside director ratio, presence of an audit committee and remuneration of board members had a negative relationship. Meanwhile, the CEO duality is positively correlated with the likelihood of failure of the organization. However, the board size, auditor's opinion and outside ownership did not have significance on company failure. Based on the results of the study, it is useful for investors, financial analysts, accounting professionals, management, and regulatory agencies in decision making, evaluation, and policy formulation.

Ali and Nasir (2018) examined the relationship between corporate governance mechanisms in terms of the board of directors' characteristics including board size, board activity, CEO duality, and board independence and companies that are experiencing financial difficulties in Malaysia. They collected the secondary data from the annual reports of all selected companies from Bursa Malaysia during 2010-2016. Companies with financial problems are designated as companies in the Bursa Malaysia Practice Note (PN17), except banks and finance companies. This research analyzed data by using Levene's test for equality of variances analysis, Pearson Spearman's Rho correlations analysis, and binary logistic regression analysis. The results showed no significant relationship between board size, board independence, and CEO duality with companies that experienced financial problems. Based on the results of the study, there is a significant relationship between board activity and the companies that are experiencing

financial difficulties. As for the board meeting, it can be more about the time consumption to solve problems during the crisis when the company faces financial problems.

Zhiyong (2014) studied the use of organizational efficiency and corporate governance measures in predicting financial failures in standard statistical credit models using cross-sectional and hazard models. This research used the measurement of corporate governance, which can be categorized into 4 groups: board composition, ownership structure, management compensation, director and manager characteristics were studied in the hazard models to predict financial failures. The results of the study found that state control, institutional ownership, salaries to independent directors, the chair's age, the CEO's education, the work location of independent directors and the concurrent position of the CEO have significant relationship with financial risks.

Jamal and Shah (2017) evaluated corporate governance affecting the financial distress from 53 non-financial listed companies in Pakistani stock exchange as study samples by using regression analysis in order to assess the impact of the described variables including size of board, composition of board, audit committee independence and duality of CEO on the financial distress. The results showed that the size of board, composition of board and CEO duality have a positive impact on good corporate governance, which they can then lower the financial distress of the company. They explained that the board size will reduce the company's financial distress level because the larger board size will contribute for company's higher capability level. Therefore, the tasks of the chairman and CEO will be separated and the decision will be made without bias. As a result, the company can make better financial decisions. The independence of the board resulted in a decrease in financial distress because it contributed the best decision-making ability for the company and created the best interest for the shareholders. On the other hand, the audit committee independence has no effect on the financial distress of companies in Pakistan. The decision of the audit committee depends on the employees of the company as well as the internal audit or internal control operations. Most of these employees are influenced by management decisions.

Ernawati, Handojo, and Murhadi (2018) analyzed the impact of financial ratios and corporate governance on financial distress, create bankruptcy prediction models, use data from 310 non-financial companies listed on the Indonesia Stock Exchange (IDX)

during the year 2012-2016. This research uses quantitative methods with a logistic regression model. The independent variables consisted of good corporate governance (GCG) with the sub-variables includes director ownership, director size, blockholder ownership, independent directors, and auditor's opinion. The results indicated that the director ownership variable has a significant negative effect on financial distress at 0.011, consistent with Miglani, Ahmed, and Henry (2015), Manzanque, Priego, and Merino (2016). The purpose of owning shares with the board of directors is for the benefit of shareholders. Blockholder ownership has a positive influence on the financial distress. It showed that the blockholder ownership is greater, making financial distress higher. But, the research of Parulian (2012) found that blockholder ownership has a positive influence on financial distress. The major shareholder is likely to dominate the minority shareholders. Reddy, Abidin, He, and Sinha (2015) has reported evidence that blockholders receive personal benefits from expenses in the interests of minority shareholders. Ownership concentration may create asymmetric information between major shareholders and minor shareholders (Jensen, 1993). Auditor's opinion variables do not have a significant impact on financial distress, meaning that the auditing results of the auditor do not cause the company unhealthy. The results showed that the accuracy of this bankruptcy prediction model was 98.1%.

Table 2.3 Summary of Corporate Governance Used in Failure Prediction Studies

CG/Study	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Board Composition																				
1.1 Board size	✓	✓		✓	✓		✓		✓	✓	✓			✓	✓	✓	✓	✓	✓	✓
1.2 Board independence	✓		✓		✓	✓	✓	✓	✓	✓			✓	✓	✓				✓	✓
1.3 Apart from the company having an audit committee, the company also has other sub-committees.			✓			✓	✓	✓												
2. Board Diversity																				
2.1 Foreign Director									✓			✓						✓		✓
2.2 Board Gender Diversity												✓	✓					✓	✓	
2.3 Age Diversity			✓		✓	✓				✓	✓		✓					✓	✓	

Table 2.3 Summary of Corporate Governance Used in Failure Prediction Studies (Cont.)

CG/Study	1	2	3	4	5	6	7	8	9	1	1	1	1	1	1	1	1	1	2		
	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0
3. Board Activity																					
3.1 Busy Boards		✓						✓		✓					✓	✓				✓	
3.2 Board Meeting Frequency					✓		✓		✓					✓						✓	✓
3.3 Meeting Attendance Rate of Directors							✓							✓	✓						
4. Board Remuneration																					
4.1 Director's Fee		✓					✓	✓		✓											
4.2 Managerial Compensation							✓							✓							
4.3 Directors' Ownership		✓	✓				✓		✓				✓	✓						✓	✓

STUDY

1. Yermack (1996)
2. Core, Holthausen, and Larcker (1999)
3. Laing and Weir (1999)
4. Bunderson and Sutcliffe (2002)
5. Sonnenfeld (2002)
6. Cotter and Silvester (2003)
7. Brown and Caylor (2004)
8. Brennan and McDermott (2004)
9. Sanda, Mikailu, and Garba (2005)
10. Fich and Shivdasani (2006)
11. Kang, Cheng, and Gray (2007)
12. Rose (2007)
13. Sapp (2008)
14. Jiraporn, Davidson III, DaDalt, and Ning (2009)
15. Sarkar and Sarkar (2009)
16. Jackling and Johl (2009)
17. Darmadi (2011)
18. Mahadeo, Soobaroyen, and Hanuman (2012)
19. Masulis, Wang, and Xie (2012)
20. Veprauskaite and Adams (2013)

2.4.4 Explanation of Corporate Governance Used in the Study of Failure Prediction

2.4.4.1 Board Composition: This section reviews literature about the composition of the board, including board size, board independence, and other sub-committees, related to the problem firms.

Board Size

Board size is the number of directors (Yermack, 1996, Certo, Daily, & Dalton, 2001, Coles, Daniel, & Naveen, 2008). This measure is widely used in previous research,

such as Chaganti, Mahajan, and Sharma (1985), Yermack (1996), Conyon and Peck (1998), Coles, Daniel, and Naveen (2008). However, there has been a consensus in previous literature that large boards are more effective (Alexander, Fennell, & Halpern, 1993) in collaborating to solve problems (Pfeffer, 1972, Johnson, Daily, & Ellstrand, 1996, Pfeffer & Salancik, 2003, Hillman & Dalziel, 2003) and roles in control (Zahra & Pearce, 1989). For this reason, board size has a negative relationship with the probability of a firm's failure (Dalton, Daily, Johnson, & Ellstrand, 1999).

Yermack (1996) found that the board size has an inverse relationship with the company value and said that a company with a small board will have a better financial ratio and provide a stronger incentive for the CEO from compensation and threats from dismissal if performance is not effective. In addition, Elsayed (2007) found that the board size does not have a significant impact on the organization efficiency. This finding is consistent with Parker, Peters, and Turetsky (2002), Lamberto and Rath (2008), which found that the board size affects survival. Connelly and Limpaphayom (2004) examined life insurance companies in Thailand, confirming that the board size is not significantly related to the company's performance.

Board Independence

The importance of board independence has been accepted, but there has been no unanimous definition of 'independence' (Brennan & McDermott, 2004, Kang, Cheng, & Gray, 2007). Previous studies used the term 'outside directors' instead of 'independence' to describe independent directors of management (Ajinkya, Bhojraj, & Sengupta, 2005). Some of the previous studies considered the difference between 'executive' and 'non-executive' directors in three areas (Kang, Cheng, & Gray, 2007, Rath, 2008).

Firstly, Fama and Jensen (1983) have a view that if the majority of directors on the board are independent directors, the CEO and inside directors will have less opportunities for self-serving on the costs of shareholders. Pass (2004) suggests that non-executive directors can exercise independent discretion; therefore, the interests of shareholders will be protected. In addition, the company can receive benefits from non-executive directors because they can participate in valuation business expertise for the

company, being able to see the risks and opportunities that may be overlooked by the company's executive directors.

Secondly, the chairman is responsible for the leadership of the board to ensure the organization is effective, performing the duties of the board, and summarizing the issues that arise in every board meeting (Council, 2003). It is expected that companies with independent chairman tend to follow the interests of shareholders and monitor management effectively (Weir & Laing, 2001). In conclusion, the non-executive directors can raise the efficiency of the organization and the opportunity to survive.

Finally, the measure of the independence of the board is the use of independent leadership structures. The CEO duality leadership structure occurs when the same person holds the position of CEO and chairman of the board. While an independent leadership structure can be described as a case in which there are different people in these positions, there are conflicting opinions about the benefits and costs of using the leadership structure. Since one of the main duties of the board is to monitor the performance of top management, allowing the CEO to take both roles to compromises in the monitoring and counterbalance system (Levy, 1981, Dayton, 1984, Rechner & Dalton, 1991). Independent structure proponents confirm that the CEO duality structure may have conflicts of interest clearly and reduce the board's ability to perform regulatory functions (Rechner & Dalton, 1991, Brickley, Coles, & Jarrell, 1997).

Improper governance structure may lead to the company crisis and eventually bankruptcy (Daily & Dalton, 1994). Supporters of CEO duality argue that the duality of the CEO structure is only the company leader and is clearly focused on the objectives and operations (Rechner & Dalton, 1991). In addition, independent leadership structures may lead to the competitive potential between the CEO and the chairperson, making it difficult to identify offenses for poor performance (Brickley, Coles, & Jarrell, 1997). Erkens, Hung, and Matos (2012) studied 306 financial companies from 31 countries during 2007-2008. Erkens et al. (2012) confirmed that increasing the number of non-executive directors on the board could result in significant losses and risks that occur before the crisis, which may have a negative impact on the company when a crisis occurred.

Apart from the company having an audit committee, the company also has other sub-committees

The companies that have directors as outsiders are good results, helping to have a broader perspective, especially for listed companies that are still family businesses. Therefore, in the structure of the board of directors, there is a requirement that every company must have a sub-committee, especially an audit committee, in accordance with the requirement that there must be an independent committee. As for the nominating committee and the remuneration committee, there may or may not be available.

The remuneration committee is important to the governance mechanism according to the principles of good corporate governance. The remuneration of directors and executives of the company must be consistent with their responsibilities. When comparing compensation to the same industry, such remuneration should be at a level that is appropriate enough to attract, retain quality directors and executives. In this regard, the remuneration committee is responsible for screening and proposing remuneration for directors each year so that the board of directors and shareholders consider transparency. The stakeholders can be assured that the directors or executives will not set their own remuneration unfairly.

Many studies have found the benefits of having a third-party director in a sub-committee, as empirical research in Australia by Bosch (1995) found that the audit committee should consist of non-executive directors. Menon and Williams (1994) stated in the same way that having an executive director on the audit committee made it impossible to oversee the management in a concrete manner. Kesner (1988) argues that compensation is an important role in supervising executives because it is an assessment of executives and offers rewards in order to have performance that is consistent with the goals. Cotter and Silvester (2003) found that a committee that is highly independent will determine fair and equitable compensation when compared to the executive's own compensation. Laing and Weir (1999) studied the relationship between the governance structure of the board and the performance of 115 listed companies in the United Kingdom that are not financial institutions in the years 1992 to 1995. They found that sub-committees have a positive impact on the company's performance. In addition, they were found that the companies have established the audit committee and the remuneration

committee will have significantly improved operating results. It pointed out that the establishment of sub-committees is an effective governance mechanism.

2.4.4.2 Board Diversity: In addition to the board composition mentioned in the previous topic, empirical research also found that board diversity is also related to the problem firms.

Foreign Director

Masulis, Wang, and Xie (2012) said that having a director as a foreigner would have a positive effect if the company had a business in that region but would have a negative effect if the company had no business in the region of those directors. Foreign directors are able to give advice to the company because foreign directors will have knowledge about the international market. They can be used to help develop, plan the operations for the company, as well as build relationships with overseas businesses and increase the ability to expand overseas in the future. Sanda, Mikailu, and Garba (2005) studied corporate governance and the company's performance in Nigeria. They found that the company has an executive chairman as a foreigner, positively correlates with the company's performance because foreign executives have good management skills with foreign partners. Tukur and Balkisu (2014) studied the diversity of the board and the performance of the non-life insurance companies in Nigeria. They found that increasing the number of foreign affairs would help increase performance.

In addition, Darmadi (2011), Cucinelli, Schwizer, and Soana (2012) found that foreign directors do not relate to the company's performance. On the other hand, Cavaco, Challe, Crifo, Reberieux, and Roudaut (2014) found that the proportion of foreign directors is negatively correlated with the company's performance, possibly due to the imbalance of information received by directors.

Based on the literature review, it is believed that if the company has a higher proportion of foreign directors, it will affect the credibility and operating results of the company from international market knowledge, consulting and planning operations for the company. This research is expected that the proportion of foreign directors will have a negative relationship with the problem firms.

Board Gender Diversity

Being a woman representing the boards is extremely important for European lawmakers due to the lack of a woman's role in continuing decisions (Singh & Vinnicombe, 2003). For this reason, elements of the boards are considering legal views because the British government is inspired by Davies (2011), making FTSE firms have at least 25% female directors in 2015. The laws of Norway and Spain require a quota of 40 percent for women in all boards by the end of 2005 and at the beginning of 2015, respectively (Rose, 2007, Adams & Ferreira, 2009, Terjesen, Aguilera, & Lorenz, 2015). Therefore, the previous board reformation seems to suggest that female directors increase the effectiveness of the board by providing various perspectives and methods to the board.

However, critics argue that having female representation on board may be disadvantageous in terms of performance. For example, Adams and Ferreira (2009) found a negative relationship between the female boards proportion and Tobin's Q in the analysis of the US company. Similarly, Carter, D'Souza, Simkins, and Simpson (2010) shows that there is no statistically significant correlation between the board's gender diversity and accounting performance measurement.

Age Diversity

Based on previous empirical studies, there is a variety of age diversity on the results of operations. Mahadeo, Soobaroyen, and Hanuman (2012) examined the data from the 2007 annual report of 42 companies listed in the Stock Exchange of Mauritius. They were found that the age diversity has a positive effect on short-term performance. Kilduff, Angelmar, and Mehra (2000) used data from 35 simulated firms run by a total of 159 managers who participated in the educational program for executives. They found evidence that different ages of team members positively affected overall performance. However, some studies have found that there is no significant impact on the diversity of age and organization performance. Bunderson and Sutcliffe (2002) collected data from 44 business unit management teams in a Fortune 100 consumer products company. The results show that age diversity does not affect unit performance. Zimmerman (2008) examines the relationship between the diversity of high-level management and the capital increase by offering shares to the public. The study found that the differences in the working background and educational background were associated with funding but did

not find significant of age differences in funding. Another study reports that age diversity has a negative effect on performance. Murray (1989) identifies elements related to age and experience in 84 US food and oil companies. The study reveals that there is a negative correlation between age diversity and short-term effectiveness, corresponding to the study done by Cummings, Zhou, and Oldham (1993), Milliken and Martins (1996) who also found negative effects of age diversity on performance.

In theory, age is associated with the experience, resulting in more effective corporate governance. Zajac and Westphal (1996) found that age was positively associated with the directors' tolerance. According to the study, it was found that the similar age of the board and senior management resulted in the CEO's higher remuneration. It may be concluded that the difference in age over the average age may be useful in improving the quality of good corporate governance. Young directors will provide new insights while older directors may contribute long experience. Therefore, the age diversity of the board has a negative relationship with the problem firms.

2.4.4.3 Board Activity: For the impact of the committees' activities in the problem firms, the empirical research has found various relationships in such matters. If using the assumption that activity participation increases the effectiveness of the board's oversight, which is a very commonly used assumption, the most research will find a negative relationship in the matter. That is, if the director has increased participation in the work activities according to the director's duties, such as the high rate of participation in the meeting, there is not much burden of holding positions in other companies, which will result in a negative impact on the problem firms.

Busy Boards

Empirical research has found that there is a wide range of relationships among directors in many companies and business value. Fama (1980), Fama and Jensen (1983) said that holding positions in many companies of outside directors may indicate that the director is of high quality and therefore is more desirable. In addition, the research of Pfeffer (1972), Mizruchi and Stearns (1994), Booth and Deli (1996) found a positive relationship between being a director in many companies and business value. Directors who hold positions in many companies are those with a wide social network, able to help pull the necessary resources into the company, increasing the company value.

In addition, there are other studies that support the hypothesis of quality hypothesis and resource dependency hypothesis, which has a positive effect on the value of the business, such as Miwa and Ramseyer (2000). They found that being a director in many companies has a positive impact on the company's performance and is beneficial for shareholders. Sarkar and Sarkar (2009) found a positive relationship between being a director in many companies and the business value, but only in the case of holding positions in many companies of independent directors. They also found that these independent directors still attended the meeting more often and were more likely to attend the annual general meeting of shareholders. However, such research found that holding positions in many companies of executive directors has a negative effect on the company's performance.

Looking at the other side, Fich and Shivdasani (2006) said that holding positions in many companies has a negative impact on the company's performance. In the same way, Core, Holthausen, and Larcker (1999), Shivdasani and Yermack (1999) explain that the directorship in many companies is related to the compensation given to the CEO in amount excess. Beasley (1996) found that holding positions in many companies is associated with an increase in accounting fraud. The above research supports the hypothesis of the busyness hypothesis. Ferris, Jagannathan, and Pritchard (2003) use the busyness hypothesis, explaining that holding positions in many companies may cause directors to have too many responsibilities, which can reduce the ability to supervise executives effectively. It adversely affects the value of the company.

Fich and Shivdasani (2005) describe the 'busy board', as the situation that the director has held 3 or more board positions in other companies. Therefore, this research will measure 'busy boards' from the proportion of directors who hold positions in 3 or more companies per all directors.

Board Meeting Frequency

The directors' board meeting was previously used for communicating and exchanging company information, following up the actions or projects of the management team, as well as discussing problems and solutions that occur in accordance with the company's strategy. The meeting frequency or the number of meetings of the board of directors per year shows the communication between the management team and the board

of directors. The board of directors is an individual who has been elected as a representative from shareholders or business owners, receiving information from the management team, allowing the shareholders to know the information as much as the management team, acknowledging the movement of the company. Such actions are consistent with agency theory by reducing asymmetric information. Therefore, if the meeting frequency of the board of directors per year is higher, there will be a tendency to reduce the conflict between the business owner and the management team.

Evans and Weir (1995), Conger, Finegold, and Lawler (1998), Sonnenfeld (2002), Mangena and Tauringana (2006) found that if the number of meetings is greater, the governance mechanism will improve, and will benefit the business performance. Since the board of directors has been meeting continuously and frequently, it will create more business understanding, work regarding with shareholders' interests, and more company strategy effectiveness.

Hashim and Abdul Rahman (2011) found the opposite direction between the meeting number of the board of directors and the time. It takes to issue an audit report. The meeting number of the board of directors is used to evaluate the participation in the duties of the board of directors as the shareholders' representative. Therefore, if the board of directors has more meetings, it will lead to more understanding, risk perception, and problem identification. It will also lead to internal control and good corporate governance mechanisms of the company according to the auditor's view, resulting in less time for issuing audit reports.

On the other hand, if the board has too many meetings, it can make the work ineffective and work unsuccessfully. Vafeas (1999) considers that the board meeting may be advantageous and disadvantage to shareholders, because the board has a limited time in each meeting and may no spend time to discuss useful ideas. As a result, the frequency of the board meetings is negatively related to the company's performance.

Meeting Attendance Rate of Directors

Attending a meeting of directors is an indicator of the quality of the board's oversight process. Vafeas (1999) found the relationship between the frequency of meeting attendance and the company's performance and concluded that the board activity is an important dimension of the governance process. However, Jackling and Johl (2009) did

not find the relationship between directors' meeting attendance and company's performance through the study of sample companies in India.

Research about the directors' meeting attendance shows that attendance is a system of relationships between both director and company nature. In examining the incentives of directors attending the meeting, Adams and Ferreira (2008) found that attendance would increase when there was higher remuneration, such as board meeting fees. It indicates that financial motivation affects the behavior of directors. They also found that the attendance would be minimal in large directors, and the attendance would be greater in large companies and in companies with poor performance. Jiraporn, Davidson, DaDalt, and Ning (2009) examined the impact of large directors on meeting attendance and found negative relationships between the number of outside directors and attendance at the meeting. Adams and Ferreira (2009) examined the differences in attendance behavior between male and female directors. They were found that female directors had a better attendance record. In addition, Chou, Chung, and Yin (2013) found that the attendance of directors involves the qualifications of directors and ownership structure.

2.4.4.4 Board Remuneration. The form of remuneration for directors and executives is another matter about the corporate governance of the company that is widely debated but cannot be concluded in such matters (Core, Holthausen, & Larcker, 1999, Adams & Ferreira, 2008). However, over the past two decades, companies have paid a great deal of compensation to directors and executives in the form that is linked to the equity of the company (Ofek & Yermack, 2000). It is based on the belief that sharing ownership can help reduce agency costs. Morck, Shleifer, and Vishny (1988) suggest that compensation for external directors is in the form of ordinary shares. Yermack (1996) found that the value of the business has increased significantly when directors and executives are involved in more ownership.

Director's Fee

Based on the survey of corporate governance, it was found that linking performance and executive compensation contributed to improving corporate governance and evaluating the performance of executives. It implies that the executive is responsible for the directors and shows a complete balance of power to strengthen the corporate

governance system. Brown and Caylor (2004) study the relationship between corporate governance and the wealth of shareholders of large corporations in the United States by studying the remuneration of directors. The results of the study showed that the directors' remuneration is an important factor of good corporate governance, which enables the company to have better-operating results.

The proportion of independent directors affects compensation by companies in the United States with a high proportion of independent directors, with a high remuneration of CEO (Core, Holthausen, & Larcker, 1999), which conflicts with the research of Basu, Hwang, Mitsudome, and Weintrop (2007) who found that if the company uses the principles of corporate governance effectively, there will be significantly lower executives' remuneration. The important tool of the corporate governance principle is the number of independent directors. Based on this study, it can be assumed that if executive compensation can reflect the effectiveness of supervision in controlling the agent problem. High compensation shows that oversight is not effective in managing future performance and will have a representative problem. That is, if the executives receive compensation more than appropriate setting, it can then lead to company's deteriorate performance.

Managerial Compensation

Besides the remuneration component of the board of director that is set by Stock Exchange of Thailand, there is also remuneration for the managing director and executives that the company must pay in accordance. The payment should be under the policy set by the board of directors, which is authorized by the approval of the shareholders' meeting. For the highest benefit of the company, the remuneration payment to the manager should be consistent with the company performance and each executive's performance. Therefore, the manager's compensation parameter is considered as important variable because it is a factor that motivates board of director to work efficiently, according to the principles of good corporate governance. In this case, it shows the ability of the business to improve its operation and performance. The manager compensation variable means the remuneration paid to the management. That is responsible for strategically managing, planning, deciding, and operating the organization successfully in order to obtain the good performance. A study by Brown and Caylor

(2004) found that companies with good corporate governance will have higher profits, higher value and more return to shareholders than companies with poor corporate governance. They also found that the compensation factors for executives and directors are most related to performance. Switzer and Tang (2009) examined to find that the good corporate governance mechanisms in relation to performance are positively correlated with company performance. Iqbal and Shehzad (2010) studied the relationship between the corporate governance cost and the executives' operational capacity in listed companies in the Pakistan Stock Exchange by using manager compensation variables as research variables. They found that the manager's compensation is in line with the company's performance, which is an incentive for executives to fully perform their work to receive good performance in return.

Shareholders play an important role in determining executive compensation. Research of Sapp (2008) states that companies controlled by shareholders with a high shareholding ratio will have lower executive compensation. Nevertheless, the executive who has a position in many sub-committees, has been an office director for many years and has a good relationship with the management team and shareholders, can likely to receive more compensation. However, Clay (2002) found that organizations with a large proportion of major shareholders tend to provide more compensation to high-ranking executives. It is caused by the failure of the intensive examination of shareholders on the remuneration of senior management. In addition, the research of Navissi and Naiker (2006) found evidence about the inefficiency of audit and cooperation of major shareholders and senior management to dominate minority shareholders, protecting executives with assistance from major shareholders. As a result, the management will receive higher returns, which will occur to the companies that have a large shareholders proportion, but have little interest in determining remuneration for executives, focusing on the profits of the organization alone.

Directors' Ownership

The ownership structure is an important factor that causes agency problems due to conflicts between management and business owners. Executives can be compared as controlling shareholder and the business owner is a minority shareholder or a shareholder who has no control power (non-controlling shareholder). The management's shareholding

ratio can reduce the costs incurred by the agent. It can be done by adjusting the benefits of executives to be more consistent with shareholders. According to Jensen and Meckling (1976), they found that the idea of creating commitments or incentives for executives by passing the ownership proportion to the management. It can reduce the cost caused by the company representative because it is to adjust the benefits of the management to match with the shareholders.

Based on the study of the relationship between internal shareholding by the board of directors and the operation results, the findings of the research are different. Research in the first group, the findings of the research are consistent with the research concepts of Jensen and Meckling (1976), saying that when the interests of company ownership and executive directors are aligned in the same direction, for example, they hold more shares in the company, both the board and the executives will have more motivation to work hard. It is caused by the board of directors that holds shares of the company will receive a share of revenue or profit accumulated from the company's operation success (Warfield, Wild, & Wild, 1995). Hermalin and Weisbach (1991) found that the shareholding of executive directors has improved performance. Mehran (1995), Agrawal and Knoeber (1996), Balotti, Elson, and Laster (2000), Farrell and Whidbee (2000) found that holding by external directors is the key to effective corporate governance.

However, another research group works according to Fama and Jensen (1983), Morck, Shleifer, and Vishny (1988) indicated that the executive directors have a large percentage of shares held within the company, which may result in sufficient voting rights to protecting their own interests, such as paying high salaries or dividends for themselves. Such actions will negatively result in a decrease in the company value (Demsetz & Lehn, 1985). There is also a negative relationship with the company's performance (Veprauskaitė & Adams, 2013).

Beiner, Drobetz, Schmid, and Zimmermann (2004) studied the relationship between corporate governance and the performance of listed companies in the Swiss stock market, by collecting 267 data sets in 2002. There are variables that are used instead of corporate governance, namely board size, proportion of independent directors, company's shareholding structure, and debt level. There are control variables including company

size, company age, CEO duality, and financial risks. The study found that the shareholding structure measured by the major shareholders' shareholding has a relationship with the performance in the opposite direction.

2.5 Predictive Value of Accounting Information

There is no doubt that financial reports provide information about an entity's financial position, as well as results of operating business activities in a single and aggregate period. However, it is doubtful whether financial reports could be useful information in the prediction area. Therefore, the following discussion attempts to analyse whether the predictive value is a useful aspect of financial reports.

Scholars have attempted to determine whether accounting information provides any predictive value for a long period. A reasonable argument for the predictive value of accounting information comes from the idea of a positive accounting approach described by Keynes (2017). The description explains that a positive science can refer to knowledge system that studies the truth.

From the above definition, it could be applied to the accounting context so that accounting information can be regarded as a positive science. This is because the primary goal of accounting theory is to explain which accounting alternative should be used. Also, accounting theories have relied on standardised concepts, for instance, relevance, usefulness, objectivity, fairness, reliability, and verifiability (ASSC, 1975) to outline accounting alternatives. No suggestion derived from accounting standards ranks alternatives in accordance with preference and beliefs. On the other hand, accounting standards provide choices and allow users to view them according to their expectations. Therefore, users should look for "what is" in accounting information rather than "what ought to be".

Friedman (1953) further explained positive science as follows: the ultimate goal of a positive science is to develop "theory" or "hypothesis" to provide an accurate and meaningful prediction about unobserved phenomena. The theory has the complexity of two components, one of which is "language", designed to promote the systematic and organized methods of reasoning. Another is an important hypothesis designed to summarize the essentials of the complex reality.

When linking a positive science of accounting information as explained by Keynes (2017) and the goal of a positive science which yields predictive value as explained by Friedman (1953), it is reasonable to draw the conclusion that accounting information provides predictive value.

The work of Beaver, Kennelly, and Voss (1968) was the classic study that described why accounting information could be considered as a predictive tool. Beaver et al. (1968) stated that the predictive value of accounting information was well established in the social and natural sciences as a method for choosing among competing hypotheses. It was to be believed that alternative accounting measures have the properties of competing hypotheses and could be evaluated in a similar manner. Beaver et al. (1968) explained that value was achieved as a result of four observations. Firstly, both competing hypotheses and alternative accounting measurements were abstractive, which meant that there was an unlimited number of alternatives. An alternative could be chosen and justified. Secondly, accounting measurements were supported by theories, which provided the logical propriety evaluation. Thirdly, predictive power was defined as the ability to generate operational implications. One could identify the predictive value out of accounting measurements in a particular way through empirical research. Finally, together with supporting theories and empirical research, the results could be generalised from the findings of the sample data to a new set of observations. Beaver et al. (1968) supported the above arguments by giving accounting for leases as an example. Accounting for leases would reflect each of the above points. Lease accounting was an abstraction because of its accounting treatments (i.e. with and without asset capitalisation). Saying that one measurement system was more abstract, however, was debatable. Both accounting treatments were supported by theories and were able to generate operational implications, for instance, determining a method that could predict loan defaults. Finally, the results of hypothesis testing should enable the identification of accounting treatments for leases that were more suitable to predict loan defaults. In conclusion, Beaver et al. (1968) stated that the predictive value of accounting information was created under the concept of the social and natural sciences in which researchers are able to build up hypotheses to test whether accounting information provides predictive value.

However, without empirical research to investigate the predictive value of accounting information, the theory may not be persuasive. Libby (1975) continued the work of Beaver et al. (1968) by conducting empirical research to observe whether accounting information provided predictive value about loan defaults. Both a discriminant analysis and a subject interview approach were conducted. The result confirmed Beaver et al. (1968)'s theory. The study found that accounting information could be used to predict loan defaults.

By using the inductive research method, Carsberg, Hope, and Scapens (1974) also strengthened the work of Beaver et al. (1968). The paper started by explaining that financial accounting was founded on logical assumptions: going concern assumptions, accrual principles, consistency, and prudence and perhaps historical cost and the recognition of profit on realisation. These assumptions were considered to be scientific in nature. As a result, accounting information should contain scientific information and could be considered as a predictive tool. Carsberg et al. (1974) referred also to the previous literature, which supported the predictive value of accounting information. The paper finally concluded that both the fundamentals of accounting and the primary means of choosing the most useful alternative method of preparing financial accounting reports led to the conclusion that accounting data could be recognised as a predictive tool for decision making Carsberg et al. (1974).

Davis, Menon, and Morgan (1982) also supported the predictive value of accounting information. The study showed that accounting theory and research had been generated by a numerical view of reality, which resulted in specific kinds of imagery. Consequently, accounting information was perceived in four principal images: historical record, description of current economic reality, information system, and community. Davis et al. (1982) stated that it was ignorant to consider accounting information just for specific purposes. The study encouraged the view that the subjective nature of image-led users meant that no one's image could capture fully the essence of accounting. New images would and should be and generated to add new dimensions to meet changes in context. Accounting, in essence, attempted to meet the requirements of the context in which it was set (Davis et al., 1982). In other words, accounting information could be further used as a predictive tool, but there might be as yet undiscovered characteristics.

Finally, Staubus (1977) simply stated that if predictions for the future mirrored events in the past, it would be impossible to ignore accounting data. Therefore, accounting information, based on events in the past, was valuable in this way. The results from prediction models should be useful information for the future.

In this section, the study has achieved the main objective of this chapter by explaining why accounting information could be considered as predictive information. The analysis results in the finding that both narrative descriptions and empirical research reveal the predictive ability of accounting information.

2.6 Implementation of Accounting Information and Its Usefulness

As stated in Section 2.5, one of the main objectives of financial reports is to furnish information in making financial reports that could be considered as a predictive tool. This gives rise to the question of how financial reports might be utilized in practical ways. Also, the amount of information in financial reports is somewhat extensive, which theory should be used when selecting information from them. The following section attempts to answer these questions. The usefulness of financial reports concerning business failure prediction is also discussed. In addition, the present study also aims at observing whether financial reports could be useful information for predicting business failure or not by studying about the example displaying how to select data. Finally, some concerns when implementing financial reports are additionally raised.

2.6.1 Financial Ratios as Representative of Financial Reports

The implementation of financial reports can be an easy matter of taking some accounting figures from reports to analyze them for specific purposes. For example, to analyze how a company has done well in its operations in recent years, the current year and previous year's net profits could be a good source of information. However, using accounting figures (sometimes called absolute value) extracted from financial reports might not be able to make full use of the accounting information. For example, firm size is a variable that might affect comparisons of accounting figures in various industries. Financial ratio analysis is created to overcome this constraint. For this reason, ratios are more likely to be representative of financial reports. This is because ratio analysis provides an idea of the estimation of empirical relationships between at least two financial

variables. Dev (1974) also stated that financial ratios gave representative financial reports in both balance sheets and income statements. Ratios can also be thought of status indicators of fundamental relationships within the business. They are barometers of relationships and business conditions within the organization. In fact, all financial and operating statistics should be viewed to determining fundamental relationships (Dev, 1974).

2.6.2 Usefulness of Accounting Information in Predictive Areas

It is believed that the banking industry initially adopted financial ratios when approving loans to customers. Due to the tremendous increase in financial information, the analysis of financial reports was changed from an item-by-item basis to the segregation of current from non-current items. Finally, the relationships between current and non-current asset items began to come under scrutiny (Horrigan, 1978). Foulke (1961) stated that the first financial ratio was the current ratio, which had a significant and long-lasting impact upon financial statement analysis, more than any other ratio. In addition, Dev (1974) believed that the main purpose of using the current ratio by commercial banks was to predict clients' short-term financial insolvency.

In his review papers, Barnes (1987) found that there were two principal uses of financial ratios: to control the size effect on the financial variables being examined and to control industry-wide factors to compare between a subject and its industry. Size is only properly controlled when two financial variables are in proportion. Also, in practical financial statement analysis, a firm's ratios would be compared with industry norms. This is to know how the firm performed compared with the industry.

Financial ratios have been employed in various areas. In the area of prediction, financial ratios have been widely adopted. Belkaoui (2000) found that ratios have been employed in three main predictive areas. Firstly, financial ratios are useful when researchers would like to predict certain situations or events. Specific prediction areas include bond premiums and bond rating predictions, predictions of corporate restructuring behavior, such as corporate take-overs, merger and acquisitions, credit and bank lending decisions.

Secondly, financial ratios could be suitable for time-series analysis. Time-series analysis assumes that accounting variables could be best described as random variables.

Thus, the past values of a single data set enable clues regarding the future realization of the same data set. The most predictive area in time series-analysis related to the prediction of future earnings. Future earnings prediction was based on the theory that accounting figures have aggregated numbers in two dimensions: temporal (i.e. quarterly earnings) and compositional (i.e. annual earnings). Examples of time-series analysis can be such as using past annual earnings to predict future earnings, using past quarterly earnings to predict future earnings and using earnings components to predict future earnings.

Finally, financial ratios are widely used to predict financial distress. This is because firm failure costs are considered to investors, especially minor ones. The main objective of these types of research is to provide a pre-warning signal prior to firm failure (Belkaoui, 2000).

In the present study, financial ratios are one of the independent variables in the data set. The main objective of the study is to investigate which financial ratios are statistically significant to the probability of delisting. As a result, when referring to Belkaoui (2000), the present study will use financial ratios to predict firm failure.

2.6.3 Supporting Theory for Selecting Ratios: an Example of Failure Prediction

Beaver (1966) initially studied failure prediction, and subsequent research relating to business failure. However, supporting theories for selecting a set of financial ratios are few. The review papers by Zavgren (1983), Jones (1987), Keasey and Watson (1991) found that the cash-flow concept was the only theory used in predicting business failure. It is not too surprising that financial ratios derived from the “cash flow” concept, which would be appropriated when analysing company insolvency. This concept was introduced by Beaver (1966). He explained that the firm was viewed as consisting of a pool of liquid assets, which was supplied and drained by the firm’s operations. As a result, firm insolvency could be defined in terms of the probability that the reservoir would be drained. From this concept of ratio analysis, four propositions were stated:

1. The larger the reservoir, the smaller the probability of failure.
2. The larger the net liquid assets flow from operations (i.e. cash flow), the smaller the probability of failure.
3. The larger the amount of debt held, the greater the probability of failure.

4. The larger the firm's expenditures for operations, the greater the probability of failure.

As a result, the four propositions could be used in business failure prediction with main value of six financial ratios, as shown in Table 2.4.

Table 2.4 Prediction of the Mean Value of Failed Firms and Non-Failed Firms

Ratios	Prediction^A
Cash flow to total debt ^B	Non-failed > failed
Net income to total assets	Non-failed > failed
Total debt to total assets	Failed > non-failed
Working capital to total assets	Non-failed > failed
Current ratio	Non-failed > failed
No-credit interval	Non-failed > failed

^A Non-failed > failed is a prediction that the mean value of the non-failed firms will be greater than that of the failed firms

^B Debt is defined as current plus long term liabilities plus preferred stock.

Source: Beaver (1966) Financial Ratios as Predictors of Failure. *Supplement to Journal of Accounting Research*, pp. 81.

However, Jones (1987), Keasey and Watson (1991) tended to disagree with the cash-flow concept in failure prediction. The overall reason was that cash flow financial figures might not represent firms' financial liquidity. Keasey and Watson (1991) explained that it was arguable that firms failed because of insufficient cash for operations. Distressed firms should also depend upon other factors, particularly upon economic cycles, capability of management team, shareholders' financial status, and creditors' point of view. In addition, there had not been formal theoretical models of the relationship between the failure process and financial variables, economic process, management team and creditors' actions. Jones (1987) found some other arguments against the cash flow theory for failure prediction. For example, one of the business failure studies found that the ratio of dividends over total cash flow was statistically significant in predicting failed companies. Jones (1987) argued that the result did not provide any incremental information value because a sudden drop or absence of dividend should be considered as

a financial distress signal. Finally, Jones (1987) concluded that most failure prediction research had not applied any theory when selecting financial ratios for empirical research.

However, Jones (1987) mentioned that the lack of theory to support ratio selection was not necessarily a serious problem to research about bankruptcy. Jones (1987) noted that theory sometimes played a limited role in leading empirical research projects, for example, in research related to corporate disclosure, accounting method choices, time series analysis, and financial distress. The study encouraged researchers to accept a relatively high degree of uncertainty, particularly in the variables to be examined. This was perhaps because economic and institutional factors might lack homogeneity in motivation for bankruptcy filing (Jones, 1987). This led to the finding by Barnes (1987) that failure prediction studies were likely to adopt well-known and successful sets of financial ratios in prediction models.

In the present study, financial ratios will be selected according to the replication of previous studies. There are two reasons for this. They are to observe whether financial ratios give useful incremental information to predict business failure and to compare the results of a previous study through replication.

2.6.4 A Concern When Implementing Financial Reports in Business Failure

Some arguments against the predictive value of accounting information are somewhat extensive. The most controversial issue is the valuation of accounting figures in financial reports. Chambers (2006) claims that the word “account” refers to a statement of what has happened, as no one can give an account of something that has not yet happened. Consequently, to speak of accounting for the future was a misuse of language. Accounting roles should take part mostly as a retrospective act, not as anticipatory calculations (Chambers, 2006).

To answer the above concern, the study by the Accountants International Study Group (1975) should provide good answers. The study surveyed accounting practices in Canada, the United Kingdom, and the United States, relating to going concern financial reports, and found that the tendency in accounting figures has moved to market or nearly market price. Even if the study is quite old, Table 2.5 shows the differences between prepared financial reports based on the going concern basis and those based on the liquidation value.

Table 2.5 Comparison of Accounting Methods of Going Concern Basis and Liquidation Basis

Items	Going Concern Basis	Liquidation Basis
Fixed assets such as land, buildings, plant & machinery, motor vehicles etc.	At cost (valuation, in the UK) less accumulated depreciation to write down to estimate residual value over estimated useful life. The net book amounts do not purport to represent realisable values	At estimated realisable values on a “break-up” basis
Inventories	At the lower cost and “market” (as the term is used in the three countries) in the ordinary course of trade	At estimated realisable value on a “break-up” basis, which will almost always be much less than in the ordinary course of trade
Accounts receivable	At the amount of the debts less provision for doubtful accounts	At the amount of the debts less any contingent or other claims which can be set-off and less provision for doubtful accounts
Deferred costs and prepaid expenses	Carried forward as assets to match against future revenues	Normally excluded as of no value

Table 2.5 Comparison of Accounting Methods of Going Concern Basis and Liquidation Basis (Cont.)

Items	Going Concern Basis	Liquidation Basis
Investment		
Long-term	At equity or cost, unless value permanently impaired	At market value
Short-term	At lower of cost or market value (sometimes just at market value)	At market value
Liabilities	No provision for additional liability which would emerge if the enterprise were to cease operations	Full provision for additional legal liabilities on cessation

Source: Accountants International Study Group (1975) *Going concern problems*. paragraph 48.

Some of the accounts in Table 2.5 may raise some concerns. Arguments might be arisen according to the values of accounting receivable, inventories, fixed assets, deferred costs, and prepaid expenses, which are based on the going concern basis rather than the liquidation basis. An explanation could be that even though these accounts are presented at a historical cost under the going concern basis, recent accounting standards require these accounts to be regularly re-evaluated to ensure that they are still presented at net realisable values. In some asset items, recent accounting standards require liquid assets such as investments to be presented at market price. In addition, the latest revision of Statements of Principles in the UK in 1999 tended to accept the current cost value of accounting. Zeff (1999) stated that in the world of changing relative prices, the use of current value accounting could remedy some of the inherent deficiencies of historical cost accounting. In addition, historical cost accounting has diluted to become advantageous accounting information which would have been unnecessary if current value accounting had been adopted.

Finally, it is somewhat difficult to search for financial reports prepared under liquidity value. Sterling (1970) explained that liquidation value could only be proved when firms were liquidated. As a result, income was never determined according to the going concern concept. In other words, with the going concern concept, it is impossible to prove what financial reports should look like and what the significant differences between financial reports on the going concern basis and the liquidation basis (Sterling, 1970). Woolf (1983) claimed that, to his knowledge, in general, no financial reports were drafted on any basis other than that of the going concern. As a result, accounting figures in financial reports were not disturbed by the concept.

In the present study, the concern regarding the historical costs in accounting figures might not be persuasive enough when compared with the characteristics of accounting information. Therefore, financial ratios will be employed in the data set as independent variables. This is to test whether financial ratios are indicators to predict business failure.

In this section, the study has mainly discussed the implementation of accounting information and its usefulness. Financial ratios are recommended as being representative of financial reports. Concrete supporting theories when selecting ratios in failure prediction is less likely to occur. The previous literature tends to use well-known and successful sets of financial ratios. Finally, the study has found that although the going concern concept is important when preparing financial reports, the concept is unlikely to play a great role in predicting failed companies. Financial reports are still useful when analysing business failure.

2.7 Concluding Remarks

Financial reports have been perceived as valuable knowledge of the company's financial position, its past success or failure as well as perhaps its future aspects. However, there might be some other values that users are able to use within financial reports. In this chapter, the analysis finds that the predictive value of accounting information is one source of valuable information in financial reports. The reason why accounting information provides predictive value is because accounting information is formed under positive science. The positive science of accounting information leads to

the development of theory or hypotheses within accounting information. The results from the analysis yield valid and meaningful predictions about phenomena not yet observed (Friedman, 1953, Keynes, 2017). The accounting information is scientific in nature (Beaver et al., 1968). These two characteristics of accounting information lead to the conclusion that accounting information could be considered as a predictive tool. In addition, many previous empirical studies have been successfully carried out to test the predictive ability of accounting information. In a practical way, financial ratios are representative of financial reports. The ratios play a great role as independent variables in failure prediction models. However, no theory supporting the selection of financial ratios is to be found in previous research. Even if there were arguments against the predictive ability of accounting information relating to the historical costs of accounting figures, the tendency in accounting standards has moved towards value accounting figures in the way that they are presented with market or nearly market value.

2.8 Financial Failure Forecasting

It is a method of estimating company's financial risk level. There are many researches that can predict financial failure with the following financial ratios.

Altman (1968) studied 66 companies as study samples and divided them into 2 groups. For the first group (Group 1), there are 33 manufacturers who filed for bankruptcy under Chapter X of the National Bankruptcy Act during the period 1945-1965. The average asset size of the company was \$6.4 million, with a range between \$0.7 million to \$25.9 million. For the second group (Group 2), there are 33 companies still operating in 1996 and collecting data from the same year that the data of bankruptcy company was collected. The multiple discriminant analysis (MDA) is used to select the financial ratio to use in predicting the degree of financial failure. The 22 financial ratios are categorized into 5 groups: profitability, liquidity, solvency, activity and leverage ratios. In the end, 5 financial ratios can be used to predict corporate bankruptcy, including X_1 = working capital/total assets, X_2 = retained earnings/total assets, X_3 = earnings before interest and taxes/total assets, X_4 = market value of equity/book value of total debt, and X_5 = sales/total assets. The results showed that the variables X_1 through X_4 were significant at the level of 0.001, indicating a significant difference in these variables between groups.

The X5 variable does not show a significant difference between groups. In addition, the discriminant coefficients of the equation show positive signals which are expected. It represents a company that has a lot of possibility for bankruptcy, the discriminant score will be lower. The discriminant function is $Z = 0.012(X1) + 0.014(X2) + 0.033(X3) + 0.006(X4) + 0.999(X5)$.

Altman (1983) improved his original model from 1968 and set different weights for use in private companies. One of the limitations of the original model is that it requires the stock price of the company that is traded on the stock exchange. The new model was changed to the book value of equity instead of using the market value. Altman (1983) found that the modified model was slightly less reliable. He used 66 companies, divided equally between failed companies and non-failed companies. The newly developed classification function is $Z = 0.717(X1) + 0.847(X2) + 3.107(X3) + 0.420(X4) + 0.998(X5)$, where X1 = working capital / total assets, X2 = retained earnings / total assets, X3 = earnings before interest and taxes / total assets, X4 = book value of equity / book value of total Liabilities, X5 = sales / total assets, Z = overall index. For the modified model, the Z-value is lower than 1.23 indicating that the company has failed; between 1.23 and 2.90 is a gray area, and above 2.90 is a healthy company.

Frydman, Altman, and Kao (1985) adopted the recursive partitioning algorithm (RPA), an alternative model to identify the bankruptcy of various companies. The RPA will be presented for predicting business failures and compared the resulting classification trees to models derived by discriminant analysis (DA). The sample consisted of 58 bankrupt companies and 142 non-bankrupt companies in the manufacturing and retail business from 1971 to 1981. Financial information was obtained from the COMPUSTAT universe and used 20 financial ratios selected by Altman (1968), Deakin (1972), Altman and Sametz (1977) to create two RPA classification trees and two discriminant models and to compare between RPA and DA models. Variables used in the first model include (1) net income / total assets, (2) current assets / current liabilities, (3) log (total assets), (4) market value of equity / total capitalization, (5) current assets / total assets, (6) cash flow/ total debt, (7) quick assets/ total assets, (8) quick assets/ total liabilities, (9) earnings before interest and taxes/ total assets, and (10) log (interest coverage). Frydman et al. (1985) created the second model consisting of 4 most important variables from the first

model. The results of the studied model succeeded in identifying 90% of the sample group, stating that cash flow to total debt is the most important variable.

Altman (1993) proposed the original Z-score model modification, called the Altman's revised four-variable Z-score bankruptcy prediction model for non-manufacturing firms. He eliminated the X5 (Sales to total Assets) variable. The asset turnover is a variable that is sensitive to industrial business and uses book value instead of market value. The classification results of the Z-score model with 4 variables are almost as good as the original Z-score. Altman (1993) found that the second model was slightly less reliable than the original model. For the new 4 variables model, if the Z score is less than 1.10, the company will have a chance of bankruptcy. The Z score between 1.10 and 2.60 is the zone of ignorance or gray area, it requires careful classification of bankrupt companies and non-bankrupt companies. The Z score higher than 2.60 is classified as healthy companies. Four variables that are updated by Altman (1993) include X1 = working capital / total assets, X2 = retained earnings / total assets, X3 = earnings before interest and taxes / total assets, and X4 = book value of equity / book value of total liabilities.

Leshno and Spector (1996) obtained 88 sample companies traded on the New York Stock Exchange (NYSE). They selected 44 companies that went bankrupt between 1984 and 1988 and had assets of \$10 million or more, paired with 44 non-bankrupt companies from the same industry group and similar asset sizes. They conducted a study using 70 financial ratios, selected to 41 financial parameters and ratios, which included 5 financial ratios of Altman's discriminant analysis (Z model). These five financial ratios can consist of working capital/total assets, retained earnings / total assets, earnings before income tax/total assets, market value/total liabilities, and sales/total assets. They collected data for the past 3 years before bankruptcy and used various neural network models and compared among them. The results showed that the predictability of the preferred neural net model is more accurate than the classical discriminant analysis models.

Razuk (2001) studied regression analysis to examine the relationship between quarterly percentage changes in financial ratios (independent variables) and two dependent variables: the percentage change in the E/P ratio of casino firms and the percentage change in a company's market value. The results showed that a percentage

current ratio had a positive relationship with a percentage change in the price/earnings multiple ratios for the medium and small capitalization casino companies. Therefore, an increase in the current ratio showed an increase in the price/earnings ratio. In addition, the results indicated that the change in the percentage change in the D/E ratio is positively related to a percentage change in P/E ratio. This finding may be explained by the fact that highly leveraged companies tend to provide a higher return on investment. In addition, this study suggested that an increase in the asset turnover ratio had a negative relationship with the percentage change of companies' market capitalization of casino companies.

McKee and Lensberg (2002) studied a hybrid approach to predict bankruptcy by developing a previously recognized genetic programming algorithm. The study uses data from 291 US public companies during the years 1991-1997. The second stage genetic programming model developed in this research consists of an 80% accurate decision model in the validation sample compared to the original rough sets model with 67% accuracy. They concluded that not only negative profits but unusually high profits are also signs of high bankruptcy risks, except in very small companies. The risk of bankruptcy decreases with the size of the company only if the profit is positive. While if the profit is negative, the small company will increase the loss more than the big company. The companies that do not have current profits may still be considered good companies if they are small companies and still have good liquidity. For large corporations, good liquidity status does not show that the company will have a positive profit in the analysis of bankruptcy status. In the end, it was concluded that genetic programming produced a model that was less complicated, more accurate, and gave insights into the theory of bankruptcy than a rough set theory-based model. They point out that creating a hybrid model using rough sets and genetic programming may be an effective method for developing useful models.

He (2002) conducted a logit analysis from a small group of companies comprised of 316 bankrupt and non-bankrupt companies that traded on the over-the-counter (OTC) market in 1990s. The objective was to study the characteristics of financial and market forecasts for bankruptcy of small companies and to determine whether these predictive variables were effective in predicting bankruptcy of a small company when using a multivariate model. Independent variables were of two accounting ratios: return

on assets and financial leverage and of two market variables: excess rate of return and standard deviation of residual returns, which assess the probability of bankruptcy. The empirical results suggest that smaller companies with low financial profitability and market return, and high financial leverage and firm-specific risk were more likely to go bankrupt. The overall classification accuracy rate was 92% in the previous year and 83%, 80% respectively in two and three years before the bankruptcy.

Ryu and Yue (2005) used a new method called isotonic separation to evaluate the company's bankruptcy prediction. There was a method of reducing the size used to reduce the predictive ratio and then a use of various classification methods, including discriminant analysis, neural networks, decision tree induction, learning vector quantization, rough sets, and isotonic separation, with lower financial ratios. Experiments show that the isotonic separation method is a technique that works better than other predicting bankruptcy methods in the short term. The study collected data from various sizes companies in industries that failed during 1996 and 2001 from Standard & Poor's COMPUSTAT North American database using 3-years data before the bankruptcy. The previous study used 5 years of financial information before bankruptcy and used 23 financial ratios for data analysis, including cash flow/total assets, cash/sales, cash flow/total debt, current assets/current liabilities, current assets/total assets, current assets/sales, earnings before tax and interests/total assets, retained earnings/total assets, net income/total assets, total debt/total assets, sales/total assets, working capital/total assets, working capital/sales, quick assets/total assets, quick assets/current liabilities, quick assets/sales, market value of equity/total capitalization, cash/current liabilities, current liabilities/equity, inventory/sales, equity/sales, market value of equity/total debt, and net income/total capitalization.

Shin, Lee, and Kim (2005) studied the effectiveness of support vector machines (SVM) in predicting the bankruptcy problem. Although it is a well-known fact that the back-propagation neural network (BPN) is a good form of work, there are some limitations. In this study, it was shown that the SVM approach was more effective than BPN on corporate bankruptcy prediction. The results show that the accuracy and efficiency of SVM are better than BPN because the size gets smaller. The data from the research is provided by the Korea Credit Guarantee Fund in Korea, consisting of

externally non-audited 2,320 medium-sized manufacturing companies, which filed for 1,160 bankruptcy cases and 1,160 non-bankruptcy cases during 1996 to 1999. They use two steps in the process to enter the selected variable. In the first step, the study choose 52 variables from more than 250 financial ratios by independent-samples t-test. In the second step, the study chose 10 variables using a MDA stepwise method, including total asset growth, contribution margin, operating income to total asset, fixed asset to sales, owner's equity to total asset, net asset to total asset, net loan dependence rate, operating asset constitute ratio, working capital turnover period, and net operating asset turnover period.

Youn (2005) created the MDA and logit models to assess the company's financial ratios by one year before the failure. For MDA, the model was created with three ratios: debt ratio, interest coverage ratio, and total assets turnover ratio. The classification results showed that the MDA model achieved the overall classification accuracy of the samples by one year before the failure at 86.36%. The logit model consisted of three variables: debt ratio, interest coverage ratio, and EBITDA to CL ratio. The classification results of the logit model showed that the overall prediction accuracy was 87.66%. Overall there were no significant differences in the efficiency of both models.

Zeytinoglu and Akarim (2013) said that the risk of financial failure means that the company cannot pay current liabilities. Financial failure may lead to bankruptcy or liquidation. The objective is to develop a reliable model to identify the financial risks of the listed company in Istanbul Stock Exchange. They used 20 financial ratios to predict the company's financial failures and develop the most reliable models. The financial ratios used for analysis are: X1 = current assets/short term debts, X2 = (current assets-inventories)/short term debts, X3 = sales/inventories, X4 = receivables/(sales /365), X5 = sales/fixed assets, X6 = sales/total assets, X7 = total debts/total assets, X8 = equity capital/total assets, X9 = total debts/equity capital, X10 = net profit-loss/sales, X11 = net profit-loss/total assets, X12 = operating profit-loss/total assets, X13 = net profit-loss/equity capital, X14 = cash and cash equivalents/ short term debts, X15 = (current assets - short term debts)/total assets, X16 = short term account receivable/current assets, X17 = sales/equity capital, X18 = short term debts/total assets, X19 = long term debts/total assets, and X20 = profit-loss before tax/equity capital. Based on the analysis using

20 financial ratios, it was found that there were significant financial ratios to predict successful and unsuccessful companies in 2009, including X1, X4, X6, X8, and X15; in 2010, including X8, X15, and X18; and in 2011, including X8, X9, X15, and X17. Therefore, capital adequacy and net working capital/total assets ratios are important in all 3 periods, with predictive accuracy of 88.7%, 90.4%, and 92.2% in 2009, 2010 and 2011, respectively, showing the model developed for 3 years is effective in predicting the financial failures of companies traded in the Istanbul Stock Exchange.

Fedorova, Gilenko, and Dovzhenko (2013) state that the problem of bankruptcy forecasting is one of the most attended studied, creating effective classification variables, including tasks that deal with the imbalance of data sets. In this research, the combination of modern learning algorithms (MDA, LR, CRT, and ANNs) is used to identify the most effective ways to predict bankruptcy for Russian manufacturing companies. At the same time, they are trying to find financial indicators set by Russian legislation that is effective for bankruptcy prediction. In Russia, the bankruptcy of a company is a complex process with many steps. In the research, they chose a legal method to determine a bankrupt company that is under bankruptcy proceedings (final step of bankruptcy). At the time of data collection of the sample during 2007-2011, there were 3,505 medium and large manufacturing companies, consisting of 504 bankrupt and 3,001 non-bankrupt companies, collecting financial ratios for 1 year before bankruptcy. There were 2 processes in variables selection. Firstly, they selected 98 financial indicators, and the remaining 75 financial indicators were selected from the ANOVA test. Secondly, they used 3 procedures to classify 75 variables: namely multivariate discriminant analysis (MDA), classification and regression tree (CRT), and logit regression (LR). It is worth noting that the inventories/current liabilities are important indicators.

Table 2.6 Summary of Ratios Used in Failure Prediction Studies

Ratios / Study	1	2	3	4	5	6	7	8	9	1	1	1	1	1	1	1	1	1	
	0	1	2	3	4	5	6	7	8	9									
Liquidity																			
Cash/Total assets				✓	✓	✓			✓									✓	✓
Cash/Current liabilities					✓					✓	✓		✓	✓	✓	✓		✓	✓
Cash/Sales					✓													✓	
Working capital/Total assets	✓	✓						✓				✓						✓	
Working capital/Sales					✓													✓	
Current assets/Current liabilities				✓		✓	✓	✓	✓						✓	✓	✓		
% Change in current ratio					✓			✓											
Times in current ratio less than one (last three years)					✓														
Current assets/Total assets				✓	✓	✓			✓									✓	✓
Current assets/Total liabilities			✓					✓											
Current assets/Sales					✓				✓									✓	
Current liabilities/Total assets			✓					✓											
(Cash - Current liabilities)/Operating costs, excluding depreciation			✓																
Cash flow from operations/Total liabilities					✓			✓											
% Change in cash flow from operations					✓														
Times of negative cash flow from operations (last three years)					✓														
Cash flow /Total liabilities					✓														
% Change in cash flow					✓														
Times of negative cash flow (last 3 years)					✓														

Table 2.6 Summary of Ratios Used in Failure Prediction Studies (Cont.)

Ratios / Study	1	2	3	4	5	6	7	8	9	1	1	1	1	1	1	1	1	1		
	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9
Gearing																				
Long-term liabilities/Total assets									✓										✓	✓
Total loans/(Total assets - Current liabilities + Short-term loans - Intangible assets)															✓					
Total liabilities/Total assets						✓	✓	✓	✓		✓		✓		✓	✓	✓	✓	✓	✓
Retained earnings/Total assets	✓	✓			✓	✓	✓			✓	✓	✓	✓			✓	✓		✓	✓
Common equity/Total liabilities						✓														
Net worth/Total liabilities						✓														
Market value of equity/Total liabilities	✓	✓														✓				
Market value of equity/Total assets											✓									
Profitability																				
Natural log of sales									✓											
Interest payments/(Interest payments + Net income (NI) before tax)											✓									
EBIT and depreciation/(Total assets - Intangible assets)									✓											
EBIT and depreciation/Total liabilities									✓											
EBIT/Total assets	✓	✓			✓	✓						✓				✓	✓		✓	✓
EBIT/(Total assets - Current liability + Short-term loans - Intangible assets)															✓					
EBIT/Shareholders' equity						✓														✓
% Change in EBIT						✓														
Times in negative EBIT (last 3 years)						✓														
NI before depreciation/(Total assets - Intangible assets)															✓					

Table 2.6 Summary of Ratios Used in Failure Prediction Studies (Cont.)

Ratios / Study	1	2	3	4	5	6	7	8	9	1	1	1	1	1	1	1	1	1			
	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	
Profitability																					
NI before tax/(Total assets - Intangible assets)								✓													
NI before tax/Current liabilities			✓																		
NI before tax/Nominal value of issued capital								✓													
NI before tax/sales								✓													
NI/Total assets			✓			✓	✓		✓	✓				✓	✓	✓	✓	✓			
NI/Shareholders' equity					✓															✓	
% Change in NI					✓																
Times in negative NI (last 3 years)					✓																
Recurring operating losses								✓													
EPS										✓											
EPS this year x Retail price index this year								✓													
EPS last year x Retail price index last year								✓													
Change in adjusted EPS								✓													
Efficiency																					
Sales/Receivables													✓	✓						✓	
Sales/Current assets			✓																		
Sales/Total liabilities								✓												✓	
Sales/Fixed assets								✓											✓	✓	✓
Sales/Total assets	✓	✓			✓	✓		✓					✓					✓	✓	✓	✓

STUDY

- | | |
|--------------------------------|------------------------------|
| 1. Altman (1968) | 2. Altman and McGough (1974) |
| 3. Taffler and Tisaw (1977) | 4. Deakin (1977) |
| 5. Levitan and Knoblett (1985) | 6. Frydman et al. (1985) |
| 7. Menon and Schwartz (1987) | 8. Peel (1989) |

STUDY

- | | |
|---|----------------------------------|
| 9. Hopwood, Pluck, and Gurdon (1989) | 10. Koh and Killough (1990) |
| 11. Koh (1991) | 12. Altman (1993) |
| 13. Leshno and Spector (1996) | 14. Lennox (1999) |
| 15. McKee and Lensberg (2002) | 16. Ryu and Yue (2005) |
| 17. Etemadi, Rostamy, and Dehkordi (2009) | 18. Zeytinoglu and Akarim (2013) |
| 19. Fedorova et al. (2013) | |

Table 2.7 Financial Ratios Used in the Study of Failure Prediction

Financial Ratios	Study
Liquidity	
Cash/Total assets	
<p>It measures the portion of a company's assets held in cash or marketable securities. Although a high ratio may indicate some degree of safety from a creditor's viewpoint, excess amounts of cash may be viewed as inefficient.</p>	<p>Deakin (1977), Levitan and Knoblett (1985), Frydman et al. (1985), Hopwood et al. (1989), Etemadi et al. (2009), Fedorova et al. (2013)</p>
Cash/Current Liabilities	
<p>The ability of a company to settle its current liabilities using only its cash and highly liquid investments. Highly liquid investments are referred to as investments that can be liquidated within 3 months.</p>	<p>Levitan and Knoblett (1985), Koh and Killough (1990), Koh (1991), Lennox (1999), McKee and Lensberg (2002), Ryu and Yue (2005), Etemadi et al. (2009), Fedorova et al. (2013)</p>
Current assets/Current liabilities	
<p>The current ratio measures the ability of a company to cover its short-term liabilities with its current assets.</p>	<p>Deakin (1977), Frydman et al. (1985), Menon and Schwartz (1987), Peel (1989), Hopwood et al. (1989), McKee and Lensberg (2002), Ryu and Yue (2005), Etemadi et al. (2009)</p>

Table 2.7 Financial Ratios Used in the Study of Failure Prediction (Cont.)

Financial Ratios	Study
Liquidity	
Current assets/Total assets	
<p>This ratio helps to measure the liquidity of the company. A company with high ratio indicates high liquidity and vice versa.</p>	<p>Deakin (1977), Levitan and Knoblett (1985), Frydman et al. (1985), Hopwood et al. (1989), Etemadi et al. (2009), Fedorova et al. (2013)</p>
Gearing	
Long-term liabilities/Total assets	
<p>It is a measurement representing the percentage of a corporation's assets financed with loans or other debt obligations lasting more than one year.</p>	<p>Hopwood et al. (1989), Fedorova et al. (2013)</p>
Total loans/(Total assets - Current liabilities + Short-term loans - Intangible assets)	
<p>It measures a firm's total loans as a percentage of its total assets - Current liabilities + Short-term loans - Intangible assets.</p>	<p>Lennox (1999)</p>
Total liabilities/Total assets	
<p>It is a leverage ratio that defines the total amount of debt relative to assets.</p>	<p>Levitan and Knoblett (1985), Frydman et al. (1985), Menon and Schwartz (1987), Peel (1989), Koh (1991), Leshno and Spector (1996), McKee and Lensberg (2002), Ryu and Yue (2005), Etemadi et al. (2009)</p>

Table 2.7 Financial Ratios Used in the Study of Failure Prediction (Cont.)

Financial Ratios	Study
Gearing	
Retained earnings/Total assets	
This measures cumulative profitability over time as a proportion of total assets. In addition, this measures the leverage of a firm (high scoring firms have financed their assets through retention of profits, rather than debt).	Altman and McGough (1974), Levitan and Knoblett (1985), Frydman et al. (1985), Menon and Schwartz (1987), Koh and Killough (1990), Koh (1991), Leshno and Spector (1996), Ryu and Yue (2005), Etemadi et al. (2009), Fedorova et al. (2013)
Profitability	
EBIT/Total assets	
It indicates a proportion between the measure that shows company's profitability and company's assets. In short, it represents general profitability of the company's assets.	Altman and McGough (1974), Levitan and Knoblett (1985), Frydman et al. (1985), Ryu and Yue (2005), Etemadi et al. (2009), Fedorova et al. (2013)
EBIT/(Total assets - Current liability + Short-term loans - Intangible assets)	
It measures a firm's EBIT as a percentage of its total assets - Current liability + Short-term loans - Intangible assets.	Lennox (1999)
NI before depreciation/(Total assets - Intangible assets)	
It measures a firm's NI before depreciation as a percentage of its Tangible assets.	Lennox (1999)

Table 2.7 Financial Ratios Used in the Study of Failure Prediction (Cont.)

Financial Ratios	Study
Profitability	
NI/Total assets Return on assets indicates how effectively the company is deploying its assets. A very low return on asset, or ROA, usually indicates inefficient management, whereas a high ROA means efficient management.	Deakin (1977), Frydman et al. (1985), Menon and Schwartz (1987), Hopwood et al. (1989), Koh (1991), McKee and Lensberg (2002), Ryu and Yue (2005), Etemadi et al. (2009)
Efficiency	
Sales/Receivables It measures the annual turnover of accounts receivable. A high number reflects a short lapse of time between sales and the collection of cash, while a low number means collections take longer.	Lennox (1999), Leshno and Spector (1996), Fedorova et al. (2013)
Sales/Total liabilities It measures a firm's sales as a percentage of its total liabilities.	Peel (1989), Fedorova et al. (2013)
Sales/Fixed assets The fixed-asset turnover ratio is, in general, used by analysts to measure operating performance. This ratio specifically measures a company's ability to generate net sales from fixed-asset investments.	Peel (1989), Etemadi et al. (2009), Fedorova et al. (2013)
Sales/Total assets Investment turnover measures a company's ability to use assets to generate sales. Although the ideal level for this ratio varies greatly, a very low figure may mean that the company maintains too many assets or has not deployed its assets well.	Altman and McGough (1974), Levitan and Knoblett (1985), Frydman et al. (1985), Peel (1989), Leshno and Spector (1996), Ryu and Yue (2005), Etemadi et al. (2009), Fedorova et al. (2013)

Table 2.8 Summary of Methods in Examination of Financial Failure

Authors	Methods
Altman and McGough (1974)	Discriminate Analysis
Deakin (1977)	Discriminate Analysis
Levitan and Knoblett (1985)	Discriminate Analysis
Frydman et al. (1985)	Recursive Partitioning Algorithm (RPA)
Menon and Schwartz (1987)	Logistic Regression
Dopuch, Holthausen, and Leftwich (1986)	Probit Analysis
Hopwood et al. (1989)	Multivariate Analysis
A1-Darayseh (1990)	Logit Analysis
Koh (1991)	Probit Analysis
Raghunandan and Rama (1995)	Logistic Regression
Leshno and Spector (1996)	Neural Network
Kiviluoto (1998)	Self-Organizing Map
Lennox (1999)	Probit Analysis
McKee and Lensberg (2002)	Genetic Programming (GP)
Darayseh, Waples, and Tsoukalas (2003)	Logit Analysis
Ryu and Yue (2005)	Isotonic Separation Method
Shin et al. (2005)	Support Vector Machines (SVM)
Youn (2005)	Multiple Discriminant Analysis and Logit Analysis
Youn (2008)	Logit and Neural Networks Models
Etemadi et al. (2009)	Genetic Programming (GP)
Zeytinoglu and Akarim (2013)	Discriminant Analysis Modern Learning Algorithms (Multivariate Discriminant Analysis
Fedorova et al. (2013)	(MDA), Classification and Regression Tree (CRT) and Logit-Regression (LR)).
Li and Wang (2014)	Logit Analysis

2.9 Turnaround Strategies

Profits from business operations are the key factors used to determine the fair value of the business. This is reflected in the price per share traded on the stock exchange. For a company with poor operating results and suffer from a loss for a long time, it will attempt to find and invest in a revamped process that can help rebuild a business and resume company's profitable growth and value. Regardless of the return of earnings, this will reflect a short-term reversal of the stock price, or if a full recovery is possible, resulting in continued growth or retention. In the past, many listed companies on the Stock Exchange of Thailand have been able to go through losses and turnaround to profit. Although most of them are short-term rebounds, after the recovery, the company may have lower operating performance or return to a loss. Of course, short-term gains during this period will lead to a reversal of market prices and a return that is higher than the market average.

2.9.1 The Pattern of Turnaround Strategies

The study of the past revolving process has classified these processes into two main types:

2.9.1.1 Operating turnaround: It is a process that aims to increase operational efficiency quickly. This can be done in a short time to help the company to pass through the crisis. It usually takes place without the need to change the company's business strategy but focuses on achieving the company's performance. It may not be necessary to focus on long-term recovery. The three main strategies are:

1) Revenue Generating: It will be heavily weighted on the existing production lines, by trying to make products that are easily recognizable, make a profit, try to increase sales volume and reduce prices, control inventory, shorten the collection period, increase repayment period, increase in turnover rate, as well as develop production capacity (Hofer, 1980).

2) Cost Cutting: Cost of the business will be thoroughly analyzed and reduced in excess, such as renting machinery instead of buying, reducing product development costs or maintaining proportions relative to revenue, and reducing the cost of maintenance (Tikici, Omay, Derin, Seçkin, & Cüreoğlu, 2011).

3) Asset Reduction: It maximizes utility to existing assets by reducing non-current assets such as sales of tooling, sale of unused land or buildings, reducing non-profitable investments or dissolving non-profitable business units.

The effect of these three strategies is that cost reduction is a more effective strategy than accelerating revenue generation and asset reduction (Hofer, 1980). The problem of business is in the process of recovery. This is due to the ineffectiveness of the operation and the business experiencing serious financial problems. However, despite the rapid recovery in operations, it does not confirm whether the company will perform better or will be able to recover permanently (Kazozcu, 2011). The cost reduction can cause more problems if the company quickly solves the problem by applying this strategy without taking into account the underlying cause.

Implementing a recovery strategy in the field of operations does not guarantee that the company will perform well and will be effective in the long run. Often, companies are experiencing problems that are too drastic to reduce assets and reduce costs (Tikici et al., 2011).

2.9.1.2 Strategic Turnaround: It is a process that looks at future goals and opportunities in consideration of the environment, competition, own resources and adaptation of the business strategy to fit the most competitive opportunities (Pearce II & Robbins, 2008). It is based on marketing, production and/or engineering skills that focus on changing business strategies to deliver better long-term performance. This is ideal when the business does not currently have a critical operational problem but loses its competitive power due to inferior technology, inefficient manufacturing processes, or weak financial status. As a result, the market share has decreased (Hofer, 1980), which often requires a long period of fruitfulness to sustain the company. It is often that the last stage when the expected performance of the actual performance is different after the business has survived and stands out from the cost reduction strategy. Restructuring and repositioning, along with the creation of new management-appropriate strategies, will further enhance the competitive edge of the business (Pearce II & Robbins, 2008), such as diversification, mergers and acquisitions in vertical, new market penetration, or even retraction.

The suitability of each form of turnover will vary depending on the priority and benefits compared to short-term and long-term costs. It may be necessary to use a variety of integrated strategies (Hofer, 1980). The recovery can only be achieved when the business is able to survive the crisis and maintain profitability. Businesses will not be able to really recover if they do not have a strong position for future growth. Growth focus should be on the company's existing constraints and resources rather than on additional resources (Kazozcu, 2011). Businesses should learn from past experience and understand the resources that they lack or need to be improved for better performance. Each company has different situations that rely on different approaches and strategies. There are also many environmental factors that affect the success of internal and external factors. Management should focus on and continually develop its resources and be flexible in its strategy for survival, and crisis is over. No single strategy is the only way to ensure success in a turbulent situation, but it should integrate multiple strategies effectively (Kazozcu, 2011).

2.9.2 Practices to Turn the Business

In the beginning, the business must identify problems that need to be solved urgently. Negative cash flows are often a major problem. Businesses need to analyze costs carefully and consider cutting unnecessary costs or accelerating revenue generation, as well as partial asset sales, cancel some departments, layoffs, improve business model, modification of credit policies, etc. This will result in more cash flow to repay the debt and avoid defaults, leading to higher borrowing costs. The company may negotiate, extend or change terms of repayment with creditors or restructure debt in order to try to reduce the financial costs temporarily or permanently.

Strategy details for a turnaround are usually different for each type of business, but the strategies used are mostly: reduction of staff salaries, sale of unnecessary assets, long-term sale of inventories to those who are willing to buy, sale of fixed assets and rent back, discontinuity of products or services that are not part of the business, price and service adjustment, repositioning or repackaging of goods and services to generate more revenue, increase in products and services variety, relocation of rental premises to where rents are cheaper to reduce operating costs, negotiation with business relationships with key suppliers, and additional funding if needed.

Applying strategies to the application needs to be monitored and may need to be modified to suit the changing circumstances to bring about a successful turnaround (Ventura, 2003).

2.9.3 Financial Risks and Financial Obligations

Funding for business purposes, if not from the shareholders' equity, the business will make money from borrowing or issuing debentures, which ordinary shareholders have to bear with the financial risk of debt. The company will have to pay back the principal and interest on the debt, which will cause the company to pay more interest. This financial risk may arise from the inability to repay principal and interest at maturity due to loss or bankruptcy.

Financial leverage is related to the relationship between earnings before interest and taxes (EBIT) and earnings per share (EPS). For debt consolidation by borrowing, companies need to bring in more money than they have to pay. That is the interest rate. Too much debt causes the company to have a burden that every shareholder must share. If the company's sales are in a sluggish state, the interest burden will affect the company's net profit immediately, resulting in investors risking their investment value and affecting the return on their securities. The financial liability is measured by the total debt to total assets ratio, also known as the leverage factor. This obligation directly affects net profit and liability. This also affects the number of ordinary shares.

2.9.4 Related Research of the Turnaround Strategies

The problem firms with poor performance are often very likely to recover. There is a gap in the company's performance improvement (Castrogiovanni & Bruton, 2000). Getting into the fast turnaround process has the potential to be highly successful, but it is often found that many Asian companies often wait until the problem gets worse and get pressured outside the organization. For example, the company is impossible to pay interest on a loan or even to pay for its employees (Bruton, Ahlstrom, & Wan, 2001). There are various researches on the turnaround strategy as follows:

Schoenberg, Collier, and Bowman (2013) presented existing synthesis of the literature on business turnaround. The aim was to find a viable business strategy for the past based on the evidence from 22 empirical researches of successful business turnaround in the mid-1970s, early 1980s, and early 1990s. The empirical evidence of the

company's recovery strategy is that nearly 1,300 companies have identified six turnaround strategies identified in their research to help businesses succeed from poorer operations. The four strategies are concerned with the content or main objectives of the recovery process: cost efficiencies, asset retrenchment, focus on the firm's core activities, and building for the future. The other two strategies involved in the change process are reinvigoration of firm leadership and corporate culture change. Schoenberg et al. (2013) describe each strategy as follows:

Content-Orientated Strategies

Cost Efficiencies: It is the most effective turnaround strategy. The aim is to create a "quick-win" for short-term financial stability or to improve cash flow efficiency (Hambrick & Schechter, 1983, Sudarsanam & Lai, 2001). The study finds that cost efficiency is the first thing to be revamped because it can be done quickly and clearly. In addition, the cost efficiency can refer to the effectively minimal use of funds or resources (Hofer, 1980, Robbins & Pearce, 1992). According to Robbins and Pearce (1992), it is concluded that cost retrenchment is so widespread that it is considered necessary in a turnaround strategy.

Cost efficiencies include reducing research and development, reducing accounts receivable, inventory depletion, extending repayment periods, reducing marketing activities, and eliminating increased costs (Hofer, 1980, Hambrick & Schechter, 1983, O'Neill, 1986, Stopford & Baden-Fuller, 1990, Sudarsanam & Lai, 2001). Interestingly, Grinyer, Mayes, and McKiernan (1990) found that the reduction of production costs was a more effective turnaround strategy than the reduction of general overhead costs such as wage incentive improvements, more stringent inventory control, financial and capacity controls, and investment in new plants.

Some researchers warn that cutting costs alone reduces employee morale, resulting in increased staff turnover (Barker & Mone, 1994). Cost efficiency activity should be stopped after a reasonable period of time so as not to damage the property or resources, which is necessary for its principal purpose (Sudarsanam & Lai, 2001). Hambrick and Schechter (1983) warned that the reduction in R&D costs is often the first cut, which it could weaken the company's future potentials.

Asset Retrenchment: It is the second most common strategy for a cost-efficiency drive. An asset retrenchment strategy is an assessment of whether a company's low-performing segment should continue to operate or should sell all assets (Hofer, 1980, Morrow, Sirmon, Hitt, & Holcomb, 2007). Some research argues that retrenchment is used in the case where cost efficiency has not enough impact to maintain the financial stability of the company (Robbins & Pearce, 1992).

Filatotchev and Toms (2006) emphasize that the use of asset retrenchment is a component of a turnaround strategy that depends on the company's ability to generate cash flow from the sale of asset retrenchment, including the disposal of used assets, rather than new assets; for example, factory investment, new technology machinery. The companies need to carefully evaluate them to ensure cost savings and investment worthy (Sudarsanam & Lai, 2001).

Focus on Core Activities: This is a common strategy in recent research that has been used in conjunction with asset retrenchment (Robbins & Pearce, 1992, Pearce & Robbins, 1994, Boyne & Meier, 2009). The strategy focuses on the company's activities in defining markets, products, and customers in order to maximize the company's profit potential. The success of the revival focuses on the company's highest-selling core product line, loyal customer segments, and commercial areas where the company stands out in the competition (Hambrick & Schecter, 1983, Sudarsanam & Lai, 2001). The companies may return to known activities in the past, either redesigned or re-engineered to be more efficient and in line with the company's main objectives.

Focusing on core activities enables the company to develop a clear competitive strategy in its core activities. Grinyer et al. (1990) found that successful companies focused on marketing, using initiatives to improve customer perceptions, building customer relationships, increasing marketing channels, optimizing about after-sales service, and utilizing effective advertisement.

Build for the Future: It is a strategy that leads to action after the three strategies mentioned above. This strategy will occur when the crisis has passed and the financial status is stable (Robbins & Pearce, 1992, Filatotchev & Toms, 2006). The recovery should be carried out with caution and always start with the 'build for the future' strategy

from the main point that the company develops long-term growth rather than survival in the short term.

The recovery will be complete when the troubled company can survive in the changing circumstances of the future. Ghoshal and Bartlett (1997) recommend that, in order for a business to succeed, all supervisors, no matter what level of leadership, should understand the importance of each employee, such as their personal behavior. The actions of supervisors have a huge impact on the company's performance and survival.

Process-Orientated Strategies

Reinvigoration of Firm Leadership: The study is divided into 3 topics as follows:

1. Change in CEO position: A change in the CEO position will be made prior to the turnaround process. In some cases, the replacement of the CEO will be with a company that is experiencing serious problems and needs to be resolved urgently (Stopford & Baden-Fuller, 1990). Changing CEO is very important for companies that are experiencing problems, and it is reported that in a 75% turnaround situation there will be a change of CEO appointed outside the company (Kesner & Dalton, 1994).

In the literature review, there are two reasons why the CEO changes. Firstly, shareholders often view that the company's inefficiencies result from the CEO actions and signs of change come from both outsiders and employees within the organization (Daily & Dalton, 1995), representing that the current authority is unable to make any effective decision anymore. The troubled company has a willingness to change and the recovery process has started (O'Neill, 1986, Arogyaswamy, Barker, & Yasai-Ardekani, 1995, Boyne & Meier, 2009).

Secondly, changing the CEO is for company's problem solution (Gopinath, 1991, Kesner & Dalton, 1994, Barker III & Patterson, 1996). Changing the CEO position gives the company a new perspective and benefits from the past experience for the new CEO. Grinyer et al. (1990) argue that the company can successfully recover from the change of CEO only 55%. It is the duty of the leader to create new values, new vision, strong drive, and improved motivation and communication.

2. Change in top management team (TMT): After changing the CEO is often followed by the change of top management team (Kesner & Dalton, 1994, Lohrke, Bedeian, & Palmer, 2004). The new CEO will often bring a trusted colleague to join him

3. Cautionary note regarding change in CEO/TMT: Some researchers have warned that the CEO and top management team (TMT) can cause problems within the company and create pressure on employees' safety and status in the organization (Castrogiovanni, Baliga, & Kidwell, 1992, Kesner & Dalton, 1994).

Culture Change: Leadership is a change in the organization. It must build a culture concerning accountability in the organization. With the Results Pyramid model, leadership will change the way of employees' thinking and working, so organizations can achieve organizational change and create new desirable results. Connors and Smith (2011), an expert in corporate culture, point out that the ability to change corporate culture is an important part of every leader, to maintain the organization' competitiveness and clear goals.

Creating a corporate culture can create employees' responsibility in the organization, which it is the heart of a successful corporate change. Without responsibility, the organizational change process will collapse rapidly. Generally, people in the organization are opposed to new initiatives. It may even undermine efforts towards the change in organization. But if everyone is responsible, it is easier to admit that they have a duty to help make organizational change successfully for themselves and for the organization. Responsibility is, therefore, the most important thing for an organization that connects everyone in the organization.

The Results Pyramid Model wants to show three key elements of corporate culture: experience, belief, and action, which experience confirms the belief, belief leads to action, and action leads to the desired result.

2.9.5 Conditions to Consider Turnaround of the Business

In general, the consideration of the company to turn over. It will focus on the improvement of performance after a time of trouble. This method is a popular way to use the sample to test for various hypotheses (Hofer, 1980).

Research by O'Kane and Cunningham (2014) describes a start-up that indicates that a company needs to go through a recovery process. The return on investment (ROI) of that company has decreased continuously for 2 years or negative. During these 2 years, there is a loss of at least 1 year, including at least 1 year, where the return on investment is less than the risk-free rate of return by using the 10-year bond yield of the same period as the benchmark. The period of recovery attempt is divided into 3 phases and the conditions for the business recovery in each phase are as follows.

2.9.5.1 Decline stemming is the first phase of an attempt to reverse the downturn. Conditions to consider turnaround of the business are the return on investment and the operating results as mentioned above.

2.9.5.2 Mid-turnaround is a period which the company can improve its performance but still fluctuate. This may result in either a successful or failed recovery. Conditions to consider the turnaround of the business are as follows.

1) The rate of return on investment is positive for 2 consecutive years. At least 1 year in the meantime, the rate of return on investment is higher than the risk-free rate of return.

2) Operating profit, including pre-tax profit, is continuously positive for at least 2 years.

2.9.5.3 Recovery is the period that the company can recover successfully. Conditions to consider the turnaround of the business are as follows.

1) Return on investment is higher than the risk-free rate of return for more than 3 consecutive years.

2) Operating profit and profit before tax are positive and continue to increase for more than 3 years.

In addition, Hofer (1980) suggests how to select a sample of companies by assessing the current performance and strength of the organization's strategy. This method will deepen the financial situation details, marketing position, production capacity, marketing mix, product mix, technology and innovation.

Pearce and Robbins (1993) said that the revival situation occurred when the company faced financial performance that had declined for many years after prosperity period and often caused by a combination of internal and external factors. The change is

related to the recovery from a severe impact on the organization and the economic independence (Harker & Sharma, 2000). Chowdhury (2002) shows that turnaround occurs when companies try to pass through declining operation periods and threat of bankruptcy in order to gain recovery of sustainable operations performance.

Kamel (2005) explained that making a profit alone is no reliable measure for the existence of turnaround situations. The company may experience temporary losses due to general marketing or political change. The company is able to maintain and recover such situations in the short term without making significant changes. Reporting a loss in a single year does not indicate a turnaround situation, but the loss situation for a change will often have reduced profits for many years. If there is no corrective action on management, the company must face bankruptcy or may be sold. However, corrective management cannot even recently guarantee the success.

2.9.6 The Relationship between Operational Efficiency of the Company and the Process of Business Recovery

The study results of Tikici et al. (2011) show that the performance of the business and its turnaround strategies are linear. Revenue generation is the only strategy that has a positive relationship with the business performance. In the meantime, cost-cutting and asset reduction strategies have a negative relationship.

Hambrick and Schecter (1983) divide strategies related to operations into two categories. The first strategy is an entrepreneurial strategy, referring to an attempt to increase revenue by using marketing strategies. The key indicators include the proportion of R&D expenditure/operating income, the proportion of marketing expense/operating income, and the proportion of product/market refocusing strategy.

The second category is the efficiency strategy, which is a cost-cutting strategy by reducing unnecessary costs, including accounts receivable and inventory management effectively. An important indicator of this strategy is the direct costs reduction and asset reduction strategy, which generally refer to the reduction of non-current assets. The key indicator of this strategy is the proportion of trade receivables/operating income, the proportion of inventory/operating income, and new property, plant, and equipment level.

The companies that use the above strategies vary depending on the situation of the company. Companies with low level of capacity utilization tend to use asset reduction

strategies, but companies with high level of capacity utilization tend to use cost-cutting strategies. Companies with a high market share tend to use entrepreneurial strategies, such as revenue-generating and product/market refocusing strategy.

The relationship study between the above strategies and company performance in the saturated industry uses return on investment as an indicator of operational efficiency. It was found that the reduction in R&D expenditure, marketing expenditure, proportion of trade accounts receivable and proportion of inventory can result in higher operating efficiency. In the meanwhile, new property, plant, and equipment levels have the same positive effect on company performance.

2.9.7 Measuring Corporate Strategy

The strategy may be defined as a form of resource allocation decision (Hofer & Schendel, 1978, Mintzberg, 1978, Mintzberg & Water, 1982, Venkatraman & Prescott, 1990). Since there are a lot of resources to make decisions, it is important to make a decision regarding the most appropriate strategy (Arend, 2004). The measurement variables in deciding the business strategy used in the study derived from the research of Prescott (1983) who found 16 variables, called strategic conduct variables, derived from studying business units and developing these variables based on the profit impact of marketing strategies (PIMS) database. Several studies have utilized these PIMS based variables in order to find the decision variables on company performance. These researchers can include Prescott (1983), Prescott, Kohli, and Venkatraman (1986), Venkatraman and Prescott (1990), Furrer, Rajendran Pandian, and Thomas (2007).

The set of strategic conduct variables in this study is one of the strategic conduct variables used by Prescott (1983), Prescott et al. (1986). These variables were obtained from the PIMS database and analyzed with the theoretical relevance in order to find the relationship between the variables. In addition, these variables were ranked by fifteen experts. Since all variables contained in the PIMS database are not available in the COMPUSTAT database, there are only seven strategic conduct variables to be selected for analysis at the end. Nevertheless, due to a large number of missing values, there are two variables including ratio of R&D expenditure to net revenue and ratio of advertising to net revenue being therefore eliminated from the analysis. Furrer et al. (2007) use the COMPUSTAT database that is maintained by the Standard & Poors Co. Since the

COMPUSTAT database cannot be used with all sixteen variables; therefore, only five variables can be selected. The strategic conduct variables used then can be as follows:

1. Manufacturing costs. This variable measures the operation management performance. It is calculated by the cost of goods sold divided by net sales.

2. Marketing costs. This variable measures the marketing management effectiveness. It is calculated by bringing the sum of selling and administrative expenses and advertising costs divided by net sales.

3. Accounts receivable. This variable demonstrates how effectively managing credit is used to increase sales. This issue is important when the economic downturn and competitors try to attract customers. It is calculated by dividing the accounts receivable by net sales.

4. Accounts payable. This variable reflects how companies use commercial credit to manage finances to maintain the level of current assets and the confidence of suppliers. It is calculated by dividing accounts payable by net sales.

5. Capital expenditure. This variable represents the long-term investment of the company to generate revenue. It is calculated by the capital expenditure on the plant and equipment divided by net sales.

Manufacturing costs, marketing costs, accounts receivable, and accounts payable is a variable related to operations that are short-term oriented and capital expenditures are the strategic variable that is long-term oriented. Strategic conduct variables are calculated as the corresponding expenditure value divided by net sales, so all variables are in range between 0 and 1.

2.9.8 Turnaround Strategies of Problem Firms Become Successful Listed Companies.

The recovery of the company occurs when the organization's leaders participate in the strategic response to the organization's decline (Cater & Schwab, 2008). The causes of the organization's decline are numerous, such as the organization cannot adapt to the changing industry environment. The inability to adjust can lead to financial losses. Therefore, turnaround is the result of a management strategy that can stop financial losses and achieve sustainable business recovery (Binti, Zeni, & Ameer, 2010).

The goal of turnaround strategies is to improve the declined business operations. The organization's recovery strategy has many steps including retrenchment, growth, and stability. The choice of a turnaround strategy depends on the organization's internal and external factors, including financial position and resources available (Rasheed, 2005). Some organizations have many problems that show the challenges of recovery (Manimala & Panicker, 2011).

Palombo (2013) has said that the turnaround strategies for business have become interesting for academics with 5 primary turnaround strategies, namely (1) chief executive officer (CEO) change, (2) retrenchment, (3) recovery, or growth of the business, (4) the use of external management, and (5) performance improvement.

CEO Change

Past studies discussed the CEO change as a plan to stop a business decline and restore the business to a profit (Sweet, 2004, Abebe, 2009, Boyd, 2011). Sweet (2004) states that there are 3 steps in business rehabilitation, including CEO change, retrenchment, and recovery. Cater and Schwab (2008) identified 3 popular strategies for rehabilitation: top-management change, external management expertise, and organizational retrenchment.

In a successful business, executives have a positive impact on operational efficiency and will appear the opposite effect for the business that is worsening. Therefore, management change is necessary because the organization is under pressure to start a strategy of action that leads to revival (O'Regan & Ghobadian, 2011). Often the turnaround situation will change the company leaders by hiring a new CEO. The newly appointed CEO may conduct internal and external analysis by assessing the strengths; weaknesses; opportunities and threats (SWOT) of the company (Cater & Schwab, 2008). Boyd (2011) said that external assessments tend to be negative. As a result, new business strategies may occur resulting in business recovery.

The CEO change strategy leads to ongoing decisions that result in both internal and external candidates. Internal applicants are familiar with the structure and culture of the organization. Knowledge of their organizations is especially useful for ensuring employees, customers, and suppliers. However, internal applicants are associated with organizational inefficiencies and doubts about their ability to develop a successful

rehabilitation strategy. External candidates are not related to the inefficiency of the organization and are not familiar with the norms that the organization develops. Modarres (2010) revealed that the new CEO is likely to adjust the management structure to be in line with his goals. Therefore, the change of leaders results in changes in existing business operations in line with the strategic direction of the CEO.

The role of the CEO is important to the organization's turnaround efforts. As the main decision-maker, the CEO determines the strategy and direction of the organization. The new leader will influence the internal strategic changes and improvements that result in the organization leaving bankruptcy (Brockmann, Hoffman, & Dawley, 2006). However, new leaders are not familiar with the business structure, the main customers, personnel, and corporate culture. These problems take time until the new CEO is familiar with the organization.

Business operation is the responsibility of the senior leader. Therefore, business failures directly affect the leadership position and often cause management changes. During the performance decline, the organization's top management team (TMT) role has a significant impact on employee strategy response (Gallén, 2009). In addition, the changes to the top-management team ensure external stakeholders such as lenders and creditors.

Retrenchment

It happens when organizations reduce both fixed and variable costs. Latham and Braun (2011) cited shortening activities, including staff reductions and the sale of unnecessary assets. The purpose of retrenchment is to create a positive cash flow for creating short-term business survival and ultimately creating stability of organization. The organization has benefited from cutting down on waste disposal situations to improve efficiency. Internal analysis is an effective measure of waste assessment and leads to the integration of the process of employees and equipment sales termination.

Corporate leaders often implement retrenchment as the first strategy when anticipating or experiencing business problems. The implementation of the retrenchment strategy varies according to the industry pattern and management style. Although large enterprises tend to carry out retrenchment before small organizations, many small organizations are reluctant to start a retrenchment strategy. Such reluctance is often

caused by the idea of a small business entrepreneur who is unable to accept the business declines as a result of the risk of entrepreneurship, investment in a small business is difficult to stop or decrease. Investors face an increase in the dilemma that they are not willing to produce sunk costs, resulting in the need to accept retrenchment (Sadi, Asl, Rostami, Gholipour, & Gholipour, 2011). The fact that they do not like this risk is an obstacle to the retrenchment process.

Staff reduction is a common practice in large organizations with large numbers of employees and departments. Smaller organizations are less likely to reduce employment levels but tend to build close relationships with them. Therefore, retrenchment in small organizations often means reducing in other costs, such as raw material costs (Rasheed, 2005).

Another cost reduction strategy can be reduction in marketing cost. There are many ways that can reduce the cost from the marketing side. This can include the use of the sale machinery which it can respond the needs of customers accurately and ignore the negative emotion the customers may have when they are not satisfied with the services. This is true because the sale machinery does not have to have personal contact as like the sales representative perhaps have and at the same time it can create close relationship with the customer as well. The usage of sale machinery can be effective through many channels starting from using advanced technology to using web-based marketing. Its result then can help increase efficiency and customer loyalty (Omar, Ramayah, Lin, Mohamad, & Marimuthu, 2011). Therefore, using internet technology allows the companies to contact customers at the lowest possible price.

Indeed, the retrenchment strategy help organizations reduce costs in order to improve the cash flow shortage (Boyd, 2011). In fact, most of the businesses that are in a difficult situation are affected by cash flow problems. Most managers having a daily workload in business management often lack necessary tools and basic financial knowledge for risk analysis. As it is known, the negative cash flow often leads to cost reduction. Then, the cost reduction is the fastest and most reliable way to generate internal cash improvement. The problem with cost reduction is that many companies tend to reduce operating costs, material quality, and employee salaries. These reduction has a negative impact on employee morale, which is important for companies that are in

recovery state. The good morale can affect the employees' positive productivity (Sweet, 2004).

Although the retrenchment strategy may receive short-term financial benefits, the decline in numbers of assets and employees can cause potential damage for long-term growth. In other words, long-term business growth require more equipment and staff. The retrenchment strategy can be advantageous when company leader uses it for bettering the business performance which company is problematic situations in a short time. However, it can be disadvantageous when the business aims to stay in the long-run period of growth since the retrenchment strategy will create difficulty in retaining the essential business elements (Latham & Braun, 2011).

Growth

Growth strategy is an important part of the restoration process. The growth strategy indicates that leaders have used investment strategies to increase market share and profit in business operations. Increased revenue does not always show success in business recovery. It generally takes two consecutive years of growth or two consecutive years of revenue growth (Sweet, 2004). The companies that have achieved revenue and asset growth indicate that there is a relationship between increased market share, growth strategies and higher financial performance (Gi-Shian & Hong Tam, 2010).

In reality, the leaders rarely consider growth as a recovery strategy. However, the management perception is a key component in strategy selection. Companies that have experience in growth and profit periods tend to consider and choose growth strategy. In addition, entrepreneurs tend to choose growth strategies in order that the companies can experience with technology, engineering, and corporate culture that, at the end, can support and promote innovation (Rasheed, 2005). The choice between growth and retrenchment strategies depend on the interaction between perceived efficiency and resource availability. Corporate leaders tend to choose growth strategies if they perceive a combination of financial awareness and available resources at a very low level. Choosing a growth strategy or retrenchment will be suitable for executives who don't like risk. Normally, investing finance into the business during the period that the company is in a weak market position seems to be easy and require more executives' confidence in organization's products/services and employees. Many organizations reduced marketing

channels by using cost reduction strategy in order to gain the external economic improvements. Decision-makers, who like risk, are looking for strategic alternatives to expand their business during the downturn (Latham & Braun, 2011).

In terms of marketing competition, there are disadvantages for small organizations with many reasons. The main weakness are access limitations to capital and lacks of management expertise. Small organizations will solve the problem by focusing on growth strategies (Golovko & Valentini, 2011). Noke and Hughes (2010) insist that SMEs can solve the deficiency problem by improving the organization's value chain. A value chain is a set of production cycle improvements. Organizations can improve their value chain through more efficient production processes. Improvements can be made from internal innovations such as lean manufacturing and total quality management practices. Improving the value chain helps organizations increase revenue and enable organizations to seek more growth opportunities. Although large corporations create large economies and owners can have easy access to capital, small organizations can create niche markets that can be advantageous in the business environment with reduced performance. Moreover, small organizations can develop close relationships with customers and suppliers, which can help companies overcome quality and price barriers. Leaders in large companies take advantage of cost reduction to attract additional businesses (Bumgardner, Buehlmann, Schuler, & Crissey, 2011).

Growth strategies may include higher sales and liquidity strategies that measure the efficiency of investment in company assets (Gi-Shian & Hong Tam, 2010). Investment in corporate assets results in increased business value from increased production capacity and productivity. Improving operations from return on investment will help improve the overall picture of the company's financial health. The company's liquidity ratio represents the number of days that the company has the cash for operating expenses and company's long-term liabilities (McCue, 2010). Companies that use property effectively tend to increase revenue from growth strategies. If the company's liquidity is strong, they can find the funding for business operations and improve the market value at the end.

For manufacturing companies that have reached the highest stage of the organization's life cycle, they must seek many options for growth. Expanding the

marketing strategy is not successful due to the return on investment because the company reaches a saturation point in the specific industry and the original equipment manufacturers (OEM). Saturated organizations can grow through internal improvements, including controlling inventory management and improving equipment and facilities that may lead to higher efficiency (Yeh & Fang, 2011).

External Management Consultants

There are many reasons why businesses are depressed, including lack of financial resources, improper adaptation to technological progress, misrecognitions of customer needs, and inability of leaders to implement strategic changes. Therefore, many organizations choose to consult with the turnaround experts (Boyd, 2011). Shaughnessy and Rudie Harrigan (2009) mentioned that consultant company that has experiences and knowledge about various problem confrontation as well as recovery specialists in the company can immediately correct a problematic situation because they can recognize the negative situations and turn them into the positive points to defense the future similar negative events (Cater & Schwab, 2008). Management consultants specialize in finding the most profitable activities for the company and participating in these activities (Denning, 2011).

Management knowledge is critical to business success. Effective management enhances the competitiveness of the organization by eliminating unnecessary activities or wasteful processes and improving production in order to maintain hiring or increasing employment (Theodore, 2011). Business owners are entrepreneurs who take risks. During the business downturn, the owner will have to face increased stress in trying to maintain financial stability. Financial stress often adversely affects their personal relationships. Efforts to overcome financial losses and to stabilize the organization hide the owner from seeing the potential market opportunities. In this situation, external management consultants will present an objective analysis of the company's market position (Crick, 2011).

In many cases, the company is still unable to solve financial problems because senior management is not aware of the situation, resulting in poor performance. Tsinopoulos and Bell (2009) found that one of the main obstacles to using new ideas and processes is the management resistance and time. Organizational routines have been

created from the past successes. When proposing new ideas and advanced technology, the management often opposes due to risks and changes to traditional processes. This can result that the management misses improvement opportunities; meanwhile, competitors in the industry already carry out such processes. Anti-improvement makes the business worse. The turnaround consultant will provide management knowledge which it can be advantageous for implementing changes, recognizing positive changes, reducing risk concerns and finally increasing successful operations. In addition to the success of external consultants, it can overcome the employee resistance and restore the company's reputation. Denning (2011) points out that traditional management systems hinder innovation that adds value to customers. He offers cultural changes that help employees participate in organizational development by increasing productivity and innovation.

Performance Improvement

Industry changes are unpredictable and inevitable. Terziovski (2010) said that every organization must be able to adapt to internal and external driving forces. Small businesses encounter risk due to fewer resources which can create and higher failure rate comparing to the large organizations. Entrepreneurs in small businesses face enormous challenges from international competition and has inability to keep up-to-date with new innovations. The business downturn comes from being unable to respond to strategic changes in the industry or encountering the situation that employees are against the changes. Consequently, effective change management is then essential for businesses to be recovery (Pandey, 2012). However, Driver (2009) found that employees reacted differently to organizational changes. Many employees regard changes as having a negative effect on themselves. In order to overwhelming the employees' change resistance, the organization needs to use staff restructuring strategy. In addition, understanding employee behavior and motivation is an important element of successful change. Although employee resistance to change is normal behavior, but it is important to manage the resistance. In general, the employees' resistance occurs when the employees face the change and feel insecurity and anxiety to confront with the changes. Therefore, management should understand the aforementioned concerns related to employees and attempts to provide detail and rationale about the upcoming changes (Pandey, 2012). Ahmed (2012) pointed out that motivating employees by increasing

wages can increase employee's productivity. However, wage incentives will be successful when coupled with strong relationships between managers and employees. Otherwise, employees will seek short-term financial benefits without regard turning the benefits back to the organization. Raju (2011) also considers that employees can be motivated by executives' empowerment techniques and cooperative working styles with employees, allowing employees to recognize opportunities, career progress, and work-life safety in the workplace. In a line with that, creating a pleasant work environment for employees can help increase productivity and work efficiency, which it contributes benefits to organization.

Commonly, business owners are reluctant to begin the transition period when they are currently experiencing a success. They are in question why they must change even sometimes they know that change can lead to the new success. In addition, the business owners also resist changes when they are in the downturn period (Vithessonthi, 2011). Generally, the resistance to organizational change is often the result of organizational structure's weaknesses from long-time established organizational norms, making difficulty for employees to accept changes. Overcoming the organizational structure inertia grassed with organizational norms, preventing employees from change acceptance, is obviously challenging. Bartram (2011) determined that structural inertia needs to be overcome by long-time accumulated internal pressure. The structural inertia in the organization makes executives feel comfortable with their business status and questionable why change is needed, leading to change resistance. In addition, structural inertia is normal in the industry that reached maturity.

Performance improvement is often caused by employee participation. During the turnaround, employees must recognize and understand the process. According to Edwards, Self, and Schraeder (2010) who found that communicating with employees can reduce false rumors and bad morale. Abernathy (2010) offers a performance improvement process that uses an organization-wide survey to identify areas and opportunity of improvement. Conclusions from the survey can be used to design efficiency improvement techniques.

Business leaders design efficiency improvements to solve work problems. Popular performance improvement methods can include feedback provision. Feedback

provides information about expected status and results to the employees. Feedback is a powerful tool that receives information from stakeholders and guide employees' direction and correctness in order to gain more quality improvement and error reduction. Moreover, continuous improvement occurs when the efforts of the feedback and suggestion go into corrective action (Turner, 2010).

Efforts to improve production efficiency occur through total quality management (TQM) or Six Sigma quality programs. However, TQM focuses on departmental improvements and Six Sigma as a primary satisfaction mechanism for customers. Performance improvement is a cross-functional work that can be applied to TQM and Six Sigma (Turner, 2010). Both TQM and Six Sigma are related to employee training that increases the composition of human capital. Employee training creates company-wide value and results in performance improvements that can help lead to the turnaround (Yeh & Fang, 2011). Comparing to TQM, Six Sigma is a unique quantitative program for the manufacturing industry, developed from internal performance improvement programs, focusing on reduced defects and cost reduction leading to value creation programs for the entire supply chain activities. One of the main benefits of Six Sigma is the company's investment in staff training and new processes that want to reduce waste and reduce errors, leading to lower operating costs and increasing customer value (Soti, Shankar, & Kaushal, 2011).

In summary, the business environment is constantly changing. Customer needs and competition push the organization to respond to the market. The organization must create a continuous improvement process that will adjust the business structure to be more competitive. Employee participation programs create continuous improvement efforts by giving employees the opportunity to make the necessary changes which enable organization's survivals (Dassisti, 2010).

CHAPTER 3

RESEARCH METHODOLOGY

This study intended to investigate whether corporate governance mechanism are financial ratios could be considered as pre-warning signal of problem firms of the Stock Exchange of Thailand (SET). In addition, in considering the companies that can turnaround a business, this research utilized the information from the problematic firms that can release the Non-Compliance (NC) mark. This study also intended to investigate turnaround strategies that have been adopted by problem firms during its recovery efforts.

3.1 Research Design

This study used a mixed method research design. The research was divided into two phases. The first phase studied the early warning signs of problem firms and the second phase studied successful turnaround strategies used by problem firms converting themselves to non-problem firms. The details of each phase are as follows:

Phase 1: The study attempted to identify early warning signs of problem firms using corporate governance and financial ratios. This research adopted predictive models using logistic regression analysis technique. The following figure, Figure 3.1 is the conceptual frame work for Phase 1.

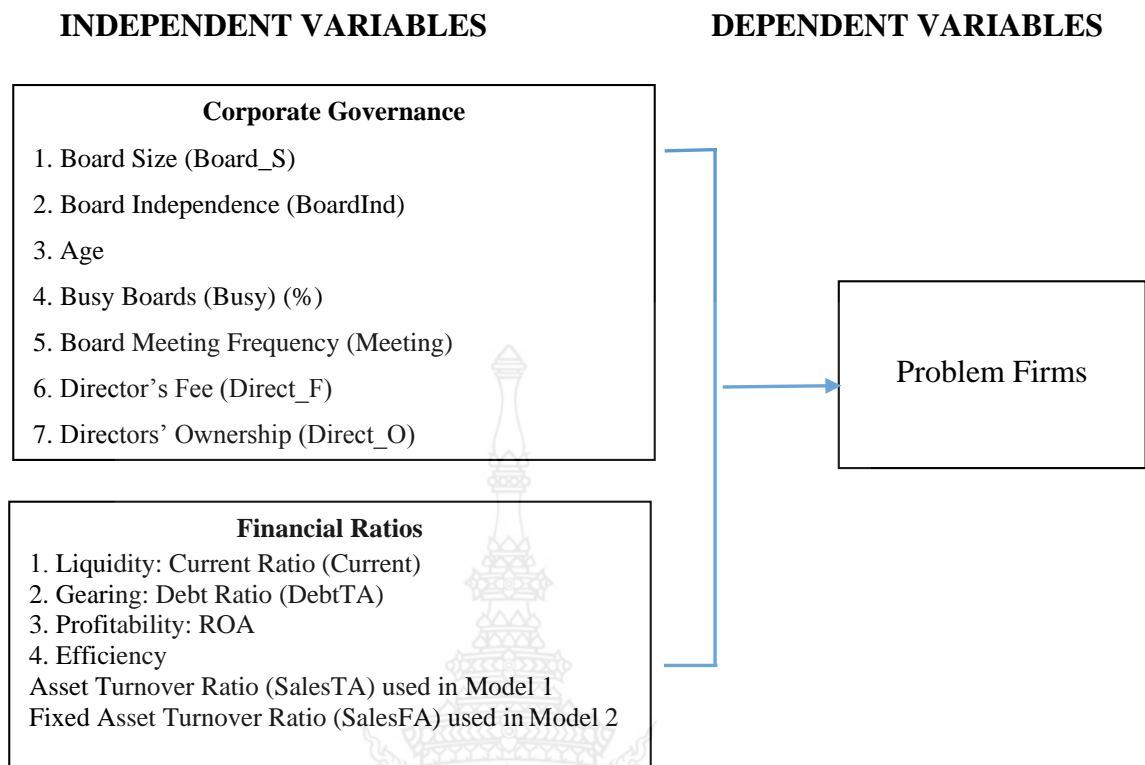


Figure 3.1 Conceptual Framework

Corporate governance mechanisms have been established a guideline to strengthen companies' sustainability. Usually, the component of corporate governance comprises of rights of shareholders, equitable treatment of shareholders, role of shareholders, disclosure and transparency and responsibilities of board. This present study prefers to employ significant information relating of boards into analysis. This is because boards are authorized to lead of companies. The brief explanation of proxies relating to board characteristics used this present study are as follows.

Board size: Previous studies have found out that board size was more likely to influence companies' efficiency and related to firm failure and survival (Dalton, Daily, Johnson, & Ellstrand, 1999, Parker, Peters, & Turetsky, 2002, Lamberto & Rath, 2008).

Board independence: Previous studies have inserted that boards who are independence from executive boards would reduce risk and increase business opportunity as well as protect companies (Pass, 2004). In addition, independence board could raises the efficiency of organization and an opportunity to survive (Weir & Liang, 2001). Also,

Erkens, Hung, and Matos (2012) confirmed that increasing the number of independence directors could reduce losses and risks incurred before failure.

Age: Previous studies have been carried out to prove informative value of age. Theoretically, age was associated with the experience, resulting in more effective corporate governance. Zajac and Westphal (1996) found that age differences may be useful in improving the quality of good corporate governance. Young directors would provide new insights while older directors may contribute long experience. Therefore, the age diversity of the board has a negative relationship with the problem firms.

Busy board: Fama (1980), Fama and Jensen (1983) said that holding positions in many companies of outside directors may indicate that the director is of high quality and therefore is more desirable. In addition, Pfeffer (1972), Mizuchi and Stearns (1994), Booth and Deli (1996) found a positive relationship between being a director in many companies and business value. Directors who hold positions in many companies were those with a wide social network and able to help pull the necessary resources into the company and finally increased company value.

Board meeting frequency: Director meeting was used for communicating and exchanging company information, following up the actions or projects of the management team, as well as discussing problems and solutions that occur in accordance with the company's strategy. Such actions were consistent with agency theory by reducing asymmetric information. Therefore, if the meeting frequency of the board of directors per year was higher, there will be a tendency to reduce the conflict between the business owner and the management team. Evans and Weir (1995), Conger, Finegold, and Lawler (1998), Sonnenfeld (2002), Mangena and Tauringana (2006) found that if the number of meetings is greater, the governance mechanism would improve, and will benefit the business performance. Since the board of directors have been meeting continuously and frequently, it would create more business understanding, work regarding with shareholders' interests, and more company strategy effectiveness.

Director's fee: Previous studies found the linking corporate governance and executive compensation in positive manner. It implies that the executive was responsible for the directors and showed a complete balance of power to strengthen the corporate governance system. Brown and Caylor (2004) studied the relationship between corporate

governance and remuneration of directors. The results showed that the directors' remuneration was important factors of good corporate governance and enabled companies to have better-operating results.

Directors' ownership: The ownership structure is an important factor that causes agency problems due to conflicts between management and business owners. Executives can be compared as controlling shareholder and the business owner is a minority shareholder or a shareholder who has no control power (non-controlling shareholder). Hermalin and Weisbach (1991), Beiner, Drobetz, Schmid, and Zimmermann (2004) found that the shareholding of executive directors has improved performance. On the other hand, Agrawal and Knoeber (1996), Mehran (1995), Balotti, Elson, and Laster (2000), Farrell and Whidbee (2000) found that holding by external directors is the key to effective corporate governance.

In addition to corporate governance factors, this present studies also employed financial statements in the area of firm failure. The brief explanation of financial ratios in this present study are as follows.

Current Ratio: Current ratio is considered as the most commonly used in predicting firm failure. It was a measurement of liquidity and the margin of safety of the company (Anthony, Hawkins, & Merchant, 2011). The current ratio was a measure of the company's ability to pay debts by using current assets. Higher current ratio indicated that the company had good liquidity and enable to have current assets to pay current obligations (Suarez, 2004).

Debt Ratio (DebtTA): The total debt to assets ratio was the total liability (current liability and noncurrent liability) to total assets (Chueh, 2013). This ratio represented the amount of assets of the company belonging to the creditors. A low debt-to-asset ratio meant the company will approach the debt-free operation goal. The companies with debt to asset ratio higher than the average for that industry had problems borrowing money (Suarez, 2004).

ROA: The return-on-assets ratio (ROA) measured of the company's performance in deploying company assets and measuring the profitability of assets, as an overall measure of the efficiency of asset utilization to generate profits for shareholders. ROA reflected income from the financial resources of the company, which came from

short-term creditors, long-term creditors, bondholders, and shareholders (Anthony et al., 2011).

Asset Turnover Ratio (SalesTA): The efficiency of the investment measured by the asset turnover ratio as the effective ratio that measured the company's ability to generate sales from assets. In other words, this ratio showed that the company can use assets to generate sales effectively (Dodge, 2017).

Fixed Asset Turnover Ratio (SalesFA): The ratio of fixed asset turnover showed that the management had effectively invested in fixed assets in order to generate sales. It was a narrower measure of assets turnover because of no interest in current assets. The higher value of the ratio represented the more efficient management of fixed asset investments (Vasiliki, 2007).

The analysis was divided into 2 models as follows:

Model 1

$$Problem = \beta_0 + \beta_1 * Board_S + \beta_2 * BoardInd + \beta_3 * Age + \beta_4 * Busy + \beta_5 * Meeting + \beta_6 * Direct_F + \beta_7 * Direct_O + \beta_8 * Current + \beta_9 * DebtTA + \beta_{10} * ROA + \beta_{11} * SalesTA + \varepsilon$$

Model 2

$$Problem = \beta_0 + \beta_1 * Board_S + \beta_2 * BoardInd + \beta_3 * Age + \beta_4 * Busy + \beta_5 * Meeting + \beta_6 * Direct_F + \beta_7 * Direct_O + \beta_8 * Current + \beta_9 * DebtTA + \beta_{10} * ROA + \beta_{11} * SalesFA + \varepsilon$$

The variables in Phase 1 study are in Table 3.1.

Table 3.1 Measurement Variables

Variables	Variables	Acronym	Measurement
Dependent			
Problem Firms	Problem/non-problem firms		Listed firms marked with C, NC, SP and NP = 1; otherwise 0
Independent			
Corporate governance	Board size	Board_S	Number of board members during the year
	Board independence	BoardInd	Number of outsider directors/board Size x 100
	Age	Age	Board age

Table 3.1 Measurement Variables (Cont.)

Variables	Variables	Acronym	Measurement
Independent			
Corporate governance	Busy Boards	Busy	Board positions at 3 or more other companies/board size x 100
	Board Meeting Frequency	Meeting	The number of meetings of the board of directors per year
	Director's Fee	Direct_F	The remuneration for directors / the executive remuneration x 100
	Directors' Ownership	Direct_O	Number of ordinary shares of the company director / total paid-up ordinary shares) x 100
Financial Ratios	Liquidity	Current	Current assets/Current liabilities
	Gearing	DebtTA	Total liabilities/Total assets x 100
	Profitability	ROA	NI/Total assets x 100
	Efficiency	SalesTA SalesFA	Sales/Total assets Sales/Total fixed assets

Phase 2: The study intended to identify successful turnaround strategies of problem firms with finally turn to be normal firms. This dataset included the problem firms with marked NC and finally the NC marked was lift off.

The qualitative research is used to study the turnaround strategies of problem firms. Data collection was made by interviews, documents, and participatory observations. Interviews are extremely important (Talmy, 2010). This research will interview people, including financial adviser (FA), executives, auditors, and stakeholders, related to the company implementing turnaround strategy. The interviewees received interview description before being conducted and interview. Also, the process of interview is run informally. However, this study is flexible and developed with information received during the study. When selecting participants, the researcher observed the interviewees via the workplace and other interviewees. Interview questions are as follows.

1. What were the warning signs informing investors/securities analysts in advance before the company became a problem firm?
2. Did Corporate Governance (CG) of company's executives have an impact on problem firms? How much in-advance signal could be sent?

3. Could the company's financial statements be analyzed in advance before the company became a problem firm? What point could it be seen from? How much in-advance signal (such as financial ratios, auditor's opinion, merger, major shareholder change, business type change, etc.) could be sent?

4. After the companies become a problem firm, were there many companies that could improve their problematic status until the Stock Exchange removes warning signs and resumes non-problem status. What and how did these companies use strategy/management methods?

3.2 Population and Sampling

This research used secondary data derived from SETSMART database (SET Market Analysis and Reporting Tool) during 22nd February 2013 – 9th April 2019. The online database service of the Stock Exchange of Thailand can sort the data into Microsoft Excel. After data sortation, the study analyzed the data. The data were divided into two groups as follows.

1. The companies, which are considered as problem firms and listed companies on the Stock Exchange of Thailand, have been marked as C, NC, SP, and NP. With match-paired sampling, the study selected the companies, which are non-problem firms, can be referred to the listed companies that are not up to the mark on the Stock Exchange of Thailand.

2. In determining the scope of turnaround strategies, this research used data from the problem firms that can release the NC mark to study the business strategies that each company uses during its recovery efforts.

In addition, this research includes the turnaround strategies of problem firms that have been used as strategic management to covert its problem firm to non-problem firms. The research will investigate the factors that can eliminate NC mark from the SET.

3.3 Statistic Methods Used in Present Study

3.3.1 Independent sample t-test

The independent sample t-test was used to test the different levels of meanings of two groups to find out which areas of variable are significantly different. Beginning

with the Levene's Test for Equality of Variances, did the two independent variances differ significantly at the 95% confidence level? By considering the significant (2 tailed) value of Levene's Test for Equality of Variances compared with $\alpha = 0.05$, if the significant (2 tailed) value was less than α , it meant that the 2 groups of independent variables had different variations with significance.

3.3.2 Pearson Correlation

Tests for Multicollinearity: if the studied variables were highly correlated, it was difficult to decide the participation of each independent variable, resulting in confusing results. Tabachnick, Fidell, and Ullman (2007) suggested the removal of highly correlated variables. A Pearson correlation matrix had been used in this study. All variables with a Pearson correlation greater than 0.65 were considered highly correlated and would be examined for consideration (McGurr, 1998; Zordan, 2000).

3.3.3 Omnibus Tests of Model Coefficients

The Omnibus test showed how all independent variables work well (Pallant, 2013). The test, with none of the predictor variables entering into the equation, reported the "goodness of fit" of the variables (Rohr, 2012). If the level of significance (p-value) was less than 0.05, it indicated that the dependent variable, which is the early warning signs of problem firms, was based on at least 1 independent variable.

3.3.4 Testing the Suitability of the Forecasting Model

The Cox and Snell R-square and the Nagelkerke R-square value were considered or examined for the consistency of the model or percentage that could explain variance or variation in logistic regression analysis (Pallant, 2013). Due to the inability to calculate an r-square value in a logistic regression, an estimated or pseudo R-square was calculated. The R-square had a value from 0 to 1, with the closer to 1, the greater the relationship between the variables. It could be converted into percentages, which would help researchers understand a range of variation of the dependent variable as described by independent variables (Rohr, 2012).

The Hosmer-Lemeshow goodness-of-fit test was used to test the suitability of the model (Yao, Titus, & MacDonald, 2001; Hosmer Jr, Lemeshow, & Sturdivant, 2013). In considering the Hosmer and Lemeshow to test the suitability of the equation, if the

significance value was greater than 0.05, the equation was appropriate to use to show the relationship (Rohr, 2012).

3.3.5 Analysis of Variables in the Equation of Model

After testing the dataset as required by logistic regression assumptions, then the Y value obtained from the calculation in the model to find the probability of the event that the company will be a problem firms according to the probability function of the event as follows.

$$Prob (y = 1) = \frac{1}{1+e^{-f(x)}}$$

where

$Prob (y = 1)$ = probability of the event that the company will be a problem firms

$f (x)$ = function of predictive variables

e = natural logarithms with statistical estimation as of 2.718

The logistic function was qualified when entering the X value. The obtained Y value would only be answered between 0 and 1. With this feature, it was applied to the probability statistics, where the value was between 0 and 1.

From the logistics model, when calculating the X value, the X value, which was greater than 0, would have a probability of between 0.5 and 1. If calculating X value, which was less than 0, there was a probability between 0 and 0.5 (Lee & Yeh, 2004). Therefore, in this research, the cut-off point was used at 0.5. It meant that if calculating the probability of the listed company that has been marked as C, NC, SP, and NP was greater than or equal to 0.5, it was then classified into the problem firms group. If calculating the probability of the listed company being marked as C, NC, SP, and NP was less than or equal to 0.5, it would be classified as non-problem firms.

Analysis of results by using binary logistic regression showed the results of probability calculation for forecasting accuracy as well as error predictions which were divided into 2 types:

Type 1 error: It was the mistake of rejecting the main hypothesis (H_0) when the assumption was true (Powell, 2001). In this study, it meant that the predictive model was non-problem firms, but in reality, it was problem firms.

Type II error: It was the error of not rejecting (accept) the main hypothesis (H_0) when the main assumption is not true (Powell, 2001). In this study, it meant that the forecasted model was problem firms, but in reality, it was non-problem firms.

Table 3.2 Format of Precision Test Results

Observed	Predicted (Cutting Point as of 0.50)	
	Non-Problem Firms	Problem firms
Non-Problem Firms	Accurate	Type II error
Problem Firms	Type I error	Accurate

3.4 Reliability and Validity

Reliability

Research requires access to organizations and employees who may not be willing to provide information (Alcadipani & Hodgson, 2009). Therefore, studying company information first helps to select criteria and alleviate some concerns about dissents for data collection. For data collection, the reliability of data is important. Based on Drost (2011) data, reliability means that the data is reliable results and relevant to the measurement quality. Repetitive measurements, made by different individuals with similar results, indicate reliability. This research examines interviews with participants and provides copies of this study to owners for accuracy.

The scope of the audit includes the financial adviser (FA), executives, auditors, and stakeholders. Therefore, this research requested participants to provide only specific information that can alleviate some concerns regarding participants' acceptance to be interviewed. The interviewees were provided a detailed consent form for asking for interview permission. In addition, privacy for interviewees was seriously assured in order to reduce the concern issues.

Validity

The concept of validity means the accuracy of the results. Many researchers developed the theory based on accuracy from the outside. Due to external accuracy, the researchers can create assumptions based on existing research in order to correspond to

the overall picture. All research concerns are on quality indicators of validity and reliability. Patton (2002) states that the reliability of the qualitative method depends on the skills and abilities of the researcher. Sangasubana (2011) explains that the results of the researcher may cause subjective reactions. Qualitative research methods that emphasize on the awareness of attendees about turnaround strategies make it a risk that they may develop preconceived ideas due to the core of the interviewer (Cronin-Gilmore, 2012).

Validity depends on the linkage of studied concepts, theories, and research measurement. The purpose of creating validity is to ensure that there is a relationship between the proposed study objectives and the measurement results (Cahoon, Bowler, & Bowler, 2012). Creating validity involves data translation (Drost, 2011).

Receiving the interviewees' views on turnaround strategies requires participatory research methods, which it can be the tool to collect information from interviews and informal observations (Swank, 2010). Yin (2009) introduces multiple sources of information to confirm non-bias of collected data from interviews and observations.

Data analysis comes from a combination of document research, observation, and interviews (Sangasubana, 2011). Aman and Kasimin (2011) describe the integration of content analysis by using the triangular method, namely interviews, document reviews, and observation. Denzin (2012) cited the use of triangular method as an attempt to use several qualitative methods to understand phenomena. The data analysis process produces data from multiple sources to identify, remove, and examine the biases and results (Turner & Turner, 2009).

CHAPTER 4

RESEARCH RESULTS

Introduction

This chapter presented empirical findings of this present study. As discussed in Chapter 3, this study was divided into 2 phases: archival data analysis and three qualitative analyses. The archival study used the secondary data from the SETSMART database (SET Market Analysis and Reporting Tool) which was an online database service of the Stock Exchange of Thailand, and from the published document of the company issuing and offering securities by the Securities and Exchange Commission, Thailand (SEC). This was to answer whether the selected corporate governance mechanisms and selected financial ratios had predictability value on problem firms. The qualitative study attempted to search if the selected corporate governance mechanisms and the selected financial ratios had no predictability value on problem firms, anything else should be considered more predictability value than the corporate governance mechanisms and the financial ratios. Further, the present study also endeavored to suggest what were successful turnaround strategy when firms have been countering distress. Using the documentary research, in-depth interview, and focus group should identify those strategies.

4.1 Data Preparation

The setting of the population for data collection was from the listed companies on the Stock Exchange of Thailand which had been marked as C, NC, SP, and NP (hereafter called “problem firms”). The problem firm of 117 companies were obtained from the SETSMART database from searching for data on 22nd February 2013 thru 9th April, 2019. However, because during the analysis of data, outliers of the data were identified. Therefore, the analysis eliminated these outlier data. Therefore, a total of 107 problem firms were in the analysis. Then, the study employed match-pair sample to select non-problem firms. Non-problem firms mean listed companies that were normal firms totaling 113 companies covering a period of three years with similar in industry, total assets and revenues as to problem firms. Data collection was based on the SETSMART

database (SET Market Analysis and Reporting Tool), financial statements, and annual registration statements (Form 56-1) from the published documents of the company issuing and offering securities according to the Securities and Exchange Commission, Thailand (SEC). Then, the three times analysis of 3-year, 2-year, and 1-year before being marked as problem firms.

For the second phase, the study selected the problems that could turn themselves to normal firms and resumed traded. A total 9 listed companies were identified as turnaround companies. The analysis of the successful firms was then analyzed for their successful turnaround strategies.

4.2 Descriptive Statistics

The independent variables used in this study included as follows. The first is the corporate governance consisting of board size, board independence, age, busy boards, board meeting frequency, director's fee, and directors' ownership. The second is the financial ratios consisting of current ratio, debt ratio, ROA, asset turnover ratio, and fixed asset turnover ratio. The following sections summarized the properties of the data collected for study and presented in quantitative and comparative.

4.2.1 Corporate Governance

The descriptive statistics for corporate governance consisted of maximum, minimum, mean, standard deviation, t-test. This research studied corporate governance in terms of board size, board independence, age, busy boards, board meeting frequency, director's fee, and directors' ownership during three periods (3-year, 2-year, and 1-year) before considering as problem firms.

Table 4.1 Descriptive Statistics for Corporate Governance

Year before being marked	Problem Firms					Non-Problem Firms					t-test	
	N	Min	Max	Mean	SD.	N	Min	Max	Mean	SD.		
Board Size (Board_S)												
3-year	113	5	21	9.70	2.74	107	6	20	10.35	2.45	0.067	
2- year	113	5	21	9.50	2.67	107	6	18	10.27	2.37	**0.024	
1-year	113	5	20	9.48	2.59	107	5	19	10.29	2.38	**0.016	

Table 4.1 Descriptive Statistics for Corporate Governance (Cont.)

Year before being marked	Problem Firms					Non-Problem Firms					t-test
	N	Min	Max	Mean	SD.	N	Min	Max	Mean	SD.	
Board independence (BoardInd) (%)											
3-year	113	16.67	66.67	39.75	9.20	107	10	66.67	36.49	8.93	**0.008
2- year	113	16.67	80	39.69	9.99	107	11.11	70	36.95	9.15	**0.035
1-year	113	15	66.67	39.29	9.27	107	10.53	71.43	37.56	8.83	0.160
Age											
3-year	113	42.75	68.71	56.29	5.93	107	46.11	71.64	57.75	5.29	0.056
2- year	113	35.38	68.57	56.20	5.99	107	45.82	72.29	58.08	5.30	**0.014
1-year	113	40.71	69.57	57.01	5.85	107	43.50	72.50	58.70	4.98	**0.022
Busy Boards (Busy) (%)											
3-year	113	0	81.82	30.37	22.48	107	0	100	28.93	25.06	0.655
2- year	113	0	85.71	30.49	23.71	107	0	88.89	29.33	23.88	0.720
1-year	113	0	100	32.62	26.16	107	0	86.67	29.48	23.47	0.350
Board Meeting Frequency (Meeting)											
3-year	113	4	18	7.73	3.53	107	4	23	7.29	3.39	0.352
2- year	113	4	21	8.03	3.57	107	4	20	7.56	3.41	0.324
1-year	113	4	24	8.53	3.73	107	4	33	7.80	4.20	0.175
Director's Fee (Direct_F) (%)											
3-year	113	0.30	67.82	16.16	13.68	107	0.33	72.92	18.64	16.29	0.222
2- year	113	0.31	95.04	17.85	16.05	107	0.61	80.20	18.81	15.11	0.647
1-year	113	0.29	61.70	17.54	14.59	107	0.60	66.31	18.78	14.28	0.526
Directors' Ownership (Direct_O) (%)											
3-year	113	0	71.38	19.24	20.13	107	0	76.34	19.81	20.52	0.836
2- year	113	0	73.20	17.53	18.38	107	0	74.86	19.27	19.99	0.501
1-year	113	0	70.68	15.41	16.43	107	0	72.03	18.33	19.27	0.227

**significant at the 0.05

Table 4.1 showed the descriptive statistics for corporate governance with the following details:

Board Size: from descriptive statistics for corporate governance of the 3-year, 2- year, 1-year before the sign of problem firms and non-problem firms, which were

companies that match to compare, the average board size was between 5-12 people according to the Corporate Governance Code for listed companies in 2017 guidelines. Problem firms had an average of 9 people (SD. = 2.7), with a minimum of 5 people, the highest of 21 people. In terms of non-problem firms, the average board size was 10 people (SD. = 2.45 in 3-year, SD. = 2.37 in 2-year, SD. = 2.38 in 1-year) higher than problem firms, with the lowest number of 5 members in 1-year and the highest number of 20 people in 3-year.

Board Independence: based on the information of problem firms and non-problem firms, it was found that the average number of independent directors was more than one-third of the total number of directors according to the Corporate Governance Code for listed companies in 2017 guidelines. The average number of independent directors of non-problem firms was less than problem firms, which was the number of independent directors of problem firms with an average of 39% of the total number of directors (SD. = 9.20 in 3-year, SD. = 9.99 in 2-year, SD. = 9.27 in 1-year). The lowest number was 15% of the total number of directors in 1-year and a maximum of 80% of the total number of directors in 2-year. As for non-problem firms, the average number of independent directors was 37% (SD. = 8.93 in 3-year, SD. = 9.15 in 2-year, SD. = 8.83 in 1-year). The lowest number was 10% of the total number of directors in 3-year and the maximum number was 71.43% of the total number of directors in 1-year.

Age: the mean of board age was not different between problem firms and non-problem firms, which was the average age between 56-58 years. Problem firms were the lowest age of 35.38 years in 2-year, with a maximum age of 69.57 years in 1-year. In terms of non-problem firms, the minimum age was 43.50 years in 1-year and the maximum age was 72.50 years in 1-year.

Busy Boards: when considering the number of board positions at 3 or more other companies per the total number of directors, problem firms and non-problem firms had the same mean of 29-32%. The minimum number was 0% and the maximum was 100%.

Board Meeting Frequency: the number of board meetings of problem firms and non-problem firms had a similar average of 7-8 times per year, which was more than 6 times per year according to the guidelines of the Corporate Governance Code for listed

companies in 2017. Both problem firms and non-problem firms, the lowest number of board meetings was 4 times a year. As for non-problem firms, the maximum number of board meetings was 33 times per year in 1-year.

Director's Fee: director's fee (%) was calculated by the remuneration for directors / the executive remuneration. The study found that the problem firms had an average of 16.16% (SD. = 13.68) in 3-year, 17.85% (SD. = 16.05) in 2-year, 17.54% (SD. = 14.59) in 1-year, with the lowest value of 0.29% in 1-year and the highest 95.04% in 2-year. Non-problem firms had an average of 18% (SD. = 16.29 in 3-year, SD. = 15.11 in 2-year, SD. = 14.28 in 1-year), with a minimum of 0.33% in 3-year and a maximum of 80.20% in 2-year.

Directors' Ownership: directors' ownership (%) was calculated by number of ordinary shares of the company director/total paid-up ordinary shares. The study found that the problem firms had a board of directors holding an average of 19.24% (SD. = 20.13) in 3-year, 17.53% (SD. = 18.38) in 2-year, 15.41% (SD. = 16.43) in 1-year. The lowest value was 0% and the highest value was 73.20% in 2-year. For non-problem firms, the board of directors held an average of 19.81% (SD. = 20.52) in 3-year, 19.27% (SD. = 19.99) in 2-year, 18.33% (SD. = 19.27) in 1-year, which was higher than the problem firms.

When considering the t-test, the Board Size (Board_S) had a significant difference between the problem firms and non-problem firms in 2-year and 1-year. Board independence (BoardInd) had a significant difference between the problem firms and non-problem firms in 3-year and 2-year. Age had a significant difference between the problem firms and non-problem firms in 2-year and 1-year. For the remaining corporate governance, there was no significant difference between the groups.

4.2.2 Financial Ratios

The descriptive statistics for financial ratios consisted of maximum, minimum, mean, standard deviation in relation to current ratio, debt ratio, debt to equity ratio, ROA, asset turnover ratio, and fixed asset turnover ratio during the period of 3-year, 2-year, and 1-year before considering as problem firms. Table 4.2 showed the descriptive statistics for financial ratios with the following details:

Table 4.2 Descriptive Statistics for Financial Ratios

Year before being marked	Problem Firms					Non-Problem Firms					t-test
	N	Min	Max	Mean	SD.	N	Min	Max	Mean	SD.	
Current Ratio (Current)											
3-year	113	0.08	47.08	2.63	5.48	107	0.15	11.04	2.38	2.08	0.651
2- year	113	0.06	47.88	3.03	6.48	107	0.28	10.76	2.46	2.12	0.382
1-year	113	0.06	47.94	3.41	7.45	107	0.43	15.59	2.61	2.60	0.284
Debt Ratio (DebtTA) (%)											
3-year	113	1.42	97.83	53.68	25.40	107	4.61	129.77	43.01	23.73	**0.002
2- year	113	2.53	232.02	57.38	32.71	107	6.89	92.84	42.30	21.27	**0.000
1-year	113	0.27	223.95	63.08	37.59	107	5.94	93.44	40.96	20.46	**0.000
ROA (%)											
3-year	113	-183.54	30.52	-4.63	22.51	107	-36.91	238.98	8.21	23.93	**0.000
2- year	113	-143.24	34.29	-8.25	25.24	107	-9.64	55.56	7.50	9.05	**0.000
1-year	113	-142.45	35.29	-11.54	23.89	107	-11.55	23.80	6.05	6.54	**0.000
Asset turnover ratio (SalesTA)											
3-year	113	0.01	5.77	0.93	1.01	107	0.03	6.72	0.89	0.73	0.768
2- year	113	0.02	7.34	0.94	1.19	107	0.02	5.24	0.86	0.63	0.562
1-year	113	0.01	4.17	0.81	0.79	107	0.05	2.51	0.81	0.47	0.985
Fixed asset turnover ratio (SalesFA)											
3-year	113	0.05	344.28	6.39	32.75	107	0.05	113.41	3.37	10.94	0.365
2- year	113	0.03	281.73	5.43	27.16	107	0.15	98.99	3.19	9.53	0.419
1-year	113	0.03	54.24	2.63	5.74	107	0.08	113.64	3.16	10.93	0.647

**significant at the 0.05

From Table 4.2, it was found that the problem firms had an average of the current ratio higher than non-problem firms. The problem firms had an average of current ratio 2.63 (SD. = 5.48) in 3-year, 3.03 (SD. = 6.48) in 2-year, and 3.41 (SD. = 7.45) in 1-year. It showed that problem firms would attempt to maintain higher liquidity to be used when the company faced problems.

When considering the average debt ratio, it was found that the problem firms had a higher average than non-problem firms. The problem firms would have an average debt ratio increasing every year to use when the company faced problems.

The problem firms had an average debt ratio of 53.68 (SD. = 25.40) in 3-year, 57.38 (SD. = 32.71) in 2-year, 63.08 (SD. = 37.59) in 1-year. The non-problem firms had an average debt ratio of 43.01 (SD. = 23.73) in 3-year, 42.30 (SD. = 21.27) in 2-year, and 40.96 (SD. = 20.46) in 1-year. When considering the maximum debt ratio, problem firms had a value of 232.02 in 2-year, with a value of 223.95 in 1-year, indicating that the company had more liabilities than assets and had negative equity.

When considering the average ROA, problem firms had a negative ROA average increase each year, while non-problem firms had a positive ROA average. Problem firms had an average ROA of -4.63 (SD. = 22.51) in 3-year, -8.25 (SD. = 25.24) in 2-year, -11.54 (SD. = 23.89) in 1-year. As for non-problem firms, the average ROA was 8.21 (SD. = 23.93) in 3-year, 7.50 (SD. = 9.05) in 2-year, 6.05 (SD. = 6.54) in 1-year. The minimum values of ROA, problem firms and non-problem firms were negative, but the ROA minimum value of problem firms had a negative value than non-problem firms. The problem firms had a minimum value of -183.54 in 3-year, -143.24 in 2-year, -142.45 in 1-year. In terms of non-problem firms, the minimum value was -36.91 in 3-year, -9.64 in 2-year, and -11.55 in 1-year.

The average asset turnover ratio of problem firms and non-problem firms was not significantly different, ranging between 0.8-0.9, indicating that assets worth 1 baht, the company can generate income 0.8 to 0.9 baht. The average assets turnover ratio of problem firms was 0.93 (SD. = 1.01) in 3-year, 0.94 (SD. = 1.19) in 2-year, and 0.81 (SD. = 0.79) in 1-year. The average assets turnover ratio of non-problem firms was 0.89 (SD. = 0.73) in 3-year, 0.86 (SD. = 0.63) in 2-year, and 0.81 (SD. = 0.47) in 1-year.

When considering the average value of fixed asset turnover ratio, the problem firms was 6.39 (SD. = 32.75) in 3-year, 5.43 (SD. = 27.16) in 2-year, and 2.63 (SD. = 5.74) in 1-year, higher than non-problem firms with an average of 3.37 (SD. = 10.94) in 3-year, 3.19 (SD. = 9.53) in 2-year, and 3.16 (SD. = 10.93) in 1-year. It represented that, as the executives of problem firms, the efficiency of investment in using fixed assets to generate sales was decreasing each year before considering as problem firms. As for the executives of non-problem firms, the efficiency of investing in fixed assets was similar each year.

When considering the t-test, the Debt Ratio (DebtTA) and ROA had a significant difference between the problem firms and non-problem firms in 3-year, 2-year, and 1-year. For the remaining financial ratio, there was no significant difference between the groups.

4.3 Data Testing as Required by Logistic Regression

4.3.1 Test of Muticollinearity

Table 4.3, Table 4.4, and Table 4.5 showed that the coefficients of independent variables: corporate governance and financial ratios are not highly correlated. This confirmed that both variables are important in establishing predictive relationships under investigation in this study.

Table 4.3 Correlation of the Variables of Corporate Governance and Financial Ratios in 3-year

	Board_S3	BoardInd3	Age3	Busy3	Meeting3	Direct_F3	Direct_O3	Current3	DebtTA3	ROA3	SalesTA3	SalesFA3
Board_S3	1											
BoardInd3	-.413**	1										
Age3	.286**	-.028	1									
Busy3	.064	-.059	-.087	1								
Meeting3	.003	.134*	-.086	.181**	1							
Direct_F3	.160*	-.073	.090	.125	-.004	1						
Direct_O3	-.157*	-.033	-.138*	-.038	-.189**	-.088	1					
Current3	.022	-.023	.161*	.040	-.068	.012	.112	1				
DebtTA3	-.073	.021	-.193**	.089	.118	.027	-.004	-.498**	1			
ROA3	.118	-.108	.068	.137*	-.029	-.008	.038	.046	-.022	1		
SalesTA3	-.014	-.041	-.039	.000	-.095	-.037	.020	-.075	.050	-.101	1	
SalesFA3	-.109	.017	-.108	.097	-.040	-.036	.010	.001	-.021	.031	.434**	1

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

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

Table 4.3 showed that in 3-year before considering as problem firms, debt ratio (DebtTA3) and current ratio (Current3) had a Pearson correlation of -0.498. It was a

moderate positive relationship between these two variables. At the same time, there was no relationship of a Pearson correlation between asset turnover ratio (SalesTA3) and busy boards (Busy3).

Table 4.4 Correlation of the Variables of Corporate Governance and Financial Ratios in 2-year

	Board_S2	BoardInd2	Age2	Busy2	Meeting2	Direct_F2	Direct_O2	Current2	DebtTA2	ROA2	SalesTA2	SalesFA2
Board_S2	1											
BoardInd2	-.374**	1										
Age2	.222**	.036	1									
Busy2	.006	-.084	-.104	1								
Meeting2	.016	.145*	-.097	.134*	1							
Direct_F2	.135*	.042	.116	.095	.033	1						
Direct_O2	-.148*	-.051	-.093	.039	-.159*	-.174**	1					
Current2	.045	.014	.141*	-.030	-.034	.017	.028	1				
DebtTA2	-.040	.026	-.114	-.059	.067	-.073	.004	-.460**	1			
ROA2	.101	-.131	.165*	.060	-.035	.111	-.013	.020	-.447**	1		
SalesTA2	-.017	-.056	-.045	.030	-.059	.051	.005	-.015	.033	-.202**	1	
SalesFA2	-.113	.013	-.095	-.081	-.068	-.025	.021	.150*	-.092	-.405**	.628**	1

** . Correlation is significant at the 0.01 level (2-tailed). * . Correlation is significant at the 0.05 level (2-tailed).

Table 4.4 showed that in 2-year before considering as problem firms, fixed asset turnover ratio (SalesFA2) and asset turnover ratio (SalesTA2) had a Pearson correlation of 0.628. It was a moderate positive relationship between these two variables. While the relationship of a Pearson correlation between debt ratio (DebtTA2) and directors' ownership (Direct_O2) was 0.004.

Table 4.5 Correlation of the Variables of Corporate Governance and Financial Ratios in 1-year

	Board_S1	Boardind1	Age1	Busy1	Meeting1	Direct_F1	Direct_O1	Current1	DebtTA1	ROA1	SalesTA1	SalesFA1
Board_S1	1											
Boardind1	-0.561**	1										
Age1	.255**	-0.033	1									
Busy1	.056	-0.086	-0.090	1								
Meeting1	.066	.009	-0.117	.207**	1							
Direct_F1	.194**	-0.004	.046	.114	.046	1						
Direct_O1	-0.099	-0.025	-0.085	.002	-.127	-.128	1					
Current1	-0.005	.083	.044	-0.035	.083	.032	-0.023	1				
DebtTA1	-0.034	-0.083	-0.119	-0.032	.067	-.096	.041	-.426**	1			
ROA1	.128	-0.060	.108	.158*	-.076	.080	.110	.065	-.519**	1		
SalesTA1	-0.006	-0.030	-0.043	-0.033	-.139*	-.079	.065	-.165*	.158*	.076	1	
SalesFA1	-0.120	.057	-0.057	.064	-.105	.018	-.009	.080	-.077	.047	.377**	1

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

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

Table 4.5 showed that in 1-year before being considering as problem firms, the board independence (Boardind1) and board size (Board_S1) had a Pearson correlation of -0.561. It was a moderate negative relationship between these two variables. While the relationship of a Pearson correlation between directors' ownership (Direct_O1) and busy boards (Busy1) was 0.002 which was very low in the same direction.

4.3.2 Omnibus Test of Model Coefficients

Table 4.6 summarized the Omnibus test. The p-value of 0.000 was less than the 0.05. It showed that the dependent variable: early warning signs of problem firms were based on at least 1 independent variable: corporate governance and financial ratios. Therefore, all 11 independent variables should be worth checking thoroughly.

Table 4.6 Omnibus Tests of Model Coefficients

		Years before considering as problem firms								
		3-year			2- year			1-year		
		Chi-square	df	Sig.	Chi-square	df	Sig.	Chi-square	df	Sig.
Model 1	Step	61.065	11	.000	78.398	11	.000	105.223	11	.000
	Block	61.065	11	.000	78.398	11	.000	105.223	11	.000
	Model	61.065	11	.000	78.398	11	.000	105.223	11	.000
Model 2	Step	61.955	11	.000	76.518	11	.000	100.841	11	.000
	Block	61.955	11	.000	76.518	11	.000	100.841	11	.000
	Model	61.955	11	.000	76.518	11	.000	100.841	11	.000

4.3.3 Testing of Suitability of Forecasting Models

Table 4.7 summarized the R-square tests. The Cox and Snell R-square and the Nagelkerke R-square provided useful information to explain the influence of the model by considering the R-square value (called Pseudo R²) as follows.

Table 4.7 Model Summary and the R-square Tests

Year before being marked	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square	Hosmer and Lemeshow Test		
				Chi-square	df	Sig.
Model 1: 3-year	243.756 ^a	0.242	0.323	10.661	8	0.222
2- year	226.423 ^a	0.300	0.400	7.537	8	0.480
1-year	199.598 ^a	0.380	0.507	5.818	8	0.668
Model 2: 3-year	242.866 ^a	0.245	0.327	9.489	8	0.303
2- year	228.303 ^a	0.294	0.392	8.106	8	0.423
1-year	203.980 ^a	0.368	0.490	15.382	8	0.102

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

In 3-year before considering as problem firms, Model 1-Model 2 had the R-square value of 0.242 to 0.327. It could be explained that all 11 independent variables

could explain the dependent variable, which it refers to early warning signs of problem firms in average more than 28 percent.

In 2-year before considering as problem firms, Model 1-Model 2 had the R-square value of 0.294 to 0.400. It could be explained that all 11 independent variables could explain the dependent variable, which it refers to early warning signs of problem firms in average more than 34 percent.

In 1-year before considering as problem firms, Model 1-Model 2 had the R-square value of 0.368 to 0.507. It could be explained that all 11 independent variables could explain the dependent variable, which it refers to early warning signs of problem firms in average more than 43 percent.

From the above information, it was worth noting that 11 independent variables could best explain the dependent variable in 1-year, followed by the 2-year and the worst was the 3-year.

The results showed in Table 4.7, Hosmer and Lemeshow test of Model 1 had sig. = 0.222 in 3-year, sig. = 0.480 in 2-year, and sig. = 0.668 in 1-year. Model 2 had sig. = 0.303 in 3-year, sig. = 0.423 in 2-year, and sig. = 0.102 in 1-year. Every value with significance greater than 0.05 could be indicated that the used equation was appropriate.

4.4 Logistic Regression Results

In early warning signs of problem firms, there would be a search for independent variables that were expected to affect problem. The analysis was divided into 3-year, 2-year, and 1-year before considering as problem firms. The study was divided into 2 models:

Model 1: it was independent variables for corporate governance and financial ratios, including board size (Board_S), board independence (BoardInd), age (Age), busy boards (Busy), board meeting frequency (Meeting), director's fee (Direct_F), directors' ownership (Direct_O), current ratio (Current), debt ratio (DebtTA), ROA, and asset turnover ratio (SalesTA).

Model 2: the independent variable was asset turnover ratio (SalesTA) which was replaced by a fixed asset turnover ratio (SalesFA) because both independent variables had similar calculations.

Table 4.8 Variables in the Equation of Model 1

Model 1	Years before considering as problems											
	3-year				2-year				1-year			
	B	Wald	Sig.	Exp(B)	B	Wald	Sig.	Exp(B)	B	Wald	Sig.	Exp(B)
Board_S	.022	.095	.758	1.023	-.094	1.533	.216	.911	-.115	1.648	.199	.891
BoardInd	.043	4.552	**0.033	1.044	.014	.545	.460	1.015	.003	.015	.903	1.003
Age	-.033	1.147	.284	.968	-.050	2.599	.107	.951	-.032	.857	.355	.968
Busy	.005	.486	.486	1.005	.006	.678	.410	1.006	.017	5.747	**0.017	1.017
Meeting	-.028	.353	.552	.972	-.006	.015	.901	.994	-.017	.148	.701	.983
Direct_F	-.014	1.633	.201	.986	.001	.005	.946	1.001	.005	.146	.703	1.005
Direct_O	-.004	.231	.631	.996	-.012	1.637	.201	.988	-.013	1.646	.200	.987
Current	.190	5.845	**0.016	1.209	.143	5.590	**0.018	1.153	.132	5.434	**0.020	1.142
DebtTA	.029	10.853	**0.001	1.029	.020	5.126	**0.024	1.020	.018	4.031	**0.045	1.018
ROA	-.086	16.900	**0.000	.918	-.108	19.834	**0.000	.897	-.148	25.718	**0.000	.862
SalesTA	.250	1.841	.175	1.283	.271	1.854	.173	1.311	.664	4.356	**0.037	1.942
Constant	-1.401	.461	.497	.246	2.045	.963	.327	7.726	-.988	.158	.691	2.687

**significant at the 0.05

Model 1 in Table 4.8 shows the 3-year analysis. It was found that there were 4 independent variables with significant level 0.05 to the dependent variable, which is the early warning signs of problem firms. This variable consisted of board independence (BoardInd), current ratio (Current), debt ratio (DebtTA), and ROA. The coefficient of the independent variables, which are board independence (BoardInd), current ratio (Current), and debt ratio (DebtTA), were a positive sign, meaning that if board independence (BoardInd), current ratio (Current), and debt ratio (DebtTA) were low, the Y value would be less and the likelihood of becoming a problem firm was also less. As for the coefficients of independent variables, which ROA was a negative sign, this can be interpreted that if ROA was very valuable, it would cause less probability to become a problem firm. It was worth noting that the current ratio (Current) was positive signs, meaning that the proportion of current ratio (Current) was too high, it would make the probability of becoming a problem firm. It showed that the problem company would try to maintain the high liquidity in order to be used when the company faced problems.

In 2-year, it was found that there were 3 independent variables including current ratio (Current), debt ratio (DebtTA), and ROA with a significant level of 0.05 to the dependent variable, which is the early warning signs of problem firms. The coefficient of current ratio (Current) and debt ratio (DebtTA) were a plus sign, the ROA's coefficient was negative.

In 1-year, it was found that there were 5 independent variables which were in significant level of 0.05 to early warning signs of problem firms, including busy boards (Busy), current ratio (Current), debt ratio (DebtTA), ROA, and asset turnover ratio (SalesTA). The coefficients of independent variables: busy boards (Busy), current ratio (Current), debt ratio (DebtTA), and asset turnover ratio (SalesTA) were positive marks and the coefficient of ROA was a minus sign.

Table 4.9 Variables in the Equation of Model 2

Model 2	Years before considering as problem firms											
	3-year				2-year				1-year			
	B	Wald	Sig.	Exp(B)	B	Wald	Sig.	Exp(B)	B	Wald	Sig.	Exp(B)
Board_S	.038	.267	.606	1.038	-.095	1.528	.216	.909	-.111	1.572	.210	.895
BoardInd	.043	4.518	**034	1.044	.012	.406	.524	1.013	.005	.039	.844	1.005
Age	-.030	.948	.330	.971	-.048	2.450	.118	.953	-.042	1.487	.223	.959
Busy	.004	.300	.584	1.004	.006	.673	.412	1.006	.016	4.955	.026	1.016
Meeting	-.029	.375	.541	.971	.007	.023	.880	.993	-.036	.693	.405	.965
Direct_F	-.015	1.744	.187	.986	.002	.050	.823	1.002	.004	.124	.725	1.005
Direct_O	-.004	.196	.658	.996	-.011	1.535	.215	.989	-.012	1.461	.227	.988
Current	.183	5.489	**019	1.201	.140	5.167	**023	1.150	.132	5.315	**021	1.141
DebtTA	.029	11.004	**001	1.030	.020	5.293	**021	1.021	.022	6.035	**014	1.022
ROA	-.086	17.066	**000	.918	-.101	19.020	**000	.904	-.124	23.745	**000	.883
SalesFA	.016	1.152	.283	1.016	.003	.035	.851	1.003	-.011	.308	.579	.989
Constant	-1.519	.539	.463	.219	2.198	1.110	.292	9.009	1.947	.631	.427	7.005

**significant at the 0.05

Model 2 is shown in Table 4.9. It was found that the Model 2 had the same independent variables as Model 1, both 3 sets of time, which had the ability to predict early warning signs of problem firms at a significant level of 0.05. Model 2 had the same

independent variables as Model 1 in 3-year and 2-year that had predictive capability in early warning signs of problem firms, model 2 was different from Model 1 only for in 1-year, with details as follows:

In 3-year, it had been found that there are 4 independent variables that were significant, namely board independence (BoardInd), current ratio (Current), debt ratio (DebtTA), and ROA. The coefficient of the independent variable: board independence (BoardInd), current ratio (Current), and debt ratio (DebtTA) were a plus sign, while the coefficient of independent variable: ROA was a minus sign.

In 2-year, and 1-year, it was found that the independent variable: current ratio (Current), debt ratio (DebtTA), and ROA had the ability to predict early warning signs of problem firms at a significant level of 0.05. The coefficient of independent variables: current ratio (Current) and debt ratio (DebtTA) were a plus sign and the coefficient of independent variable: ROA was a minus sign.

4.5 Model Accuracy

This research had applied the model obtained from the analysis to test the accuracy in the forecast: early warning signs of problem firms, as the study signals a warning signs of the Stock Exchange of Thailand, by setting the cutting point level at 0.5 of probability of problem firms and non-problem firms. If the calculated probability was greater than 0.5, it was predicted that the problem firms. Conversely, if the value of probability was less than 0.5, it was predicted as non-problem firms.

Table 4.10 Classification Table of Model 1

Observed	Years before considering as problem firms											
	Predicted of 3-year				Predicted of 2-year				Predicted of 1-year			
	Non-Problem Firms	Problem firms	Total	% Correct	Non-Problem Firms	Problem firms	Total	% Correct	Non-Problem Firms	Problem firms	Total	% Correct
Non-Problem Firms	77	30	107	72.0	83	24	107	77.6	91	16	107	85.0
Problem firms	32	81	113	71.7	31	82	113	72.6	27	86	113	76.1
Overall %				71.8				75.0				80.5

The cut value is .500

Table 4.10, it was found that from Model 1 in the forecast: early warning signs of problem firms in the 3-year before considering as problem firms, 220 listed companies using data from corporate governance and financial ratios. It had an overall forecast accuracy of 71.8% (158 companies), which could predict that the problem firms were correct, 71.7% (81 companies) and could accurately predict non-problem firms 72.0% (77 companies). However, the model had a type I error, which was a mistake from rejecting H_0 when H_0 was true, by forecasting that it was a non-problem firm, but in fact the problem firm for 28.3% (32 companies). The model had a type II error that was a mistake from accepting H_0 when H_0 was false, by predicting the problem firms, but in fact, non-problem firms for 28.0% (30 companies).

From Model 1, early warning signs of problem firms in the 2-year before considering as problem firms, it was found that the model could accurately predict 75.0% (165 companies). It predicted the problem firms correctly 72.6% (82 companies) and accurately forecasts the non-problem firms 77.6% (83 companies), with a type I error of 27.4% (31 companies) and type II error of 22.4% (24 companies).

From Model 1 in the forecast: early warning signs of problem firms in the 1-year before considering as problem firms, the model had 80.5% accuracy in forecasting (177 companies). The forecast of the problem firms was 76.1% accurate (86 companies) and was able to accurately predict the non-problem firms 85.0% (91 companies), with a type I error of 23.9% (27 companies) and type II error of 15.0% (16 companies).

Table 4.11 Classification Table of Model 2

Observed	Years before considering as problem firms											
	Predicted of 3-year				Predicted of 2-year				Predicted of 1-year			
	Non-Problem Firms	Problem firms	Total	% Correct	Non-Problem Firms	Problem firms	Total	% Correct	Non-Problem Firms	Problem firms	Total	% Correct
Non-Problem Firms	80	27	107	74.8	83	27	107	77.6	84	23	107	78.5
Problem firms	29	84	113	74.3	29	84	113	74.3	25	88	113	77.9
Overall %				74.5				75.9				78.2

The cut value is .500

Table 4.11 was Model 2 in forecasting: early warning signs of problem firms in the 3-year before considering as problem firms. The result showed ability to accurately predict the problem firms of 84 companies from a total of 113 companies, accounting for 74.3% and it could accurately predict the non-problem firms as 80 companies, accounting for 74.8%. Based on the test of the accuracy of the model at the cutting point level of 0.5, the model could accurately predict the number of 164 companies, accounting for 74.5% with a type I error of 25.7% and a type II error of 25.2%.

From Model 2 in forecasting: early warning signs of problem firms in the 2-year before considering as problem firms, it could accurately predict the problem firms of 84 companies from a total of 113 companies, accounting for 74.3% and could accurately predict the non-problem firms of 83 companies, accounting for 77.6%. The accuracy of the model could be accurately predicted by 167 companies, representing 75.9% at the cutting point level of 0.5, with type I error of 25.7% and type II error of 22.4%

From Model 2 in forecasting: early warning signs of problem firms in the 1-year before considering as problem firms, it could accurately predict the problem firms, 88 companies from a total of 113 companies, accounting for 77.9% and correctly forecasting the non-problem firms with 84 companies, accounting for 78.5%. Based on the test of the accuracy of the model at the cutting point level of 0.5, the model could accurately predict 172 numbers, representing 78.2%, with a type I error of 22.1% and a type II error of 21.5%

The summary of the model accuracy rates are as follows:

Model 1 3-year = 71.8%, 2-year = 75.0%, 1-year = 80.5%

Model 2 3-year = 74.5%, 2-year = 75.9%, 1-year = 78.2%

The Type I error, which was a mistake from rejecting H_0 when H_0 was true, by forecasting that it was a non-problem firm, but in fact the problem firm as follows.

Model 1 3-year = 28.3%, 2-year = 27.4%, 1-year = 23.9%

Model 2 3-year = 25.7%, 2-year = 25.7%, 1-year = 22.1%

The Type II error, which was a mistake from rejecting H_0 when H_0 was wrong, by forecasting that it was a problem firm, but in fact the non-problem firm as follows.

Model 1 3-year = 28.0%, 2-year = 22.4%, 1-year = 15.0%

Model 2 3-year = 25.2%, 2-year = 22.4%, 1-year = 21.5%

From the above studies, it was found that Model 1 and Model 2 had similar accurate forecasting for the whole 3 years before considering as problem firms, but considering the type I error in Model 2, it had the least type I error. The recommended to choose Model 2 in the forecast early warning signs of problem firms.

4.6 Qualitative Results

This research intended to investigate the turnaround strategies of problem firms to become non-problem firms. Content analysis using the computer package software, called NVivo Version 12, was designed for Qualitative Data Analysis – QDA. It facilitates finding themes. The analysis model was a combination between content analysis and thematic analysis. The data would be classified into different classification. The coding was a category derived from the relevant theories or literatures in order to be consistent with the research objectives. In this case, the researcher read and reviewed the raw data for several times and determined the themes that appear from the data (Lune & Berg, 2016).

Qualitative research results were divided into 3 parts.

Part 1, it was the result of an in-depth interview by 7 informants from 5 securities companies. The first informant and the second informant were an executive vice-president. The third informant was a senior vice president. The fourth informant was the senior fund manager. The fifth informant was portfolio manager. The sixth informant was the fund manager. In addition, the seventh informant was a deputy head of department.

Part 2, it was the result of the focus group consisted of 11 informants, namely 3 bank credit departments (B1, B2, and B5), 4 investors (I3, I6, I7, and I9), 2 certified public accountants (A4, A10), 1 financial advisor (F8), and 1 academician (C11).

Part 3, it was documentary research in the study of turnaround strategies of problem firms that used strategies management to become non-problem firms. This research would investigate the factors that problem firm used to mark NC as the reason to be removed from the SET, which was selected from the examination result from the Securities and Exchange Commission, company summary of the Stock Exchange of Thailand, annual registration statement (form 56-1), and annual report (form 56-2).

Part 1 and part 2 also confirmed the quantitative research in Phase 1 which factors provided the predictability value to problems. All Part 1, Part 2 and Part 3 gave the answers what were the successful turnaround strategies.

4.6.1 In-depth Interview Results

The researcher had 4 questions. Questions 1-3 confirmed the quantitative results of the early warning signs of problem firms consisting of corporate governance (CG), and financial ratio. Questions 4 was the study related to strategic management to turn problem firms to non-problem firms. There were 7 informants from 5 securities companies. The informant 1 (I1) was an executive vice-president from the first securities company. The informant 2 (I2) was an executive vice-president and the informant 3 (I3) was a senior fund manager from the second securities company. The informant 4 (I4) was a senior vice president. The informant 5 (I5) was a portfolio manager from the third securities company. The informant 6 (I6) was a fund manager from the fourth securities company. The informant 7 (I7) was a deputy head of department from the fifth securities company. The in-depth interview results are shown in Table 4.12.

Table 4.12 Summary of Data Analysis from In-depth Interviews

In-depth interview results	Informant	% of informants (n = 7)
Q1: What were the warning signs informing investors/securities analysts in advance before the company became a problem firm?		
Finding 1: Anomaly of the Stock Price	I2, I3, I4,	86
A sharp drop in stock prices would be a signal of a potential problem firms before the company issued the financial statements. This was because financial statements were issued timely basis (quarterly, semi-annual and yearly) but stock prices were reported daily.	I5, I6, I7	

Table 4.12 Summary of Data Analysis from In-depth Interviews (Cont.)

In-depth interview results	Informant	% of informants (n = 7)
<p>Finding 2: An Auditor’s Opinion</p> <p>The modified of opinions of auditors were an important warning signal. This was because auditors signaled non-transparent issues to publics. Also, modified opinions gave the idea of financial statements manipulation which always aimed to increase the price of common shares and created wealth for the business. The modified opinions affected the credibility of the financial statement preparation and presentation system.</p>	I1, I2, I4	43
<p>Finding 3: The Executives Sold their Common Shares, and Manipulating Stocks Using Insider Information</p> <p>Insider must know unusual information inside the company before outsiders. Therefore, insider sold shares out before outsiders. This means executives who sold shares would be a signal to show the chance of problem firm.</p> <p>Q2: Did Corporate Governance (CG) of company’s executives have an impact on problem firms? How much in-advance signal could be sent?</p>	I2	14
<p>Finding 1: Corporate Governance: CG did not Reflect the True Event</p> <p>The corporate governance information did not match the actual situations. In some cases, listed companies had financial problems even though they had been ranked as a good CG company. Some brokers and investors did not pay attention to companies’ CG information because they felt that the information was irrelevant.</p>	I1, I2, I3, I4, I6, I7	86

Table 4.12 Summary of Data Analysis from In-depth Interviews (Cont.)

In-depth interview results	Informant	% of informants (n = 7)
<p>Q3: Could the company's financial statements be analyzed in advance before the company became a problem firm? What point could it be seen from? How much in-advance signal could be sent?</p>		
<p>Finding 1: Reducing Sales and Profits</p> <p>The financial statements of problem firms could be seen from continuously decreasing profits. In addition, income should be considered as well. If income decreases, it was caused by industry groups or the company itself. After considering the income, there should be a look at the gross margin and net profit, which would indicate whether the business was starting to have problems. That was to consider the cost and income of the company.</p>	<p>I1, I2, I3, I4, I5, I6, I7</p>	<p>100</p>
<p>Finding 2: Cash Flow</p> <p>In most cases, companies that had problems caused by cash flow, such as short-term cash flow, was not enough to pay short-term debt.</p>	<p>I1, I2, I4, I5, I6, I7</p>	<p>86</p>
<p>Finding 3: Increasing Liabilities and Reducing Ability to Pay Debts</p> <p>The company had a high debt for 1-2 years continuously and was unable to control their debt. The company had a problem to pay off debt. This was a signal of financial distress.</p>	<p>I1, I2, I3, I5, I6, I7</p>	<p>86</p>
<p>Finding 4: Financial Statements were Too Late to Show Problems</p> <p>Financial statements were not good signals. Investors would know that it was a problem firm when the company already had problem.</p>	<p>I3</p>	<p>14</p>

Table 4.12 Summary of Data Analysis from In-depth Interviews (Cont.)

In-depth interview results	Informant	% of informants (n = 7)
<p>Q4: After the companies become a problem firm, were there many companies that could improve their problem status until the Stock Exchange removes warning signs and resumes non-problem status. What and how did these companies use strategy/management methods?</p>		
<p>Finding 1: Finding a New Capital Group Business rehabilitation was an investment that required a lot of money. Therefore, the company must find sources of funds by issuing additional shares, which the company would offer to sell to interested parties such as existing shareholders, institutional investors, or general investors. The reasons for the company having to increase capital can be divided into 4 main reasons, namely the company needed funds to expand the business, the company needed funds to pay the debt, the company wanted to clear the accumulated losses, and the company needed the working capital to run the business.</p>	<p>I1, I3, I4, I6, I7</p>	<p>71</p>
<p>Finding 2: Negotiating with Creditors to Convert Debt into Equity Converting debt to equity was a method that could be used to pay off a company's outstanding debt. Converting debt to equity was an act of debt repayment by issuing additional ordinary shares to creditors participating in the debt to equity conversion program. It would have a positive impact on the company, which means that the company would have lower debt, lower interest expenses, lower debt to equity ratio, increased equity, and facilitate funding from financial institutions. From the ability to raise funds, the company can use the funds to invest, can use the working capital to increase liquidity, support future business expansion, and strengthen the financial status in the company.</p>	<p>I1, I3, I4, I6, I7</p>	<p>71</p>

Table 4.12 Summary of Data Analysis from In-depth Interviews (Cont.)

In-depth interview results	Informant	% of informants (n = 7)
<p>Finding 3: Merger and Acquisitions and Back-Door Listing</p> <p>The companies that need to rehabilitate their business may have difficulty raising funds for developing their various projects. Moreover, it was affected by the financial institutions having restrictions and various conditions in considering the loan of the company. Therefore, the company must find strategies for raising funds through various methods. Merger and acquisitions were a method that can be used to raise funds.</p>	I1, I3, I7	43
<p>Finding 4: Looking for Additional Investments in Other Businesses</p> <p>Considering the core business, one must look at the current trend of the world in what direction. If the core business was still good, new business come in as well. If you were not together with the trend of the world, the core business would keep decreasing. If the company did not change anything the company would not survive in the end.</p>	I3, I5, I7	43
<p>Finding 5: Changing Business Type</p> <p>New partners came in to change the business model. The old business had a problem. If the company continued to follow the old business model, it would lose money because the product could not be sold. The product was not matched with customers' need. Therefore, the company must found a new partner to change to new business.</p>	I1, I3, I7	43

Table 4.12 Summary of Data Analysis from In-depth Interviews (Cont.)

In-depth interview results	Informant	% of informants (n = 7)
Finding 6: Changing Shareholders and Changing Management After the capital increase, there may be a change of the structure of the major shareholders. The company will proceed to change the new management. The new management would make a plan to solve problems and projects that were an obstacle to management, including the implementation of a plan to recover the business.	I3, I7	29
Finding 7: Hiring Financial Advisor and Consultants The problem companies were caused by many reasons such as lack of financial resources, unable to adapt with technological progress, not being aware of the needs of customers, incompetence of leaders. These companies required external management consultants that were able to immediately resolve the situation. The experience of external management consultants allowed companies to be able to recognize situations in which executives were unable to solve problems and may take a long time to solve problems.	I1, I4	29
Finding 8: Reducing Costs and Expenses The company reduced costs and expenses in order to create a positive cash flow and in the short-term for business survival, allowing the company to eventually recover. The company would benefit from cost reduction and waste disposal cost in order to improve operational efficiency. Although the cost and expense reductions of the company would receive short-term financial benefits, it may damage the company's long-term growth.	I4, I7	29

Table 4.12 Summary of Data Analysis from In-depth Interviews (Cont.)

In-depth interview results	Informant	% of informants (n = 7)
<p>Finding 9: Changing in Management Characteristics of Executives</p> <p>The personality of executives and employees in the organization was also important. For example, if executives and employees felt like they were the owners, then the problem could be solved. If executives had an aggressive personality, when the company went wrong, the company would be affected a lot.</p>	I1, I6	29

In sum, from Table 4.12, the in-depth interviews could be concluded that an anomaly of the stock price, an auditor's opinion, and the executives were selling shares, and manipulating stocks, could be a warning to investors and securities analysts in advance before the company became a problem firms.

Corporate governance of company executives might not be a good warning before the company became a problem firm because the CG information did not match what actually happens.

In analyzing the company's financial statements, it can be a warning sign to problem firms by considering reduced sales, profits, and cash flow, and increased liabilities, and reduced ability to pay debts, and financial statements were showing slower than problems that occurred before.

The company that become a problem firm could be changed back to be a regular company in the stock market. In-depth interview results from 7 informants could summarize and recommend the strategy/management methods that can be implemented as follows: The first strategy consisted of 5 informants ($5/7 = 71\%$) which were strategy focusing on finding a new capital group and strategy focusing on negotiating with creditors to convert debt into equity. The second strategy consisted of 3 informants (43%) which were strategy focusing on merger or backdoor listing, and strategy focusing on

additional investment in other businesses, and strategy focusing on changing business type. The company sought a capital group to take a takeover or backdoor listing. It was an indirect listing on the Stock Exchange of Thailand, which the stock market did not like. The third strategy consisted of 2 informants (29%) which were strategy focusing on changing shareholders, and changing management, and strategy focusing on having financial advisor and consultants, and strategy focusing on reducing costs and expenses, and strategy focusing on changing in management characteristics of executives.

4.6.2 Focus Group Results

The study also used the same four questions in focus group as well as in-depth interview. The focus group consisted of 11 informants, namely 3 bank credit departments (B1, B2, and B5), 4 investors (I3, I6, I7, and I9), 2 certified public accountants (A4, A10), 1 financial advisor (F8), and 1 academician (C11). The results of the focus group are shown in Table 4.13.

Table 4.13 Summary of Data Analysis from Focus Group

Focus Group Results	Informant	% of informants (n = 11)
Q1: What were the warning signs informing investors/securities analysts in advance before the company became a problem firm?		
Finding 1: Anomaly of Stock Price The early warning signs of anomaly of stock price included: market price of securities had continuously declined for 3 quarters; market price of securities fell by more than 30% and market price of the stock was unusually high without any underlying factors.	B2, I3, I7, I9	36
Finding 2: The Executives Sold their Shares and Manipulating Stocks The company president sold shares/manipulated stocks.	B2, I3, F8	27

Table 4.13 Summary of Data Analysis from Focus Group (Cont.)

Focus Group Results	Informant	% of informants (n = 11)
<p>Finding 3: If the Company was Unable to Borrow Money from the Bank, it will Use the Method of Issuing Debentures.</p> <p>If the company could not loan from banks, the company would use the method of issuing bonds.</p>	B2, I3, A4	27
<p>Finding 4: CEO Frequently Changed</p> <p>The company changed CEO positions several times.</p>	B2, F8	18
<p>Finding 5: Miss-Match Fund</p> <p>Funds were used inappropriate purposes such as use short-term loan to invest in projects that require a long time payback.</p>	B2, I3	18
<p>Finding 6: An Auditor's Opinion</p> <p>The auditor issued disclaimer of opinion.</p> <p>Q2: Did Corporate Governance (CG) of company's executives have an impact on problem firms? How much in-advance signal could be sent?</p>	A4, A10	18
<p>Finding 1: Corporate Governance (CG) did not Reflect the True Event</p> <p>Corporate Governance information did not reflect the true event.</p> <p>Q3: Could the company's financial statements be analyzed in advance before the company became a problem firm? What point could it be seen from? How much in-advance signal could be sent?</p>	B1, B2, I3, A4, I7	45
<p>Finding 1: Reducing Sales and Profits</p> <p>Significant financial statements had changed such as decreasing sales or profits, unusual increases liabilities.</p>	B2, I3, I6, I7, I9	45

Table 4.13 Summary of Data Analysis from Focus Group (Cont.)

Focus Group Results	Informant	% of informants (n = 11)
<p>Finding 2: Inability to Pay Off Debts</p> <p>Significant financial statements had abnormally increased. It would be a sign that this company was starting to have a worse business background.</p>	B2, I3, I6, I7, I9	45
<p>Finding 3: Cash Flow</p> <p>Operating cash flow was negative causing interest payment, ability to pay the debt the tendency to default. Also Debt Service Coverage Ratio (DSCR) became problems.</p>	B2, I3, I7, C11	36
<p>Finding 4: Delay of Financial Statements Disclosure</p> <p>In investor's perspective, financial statements were not good warning signs. The financial statements were displayed after the event had occurred. Sometimes the results of the financial statements may not be true.</p> <p>Q4: After the companies become a problem firm, were there many companies that could improve their problem status until the Stock Exchange removes warning signs and resumes non-problem status. What and how did these companies use strategy/management methods?</p>	I7, C11	18
<p>Finding 1: Additional Investment in Other Businesses</p> <p>Companies should look for other businesses to find new opportunities.</p>	B1, B2, I6, I7, F8, C11	55
<p>Finding 2: Changing Business Type</p> <p>Change to new business types because old business did not serve the company survival.</p>	B1, B2, I6, I7, F8, C11	55

Table 4.13 Summary of Data Analysis from Focus Group (Cont.)

Focus Group Results	Informant	% of informants (n = 11)
Finding 3: Negotiating with Creditors to Convert Debt into Equity Capital restructure may needed by converting debt to equity.	B2, A4, A10, C11	36
Finding 4: Changing in Management Characteristics of Executives The survival of a company depended on the management style such as young age. In addition, it can also include entrepreneurship style.	B1, A4, C11	27
Finding 5: Changing Shareholders and Management Changing top 10 major shareholders may be useful. When the company changes the majority shareholders, the management may change to improve the company's operations to be more efficient.	B2, I7, C11	27
Finding 6: Merger and Acquisitions and Back-Door Listing There were mergers and acquisitions and back-door listing (registration with the stock exchange indirectly). Mergers and acquisitions were a way to add value to the business because they combine the strengths and weaknesses of each company, helping them increase their competitiveness. In addition, it also makes the company more efficient by sharing resources.	B2, I7, F8	27
Finding 7: Finding a New Capital Group During the business recovery, the company must find a new capital group to use the funds from the capital increase as working capital and expand the business.	I7, F8, C11	27

Table 4.13 Summary of Data Analysis from Focus Group (Cont.)

Focus Group Results	Informant	% of informants (n = 11)
<p>Finding 8: Capital Restructuring and Clearing Deficit</p> <p>The company should change its capital structure by compensating deficit. The company would use the legal reserve and premium on share capital to compensate the deficit and increased registered capital.</p>	A4, A10	18
<p>Finding 9: Hiring Financial Advisors</p> <p>The company should hire financial advisors (FA). Their experience makes it possible to provide valuable advice for the company.</p>	F8	9
<p>Finding 10: Reducing Costs and Expenses</p> <p>The company's management must consider cost and expense reduction. It will enable the company to have working capital to be used in operations and increase profits.</p>	A4	9

In sum, from Table 4.13, the focus group could be summarized as follows.

1. Warning signs for investors and securities analysis before the company became problem firms were as follows: (a) anomaly of the stock price, (b) the executives sold shares and manipulated stocks, (c) if the company was unable to borrow money from the bank, it would use the method of issuing bonds, (d) CEO frequently changed, (e) miss match fund, and (f) disclaimer of opinion.

2. The focus group found that corporate governance did not reflect the true event. Informant I3 said that CG was like an accounting process, it could be manipulated. Especially, the companies in the stock market had a framework for CG scorecard as guidelines, can still exploited their business.

3. Early warning signs from the analysis of the company's financial statements before becoming a problem firm could be considered as follows. The first warning signal that was advocated by 5 persons (5/11 = 45%) can be the point stating that there was significantly decreased financial statements, such as sales or profits that were continually decreasing, or liabilities that were increasing abnormally. The second warning signal was advocated by 4 people (36%), which it included very problem cash flow. The last warning signal was advocated by 2 people (18%), which it included investor's perspective viewing that financial statements were not good warning signs. The financial statements can be manipulated and show slowly problem events in companies. However, the financial statements can still be used as one of indicator informing the problem status.

4. The strategies that could be implemented by the company in order to return the company status from problem to normal company. The details can be as follows:

The first strategy that was advocated by 6 people (55%) can include strategy focusing on investments in other businesses besides core business in order to expand the business. Another strategy included a strategy focusing on a change in the business model because the old business did not help company to be survived. The second strategy was advocated by 4 people (36%). This strategy focusing on restructuring capital by converting debt to equity. The third strategy advocated by 3 people (27%). This strategy focusing on changing in management characteristics of executives, strategy focusing on changing shareholders, and changing management, strategy focusing on merger or backdoor listing, and strategy focusing on finding a new capital group. The fourth strategy advocated by 2 people (18%). This strategy focusing on adjusting its capital structure by compensating the company deficit. The final strategy advocated by 1 person (9%). This strategy focusing on having financial advisors (FA) who have knowledge on finance and investment, and strategy focusing on reducing costs and expenses.

4.6.3 Documentary Research Results

This research used secondary data searching from 22 February, 2013 - 9 April, 2019, compiled from the SETSMART database (SET Market Analysis and Reporting Tool), which was an online database service of the Stock Exchange of Thailand. In determining the scope of turnaround strategies, this research uses data from the problem firms that can release the NC mark by studying the business strategies that each company

uses during its recovery efforts. After collecting data, there were 9 companies that can lift the NC mark from the Stock Exchange of Thailand, allowing the company to resume trading in the stock exchange.

From the study of documents from the Securities and Exchange Commission; summary of listed company information of the Stock Exchange of Thailand (Company Summary); annual information registration form (Form 56-1); and annual report (Form 56-2), the researcher could summarize the events in which all 9 companies lifted the NC sign and re-entered the stock market as follows.

Table 4.14 Summary of Data Analysis from Documentary Research

Turnaround Strategies	% of Successful Turnaround Companies (n = 9)
Finding 1: Finding a New Capital Group	
The company had increased the registered capital and search for a new capital groups.	100
Finding 2: Additional Investment in Other Businesses	
The company had invested in other businesses to expand the business.	100
Finding 3: Reducing Costs and Expenses	
The company had adjusted strategies to reduce costs and expenses.	67
Finding 4: Negotiate with Creditors to Convert Debt into Equity	
The company had restructured its capital structure by converting debt to equity in order to repay debt to creditors and financial institutions or new lenders.	56
Finding 5: Capital Restructuring and Clearing Deficit	
The company had reduced the registered and paid-up capital of the company in order to restructure the owner's equity and compensate for the deficit of the company.	44

Table 4.14 Summary of Data Analysis from Documentary Research (Cont.)

Turnaround Strategies	% of Successful Turnaround Companies (n = 9)
Finding 6: Hiring Financial Advisor Consultants	
The company hired financial advisors or hired legal advisors regarding rehabilitation plans.	33
Finding 7: Change Business Type	
The company had changed the main business types or had added new products.	33
Finding 8: Merger and Acquisitions, Back-Door Listing	
The company had a mergers and acquisitions, back-door listing.	22
Finding 9: Change Shareholders and Management	
The company had changed the structure of major shareholders.	22

Table 4.14 summarizes turnaround strategies are as follows:

The first strategy consisted of 9 companies ($9/9 = 100\%$) which were strategies focusing on finding a new capital group, and adding more investment in other businesses.

It was normal for business. When problems occur, they need to find more funds to pay for debt and use as working capital. If the company was able to solve the problem to a certain extent, it would find more businesses besides the main business to expand the business and increase profits.

The second strategy consisted of 6 companies ($6/9 = 67\%$) which was strategy focusing on reducing costs and expenses. For example, one of these six companies would adjust strategies to reduce costs and expenses by closing unprofitable branches, reducing non-profit purchasing licenses, focusing on training salespeople to have skills to provide services to customers. In addition, one of these six companies used during crisis times to clear problems, such as back-office systems, financial systems, and reduce excess fat

from the organization by removing 1,600 inefficient workers, and remaining only 880 people. As a result, the company had increased revenue and improved the system to realize cost quickly.

The third strategy consisted of 5 companies ($5/9 = 56\%$) which was strategy focusing on negotiating with creditors to convert debt into equity in order to repay debt to creditors and financial institutions or individuals. For example, during a crisis, one of the five companies received help from a large creditor, who still sees the value of the company. He believed that the company worked hard, did not cheat, and did not fail. Therefore, a large creditor decided to hunt down some debt and extend the debt period to 10 years, including the conversion of debt to equity by becoming a 9.98% shareholder, allowing the company to survive.

The fourth strategy consisted of 4 companies ($4/9 = 44\%$) which was strategy focusing on capital restructuring, and clearing accumulated losses in order to adjust the ownership structure and to compensate the accumulated losses of the company.

The fifth strategy consisted of 3 companies ($3/9 = 33\%$) which was strategy focusing on having financial advisor consultants, and changing business type.

The sixth strategy consisted of 2 companies ($2/9 = 22\%$): strategy focusing on merger or backdoor listing, and strategy considering on changing shareholders and change management.

4.7 Summary Results of Early Warning Signs of Problem Firms

Table 4.15 combines the results from quantitative and qualitative research as follows.

Table 4.15 Summarize the Results of the Early Warning Signs from Quantitative and Qualitative Research

The Early Warning Signs				
Quantitative research		Qualitative research		
		In-depth Interview (% of informants) (n = 7)	Focus Group Interview (% of informants) (n = 11)	% Total number (n = 18)
Corporate Governance				
Board independent	Corporate Governance: CG did not reflect the true event.	86	45	61
Financial Ratios				
ROA	Reduced sales and profits	100	45	67
Debt Ratio	Increased liabilities and reduced ability to pay debts	86	45	61
Current Ratio	Cash Flow	86	36	56
-	Financial statements were showing slower than problems that occurred before	14	18	17
Other				
-	Anomaly of the stock price	86	36	56
-	An auditor's opinion	43	18	28
-	The executives were selling shares, manipulating stocks	14	27	22
-	If the company was unable to borrow money from the bank, it will use the method of issuing debentures	-	27	17
-	CEO frequently changed	-	18	11
-	Miss match fund	-	18	11

From quantitative research, it was found that the early warning signs from corporate governance could identify companies with problems and non-problems. The research found the early warning signs of corporate governance mechanisms in limited predictive value. It was that in 3-year before considering as problem firms only board

independence significantly related to problem firms in a positive manner. However, the qualitative research results showed that corporate governance were not correspond to what was actually happened and could be manipulated.

The results from quantitative and qualitative research of warning signs from financial statement before the company was a problem firm could be summarized similarly. As for profitability ratios, results from quantitative research showed that problem firm would have reduced ROA. The result from qualitative research showed that problem firm would decrease sales and profits. As for the leverage ratio, the result of the quantitative research showed that the problem firm would have an increased debt ratio. The qualitative research showed the same result: the problem firm would have more debt and the efficiency of debt payment would decrease. As for the liquidity ratio, the results from quantitative research showed that the problem firm had an increased current ratio. During the period when the company encountered problems, the company had a lot of debt. Therefore, the company may not be able to borrow money from financial institutions. The company's management would try to provide good liquidity in order to be able to repay short-term debt and had money to circulate for the business. The qualitative research showed that the problem firm would have cash flow problems. In addition, the qualitative analysis found out other early warning signs of problem firm. The first warning sign was an anomaly of the stock price (56%). The next warning signs were an auditor's opinion (28%), the executives were selling shares, manipulating stocks (22%), If the company was unable to borrow money from the bank, it will use the method of issuing debentures (17%), CEO frequently changed (11%), and miss match fund (11%).

4.8 Summary Results of Successful Turnaround Strategies

After the companies was problem firms, the companies could improve to be non-problem firms. It could be summarized as in table 4.16.

Table 4.16 Summarize the Results of Turnaround Strategies from Qualitative Research

Turnaround Strategies	Qualitative research			
	Documentary research (% of successful turnaround companies) (n = 9)	In-depth Interview (% of informants) (n = 7)	Focus Group Interview (% of informants) (n = 11)	% Total number (n = 27)
Investing in other businesses	100	43	55	67
Finding a new capital group	100	71	27	63
Negotiate with creditors to convert debt into equity	56	71	36	52
Change business type	33	43	55	44
Costs and expenses reduction	67	29	9	33
Merger and acquisitions, and back-door listing	22	43	27	30
Change shareholders and management	22	29	27	26
Capital restructuring, and clearing accumulated losses	44	-	18	22
Hire financial advisors	33	29	9	22
Change in management characteristics of executives	-	29	27	19

These companies used the strategy and management methods as follows: the first strategy was additional investment in other businesses. It came from 9 turnaround companies, in-depth interviews of 3 people and focus group of 6 people, representing $18/27 = 67\%$ of the total of 27 data. The next strategies were finding a new capital group (63%), negotiate with creditors to convert debt into equity (52%), change business type (44%), reducing costs and expenses (33%), merger and acquisitions, back-door listing (30%), change shareholders and management (26%), capital restructuring, clearing accumulated losses (22%), hire financial advisors (22%), and change in management characteristics of executives (19%).

CHAPTER 5

CONCLUSION AND RECOMMENDATION

Introduction

This chapter recapitulates all important contents of this present study. Firstly, the objectives of this study are described together with research design. Then, the significant findings are summarized to open for discussion and implication. Discussion of empirical findings are mentioned to compare this present study and previous studies in both pro and con manners. In addition, the implications and contributions of this study make to regulators, investors and creditors, and board of directors and management. Finally, the limitations and further study are mentioned at the end of the chapter.

5.1 Objectives and Research Design

The objectives of this study are to:

1. investigate the predictability value of corporate governance mechanisms and financial ratios over financial distress of problem firms in the Stock Exchange of Thailand (SET).
2. explore successful turnaround strategies of listed firms initially marked as problem firms and later resume as normal firms.

To answer the Objective 1, the study employed problem firms from SET. The study defined problem firms as being marked as SP (Trading Suspension), C (Caution), NP (Notice Pending), and NC (Non-Compliance) during 22 February 2013 - 9 April 2019. Data collection were based on SETSMART (SET Market Analysis and Reporting Tool) which is an online database service of the Stock Exchange of Thailand and annual registration statements (Form 56-1). The problem firms included 113 companies. Using match pair sampling, the normal firms were identified based on the same industry group, similar total assets and total revenue of problem firms totaling 107 listed companies. Total 220 listed companies were then analyzed in three analyses: 3-year, 2-year, and 1-year

before being marked SP, C, NP, and NC. This study approached two predictive models as follows.

Model 1: Independent variables for corporate governance and financial ratios, including board size, board independence, age, busy boards, board meeting frequency, director's fee, directors' ownership, current ratio, debt ratio, return on assets (ROA), and asset turnover ratio are early warning signs to predict problem firms.

Model 2: Instead of using asset turnover ratio, the analysis replaced the ratio with a fixed asset turnover ratios. This is to confirm whether efficiency ratio have informative value as early warning sign.

To answer the Objective 2, a qualitative research method was adopted. The constructive postpositivism research paradigm enables the study to gather social socially constructed knowledge to understand the meanings that people construct in particular social contexts. The study employed a mixed qualitative research including documentary research, in-depth interview and focus group interview. The data collections and methods of the three qualitative research are as follows.

For documentary research, in determining the scope of turnaround strategies, this study used turnaround strategy data from the problem firms that enabled to release the NC mark of each company during its recovery efforts during 22 February 2013 - 9 April 2019. The strategy information was collected from annual registration statement (Form 56-1), annual report (Form 56-2) among others. It was found that nine companies enabled to lift off the NC mark and resumed normal trade in the Stock Exchange of Thailand.

In-depth interview was made by 7 informants from five leading securities companies. The first informant and the second informant were an executive vice-president. The third informant was a senior vice president. The fourth informant was the senior fund manager. The fifth informant was portfolio manager. The sixth informant was the fund manager. The seventh informant was a deputy head of department. The main interview questions were "After the companies are identified as problem firms, many

companies could improve until the stock exchange releases these marks NC and return to non-problem firms. How did these companies use strategy/management methods?”

Focus group interview consisted of 11 informants including three bankers of credit departments of leading banks, four investors, two certified public accountants, one financial advisor and one academician. The same main question as in-depth interview was “After the companies are identified as problem firms, many companies could improve until the stock exchange releases these marks NC and return to non-problem firms. How did these companies use strategy/management methods?”

After collecting the data from documentary research, in-depth interview, and focus group interview, content analysis using the computer package software, called NVivo version 12 which is designed for Qualitative Data Analysis – QDA. It facilitates finding themes. The analysis model is a combination between content analysis and thematic analysis. The data would be classified and grouped for analysis and discussion. The coding is a category derived from the relevant theories or literatures in order to be consistent with the research objectives.

5.2 Summary of the Significant Findings

The regression analysis indicated that corporate governance mechanisms were less likely to identify problem firms, while well-known financial ratios including current ratio, debt ratio and return on assets were more likely to identify problem firms. However, with low significant the most potential corporate governance mechanism that identified the problematic company was the proportion of independent directors. Due to the fact that corporate governance mechanisms had limited predictive value early warning signals, the model accuracy rates ranged from only 71.8% - 80.5% from 3-year to 1-year before being recognized as problem firms. This indicates Type I and Type II error somewhat high.

To answer what are informative factors to consider as suitable early warning signs, the further study was carried on by employing a qualitative study including in-depth interview and focus group interview. The qualitative results confirmed that corporate

governance mechanisms were less likely to consider as early warning signs. Instead, anomaly of stock price and auditor's opinion were more likely to drown corporate governance information. In addition, the regression and qualitative results agreed that financial ratios were considered early warning signs. These included current ratio, debt ratio and return on asset.

Furthermore, by using the qualitative study including documentary research, in-depth interview and focus group interview, the conclusion showed that successful turnaround strategies prioritize as, in high level, investing in other businesses, finding a new capital group, and negotiate with creditors to convert debt into equity, while in medium effect are change business types, costs and expenses reduction, merger and acquisitions, and back-door listing. Finally, the least effect of turnaround strategies is change in management characteristics of executives.

5.3 Discussion and Conclusion of the Findings

Referring to the Research Objective 1, this study intended to identify whether corporate governance and financial ratios could be considered as early warning signs of problem firms. This objective comes from the believe that the fundamental concept of corporate governance is to improve firm performance. Also, the argument in supporting corporate governance increases information content of predictability of firm distress. However, this study clearly answered the above research objective that corporate governance mechanisms were less likely to add informative value to failure prediction, while financial ratios increased predictability to firm distress. The following discussion offers only the relationship between corporate governance and firm distress and does not discuss for the relationship between financial ratios and firm distress. This is because previous studies have been confirmed the incremental value of financial ratios on financial distress.

The concept of corporate governance has been developed from agency theory. It is to help improve firm performance. Many studies have been carried out to investigate

informative value of corporate governance mechanisms in many dimensions. These include incremental content to firm performance (i.e. Audretsch & Lehmann, 2005) also business failures (i.e. Goktan, Kieschnick, & Moussawi, 2006).

In the area of business failure or financial distress, the results of previous studies have been considered as debatable issues. Both agree and disagree in supporting the informative value of corporate governance over business failure. Previous studies supported the predictability of corporate governance over financial distress were as follows. Lee and Yeh (2004) supported the incremental content of corporate governance over firm failure stating that directors and controlling shareholders were positively correlated with the financial distress risk. This was because companies with weak corporate governance may be at risk when economic downturned and had possibility to fall into financial distress. Lakshan and Wijekoon (2012) studied the influence of corporate governance on firm failure. The corporate governance variables consisted of board size, CEO duality, outside directors, outsiders' ownership, auditor's opinion, audit committee, and remuneration of board members. The study found that outside director ratio, presence of an audit committee and board remuneration had a negative relationship with firm distress. Meanwhile, CEO duality was positively correlated with the likelihood of failure of the organization. Similar to the work of Zhiyong (2014), the study found that state control, institutional ownership, independent director remuneration, the age of chairman and CEO education significantly related to financial risks. Also, Jamal and Shah (2017) evaluated corporate governance affecting the financial. The results showed that the size of board, composition of board and CEO duality had a positive impact on good corporate governance and decreased financial distress. These studies also confirmed previous studies in supporting the incremental value of corporate governance over firm distress. Ernawati, Handojo, and Murhadi (2018) analyzed the impact of financial ratios and corporate governance on financial distress and bankruptcy. The results indicated that the director ownership variable had a significant negative effect on financial distress.

Previous studies disagreed of the informative value of corporate governance over firm distress, for examples, Price, Román, and Rountree (2011) examined the influence of efforts to improve corporate governance on the efficiency and transparency of companies. The research showed no relationship between corporate governance index and firm financial distress. Also, Connelly, Limpaphayom, and Nagarajan (2012) examined the relationship between the quality of corporate governance practices and the value of companies which had a complex ownership structure. The research showed that good corporate governance would be ineffective when the ownership structure was not transparent and no relationship with firm financial distress. In addition, Ali and Nasir (2018) examined the relationship between corporate governance mechanisms in companies' experiencing financial difficulties. The results showed no significant relationship between board size, board independence and CEO duality with companies that experienced financial problems.

As previously stated, due to the finding of this study mentioning that corporate governance mechanisms were less likely to add informative value to failure prediction. The study then proceeded by using a qualitative study what were factors influencing firm distress, the qualitative results stated that corporate governance mechanisms were too far from predicting firm distress. This is because the rumors that come from the inside information tend to provide more significant information than corporate information do. These noises initially reflect to stock prices and drown corporate governance information without any considering corporate governance results. This was why corporate governance mechanisms were less likely to add informative value to failure prediction. In addition to qualitative findings, recently, the Securities and Exchange Commission (SEC) of Thailand has issued a new Corporate Governance Code (CG Code) for listed companies as corporate governance may not be efficient enough to improve firm performance. The new CG Code would raise the level of corporate governance from development-oriented forms to focus on content to narrow the gap between good intentions to good actions to see the real results in practice.

The study argued the objective 2 as follows. The study intended to investigate successful turnaround strategies from problem firms to non-problem firms. This study agrees with previous studies. For example, Pearce II and Robbins (2008) found that restructuring and repositioning, along with the creation of new management-appropriate strategies, would further enhance the competitive edge of the business, such as diversification, mergers and acquisitions in vertical, new market penetration, or even retraction. Kazozcu (2011) indicated that the recovery could only be achieved when the business was able to survive the crisis and maintain profitability. Businesses would not be able to really recover if they did not have strong positions for future growth. Growth focus should be on the company's existing constraints and resources rather than on additional resources. No single strategy was the only way to ensure success in a turbulent situation, but it should integrate multiple strategies effectively.

Some researchers suggested that companies with going concern problems should have external consultants. Shaughnessy and Rudie Harrigan (2009) stated that a company experiencing financial difficulty needed a specialist who could immediately correct a problematic situation. According to the experiences of turnaround consultants, consulting teams enabled to recognize the negative situations that business owners had never recognized. Furthermore, Denning (2011) found that management consultants specialize could discover the most profitable activities for the companies. In addition, Palombo (2013) stated that the turnaround strategies for businesses should include 5 primary turnaround strategies, namely (1) chief executive officer change, (2) retrenchment, (3) recovery, or growth of the business, (4) the use of external management, and (5) performance improvement. However, Hofer (1980) found that the suitability of each form of turnover would vary depending on the priority and benefits compared to short-term and long-term costs. It should be necessary to use a variety of integrated strategies. In addition, turnaround strategy was not an independent action, it was related (Francis & Desai, 2005). The study of Sweet (2004) showed that using multiple strategies together would increase the likelihood of a turnaround success.

5.4 Implications

This study makes vital contributions to the academic literature. The implications and contributions are classified according to regulators, investors and creditors and management, and boards of directors as follows:

For Regulators

This study found that like other emerging markets, corporate governance was less likely to be considered as early warning signs of problem firms. The corporate governance mechanisms adopted by listed companies did not reflect good corporate governance of listed companies. Management of some listed companies may consider corporate governance rules are just in the papers. SEC should enforce the rules also monitor the implementation of the rules regularly and continuously. Furthermore, the study supports that SEC should stimulate listed companies to adopt of the new CG code in urgent manner. This is to raise the level of corporate governance from development-oriented forms to focus on content to narrow the gap between good intentions to good actions to see the real results in practice.

For Investors and Creditors

The empirical findings of this study showed that corporate governance was less likely to indicate problem or non-problem firms. Therefore, investors and creditors should consider other information sources, especially financial statements. The vital financial ratios to indicate financial failure including current ratio, debt ratio, and return on assets. When firms with low return on assets, these indicate financial distress, while firms with high current ratio and debt ratio are more likely to be considered as financial distress firms. In addition to financial indicators, when investors and creditors desire to offer their financial support to problem firms, they should consider the following successful turnaround strategies. These include planning to invest in other businesses, finding new venture capital group as well as converting their debt into equity. These successful turnaround strategies should convert problem firms to healthy firms in the near future.

For Boards of Directors and Management

Boards of directors and management should seriously manage financial ratios which indicate financial distress and the financial weaknesses and these weaknesses would bring unwanted notices from stock exchanges. These financial ratios include current ratio, debt ratio and return on assets. To achieve these financial ratios, management should plan for cash inflow and cash outflow of day by day operations. These accounts cover cash and cash equivalent, accounts receivable, inventories, accounts payable and fixed expenses. This is to balance cash inflow and outflow of these accounts. Capital structure is another potential financial distress. The proportion between debt and equity should be taken into account. Firms with high debt are more likely to face financial difficulty, while it is too risky for shareholders to invest high proportion of sources of funds. Finally, profitability is another concern of management team. Recently, sources of revenue are tremendous concern of management in this disruption era. Management team should always seek to new sources of revenue and attempt to look for cost deduction techniques.

5.5 Contributions of the Study

The contributions of this study are both consistent and inconsistent with prior studies. This study confirms that financial ratios are still benefit to financial statements' users. When firms may be facing financial distress in the near future, profitability return on assets, debt ratio and current ratio could be considered as pre-warning signals of problems. This study may argue against the incremental content of corporate governance in predicting firm distress. The study found that other information should be considered as valuable information in predicting firm failure. These include anomaly of stock prices, auditor's opinion, and loan default with considering various conditions.

In addition, this study contradicts to prior studies that corporate governance mechanisms may not be considered as financial distress indicators. There are some reasons to explain this finding. For example, corporate governance is just in the paper.

This is to suit with law and regulations. However, both enforcement and continuous implementation are of the concerns for regulators.

This study introduces successful turnaround strategies prioritize as investing in other businesses, finding a new capital group, negotiate with creditors to convert debt into equity, change business types, costs and expenses reduction, merger and acquisitions and back-door listing, change shareholders and management, capital restructuring and clearing accumulated losses, acquire financial advisors, and change in management characteristics of executives. In addition, the problem firms should employ multi-turnaround strategies simultaneously.

5.6 Limitations of the Study

This study intended to investigate whether corporate governance mechanisms increased predictability of financial distress by introducing a new environment of problem firms. SET as a representative of emerging markets sets the rule of pre-warning signs when listed companies in doubt of financial distress by posting SP, C, NP, and NC to these firms. These raise somewhat limitation of this present study. First of all, there are some factors were overlooked from the analysis and those omitted variables may influence to predictability of the analysis. In addition, to use the marked signs in this analysis may be too early to consider as problem firms. This causes the model accuracy rates were not close to 100%. However, the predictive model intended to be as a preliminary decision support system to shareholders and interested parties that could be used for early warning and personal surveillance. This is to prepare early corrective actions in a timely manner.

5.7 Suggestions for Future Research

Further studies should consider this study's research method to develop alarm systems. However, environmental factors have changed quite a lot since the beginning of 21th century. If further studies could introduce other variables in the analysis, the

implication of the results should be benefit from time to time. The other variables should include economic proxies (i.e. GDP, attentive policy of central government, local and world economic forecasted), and shareholder characteristics. These proxies should increase model accuracy rate.

In addition, this study's qualitative research showed that anomaly of the stock prices initially reflected companies' future performance, later financial statements confirmed whether the companies would be facing of financial distress. However, the result should confirm by employing archival data to scrutinize this result. Hence, further study should focus on these issues by using quantitative research methodology to deliver how the anomaly of stock prices do.



List of Bibliography

- Abebe, M. A. (2009). Leadership characteristics of declining firms attempting turnaround: An empirical examination. **Journal of Strategy and Management**, 2(3), 201-216.
- Abernathy, W. B. (2010). A comprehensive performance analysis and improvement method. **Performance Improvement**, 49(5), 5-17.
- Adams, R. B., & Ferreira, D. (2008). Do directors perform for pay? **Journal of Accounting and Economics**, 46(1), 154-171.
- Adams, R. B., & Ferreira, D. (2009). Women in the boardroom and their impact on governance and performance. **Journal of financial economics**, 94(2), 291-309.
- Agrawal, A., & Knoeber, C. R. (1996). Firm performance and mechanisms to control agency problems between managers and shareholders. **Journal of financial and quantitative analysis**, 31(3), 377-397.
- Ahmed, S. (2012). Lessons from experience with wage flexibility in Asia. **The Journal of American Academy of Business Cambridge**, 18, 246-252. Retrieved from <http://www.jaabc.com/>
- Ahn, B. S., Cho, S. S., & Kim, C. Y. (2000). The integrated methodology of rough set theory and artificial neural network for business failure prediction. **Expert systems with applications**, 18(2), 65-74.
- Ajinkya, B., Bhojraj, S., & Sengupta, P. (2005). The association between outside directors, institutional investors and the properties of management earnings forecasts. **Journal of accounting research**, 43(3), 343-376.
- Al-Darayseh, M. M. (1990). **Corporate failure for manufacturing industries using financial ratios and macroeconomic variables with logit analysis** (The Graduate College, University of Nebraska).
- Alba, P., Claessens, S., & Djankov, S. (1999). **Thailand's corporate financing and governance structures**. The World Bank.
- Alcadipani, R., & Hodgson, D. (2009). By any means necessary? Ethnographic access, ethics and the critical researcher. Tamara: **Journal for Critical Organization Inquiry**, 7(4).

- Alexander, J. A., Fennell, M. L., & Halpern, M. T. (1993). Leadership instability in hospitals: The influence of board-CEO relations and organizational growth and decline. **Administrative Science Quarterly**, 74-99.
- Ali, M. M., & Nasir, N. M. (2018). Corporate Governance and Financial Distress: Malaysian Perspective. **Asian Journal of Accounting Perspectives**, 11(1), 108-128.
- Aljifri, K., & Moustafa, M. (2007). The impact of corporate governance mechanisms on the performance of UAE firms: an empirical analysis. **Journal of Economic and Administrative Sciences**, 23(2), 71-93.
- Altman, E. (1993). **Corporate financial distress and bankruptcy: a complete guide to predicting and avoiding distress and profiting from bankruptcy**. A Wiley and Sons. *New York*.
- Altman, E. I. (1968). Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. **The journal of finance**, 23(4), 589-609.
- Altman, E. I. (1969). Corporate bankruptcy potential, stockholder returns and share valuation. **The Journal of Finance**, 24(5), 887-900.
- Altman, E. I. (1983). **Corporate financial distress: a complete guide to predicting, avoiding, and dealing with bankruptcy**. In. New York: Wiley.
- Altman, E. I., & McGough, T. P. (1974). Evaluation of a company as a going concern. **Journal of Accountancy**, 138(6), 50-57.
- Altman, E. I., & Sametz, A. W. (Eds.). (1977). **Financial crises: institutions and markets in a fragile environment**: John Wiley & Sons.
- Aman, A., & Kasimin, H. (2011). E-procurement implementation: a case of Malaysia government. **Transforming Government: People, Process and Policy**, 5(4), 330-344.
- Anthony, R. N., Hawkins, D. F., & Merchant, K. A. (2011). **Accounting: text and cases**. McGraw-Hill.
- Arend, R. J. (2004). The definition of strategic liabilities, and their impact on firm performance. **Journal of Management Studies**, 41(6), 1003-1027.
- Arogyaswamy, K., Barker, V. L., & Yasai-Ardekani, M. (1995). Firm turnarounds: an integrative two-stage model. **Journal of management studies**, 32(4), 493-525.

- ASSC, T. (1975). **The Corporate Report**. In: London. Accounting Standards Steering Committee.
- Audretsch, D. B., & Lehmann, E. E. (2005). The effects of experience, ownership, and knowledge on IPO survival: Empirical evidence from Germany. **Review of Accounting and Finance**, 4(4), 13-33.
- Bai, C. E., Liu, Q., Lu, J., Song, F. M., & Zhang, J. (2004). Corporate governance and market valuation in China. **Journal of comparative economics**, 32(4), 599-616.
- Balatbat, M. C., Taylor, S. L., & Walter, T. S. (2004). Corporate governance, insider ownership and operating performance of Australian initial public offerings. **Accounting & Finance**, 44(3), 299-328.
- Balgobin, R., & Pandit, N. (2001). Stages in the turnaround process: The Case of IBM UK. **European Management Journal**, 19(3), 301-316.
- Balotti, R. F., Elson, C. M., & Laster, J. T. (2000). **Equity Ownership and the Duty of Care: Convergence, Revolution, or Evolution?** *The Business Lawyer*, 661-692.
- Barker III, V. L., & Patterson Jr, P. W. (1996). Top management team tenure and top manager causal attributions at declining firms attempting turnarounds. **Group & Organization Management**, 21(3), 304-336.
- Barker, V. L., & Mone, M. A. (1994). Retrenchment: cause of turnaround or consequence of decline? **Strategic management journal**, 15(5), 395-405.
- Barnes, P. (1987). The analysis and use of financial ratios: A review article. **Journal of Business Finance & Accounting**, 14(4), 449-461.
- Bartram, T. (2011). Employee management systems and organizational contexts: a population ecology approach. **Management Research Review**, 34(6), 663-677.
- Basu, S., Hwang, L. S., Mitsudome, T., & Weintrop, J. (2007). Corporate governance, top executive compensation and firm performance in Japan. **Pacific-Basin Finance Journal**, 15(1), 56-79.
- Beasley, M. S. (1996). An empirical analysis of the relation between the board of director composition and financial statement fraud. **Accounting review**, 443-465.

- Beaver, W. H. (1966). Financial ratios as predictors of failure. **Journal of accounting research**, 71-111.
- Beaver, W. H., Kennelly, J. W., & Voss, W. M. (1968). Predictive ability as a criterion for the evaluation of accounting data. **The Accounting Review**, 43(4), 675-683.
- Becht, M., Bolton, P., & Roell, A. (2002). Corporate governance and control. European corporate governance institute (No. 02). **Finance Working Paper**.
- Beiner, S., Drobetz, W., Schmid, F., & Zimmermann, H. (2004). Is board size an independent corporate governance mechanism? **Kyklos**, 57(3), 327-356.
- Belkaoui, A. R. (2000). **Accounting Theory**: Thomson Learning, London.
- Bibeault, D. B. (1998). **Corporate turnaround: how managers turn losers into winners!**: Beard Books.
- Binti, S., Zeni, M., & Ameer, R. (2010). Turnaround prediction of distressed companies: evidence from Malaysia. **Journal of Financial Reporting and Accounting**, 8(2), 143-159.
- Blacconiere, W. G., & Patten, D. M. (1994). Environmental disclosures, regulatory costs, and changes in firm value. **Journal of accounting and economics**, 18(3), 357-377.
- Bongini, P., Ferri, G., & Hahm, H. (2000). Corporate bankruptcy in Korea: Only the strong survive? **Financial Review**, 35(4), 31-50.
- Booth, J. R., & Deli, D. N. (1996). Factors affecting the number of outside directorships held by CEOs. **Journal of Financial Economics**, 40(1), 81-104.
- Bosch, H. (1995). **The director at risk**. Melbourne: Pitman Publishing.
- Bose, I., & Pal, R. (2006). Predicting the survival or failure of click-and-mortar corporations: A knowledge discovery approach. **European Journal of Operational Research**, 174(2), 959-982.
- Boyd, D. P. (2011). Lessons from turnaround leaders. **Strategy & Leadership**, 39(3), 36-43.
- Boyne, G. A., & Meier, K. J. (2009). Environmental change, human resources and organizational turnaround. **Journal of Management Studies**, 46(5), 835-863.
- Brennan, N., & McDermott, M. (2004). Alternative perspectives on independence of directors. **Corporate Governance: An International Review**, 12(3), 325-336.

- Brezigar-Masten, A., & Masten, I. (2012). CART-based selection of bankruptcy predictors for the logit model. **Expert Systems with Applications**, 39(11), 10153-10159.
- Brickley, J. A., Coles, J. L., & Jarrell, G. (1997). Leadership structure: Separating the CEO and chairman of the board. **Journal of corporate Finance**, 3(3), 189-220.
- Brockmann, E. N., Hoffman, J. J., & Dawley, D. D. (2006). A contingency theory of CEO successor choice and post-bankruptcy strategic change. **Journal of Managerial Issues**, 213-231.
- Brown, L. D., & Caylor, M. L. (2004). **Corporate governance and firm performance**. Working paper, Georgia State University.
- Bruton, G. D., Ahlstrom, D., & Wan, J. C. (2001). Turnaround success of large and midsize Chinese owned firms: Evidence from Hong Kong and Thailand. **Journal of World Business**, 36(2), 146-165.
- Bumgardner, M., Buehlmann, U., Schuler, A., & Crissey, J. (2011). Competitive actions of small firms in a declining market. **Journal of Small Business Management**, 49(4), 578-598.
- Bunderson, J. S., & Sutcliffe, K. M. (2002). Comparing alternative conceptualizations of functional diversity in management teams: Process and performance effects. **Academy of management journal**, 45(5), 875-893.
- Cahoon, M. V., Bowler, M. C., & Bowler, J. L. (2012). A reevaluation of assessment center construct-related validity. **International Journal of Business and Management**, 7(9), 3.
- Carsberg, B., Hope, A., & Scapens, R. W. (1974). The objectives of published accounting reports. **Accounting and Business Research**, 4(15), 162-173.
- Carter, D. A., D'Souza, F., Simkins, B. J., & Simpson, W. G. (2010). The gender and ethnic diversity of US boards and board committees and firm financial performance. **Corporate Governance: An International Review**, 18(5), 396-414.
- Castrogiovanni, G. J., Baliga, B. R., & Kidwell Jr, R. E. (1992). Curing sick businesses: changing CEOs in turnaround efforts. **Academy of Management Perspectives**, 6(3), 26-41.

- Castrogiovanni, G. J., & Bruton, G. D. (2000). Business turnaround processes following acquisitions: Reconsidering the role of retrenchment. **Journal of Business Research**, 48(1), 25-34.
- Cater, J., & Schwab, A. (2008). Turnaround strategies in established small family firms. **Family business review**, 21(1), 31-50.
- Cavaco, S., Challe, E., Crifo, P., Reberioux, A., & Roudaut, G. (2014). Board independence and operating performance: analysis on (French) company and individual data. **Applied Economics**, 48(52), 5093-5105.
- Certo, S. T., Daily, C. M., & Dalton, D. R. (2001). Signaling firm value through board structure: An investigation of initial public offerings. **Entrepreneurship Theory and Practice**, 26(2), 33-50.
- Chaganti, R. S., Mahajan, V., & Sharma, S. (1985). Corporate board size, composition and corporate failures in retailing industry [1]. **Journal of management studies**, 22(4), 400-417.
- Chambers, R. J. (2006). **Accounting, evaluation and economic behavior**. Sydney University Press.
- Chi, L. C., & Tang, T. C. (2006). Bankruptcy prediction: Application of logit analysis in export credit risks. **Australian Journal of Management**, 31(1), 17-27.
- Child, J., Faulkner, D., & Pitkethly, R. (2001). **The management of international acquisitions**. Oxford University Press.
- Cho, M. H. (1994). **Predicting business failure in the hospitality industry: An application of logit model**. (Doctoral dissertation, Virginia Tech).
- Chou, H. I., Chung, H., & Yin, X. (2013). Attendance of board meetings and company performance: Evidence from Taiwan. **Journal of Banking & Finance**, 37(11), 4157-4171.
- Chowdhury, S. D. (2002). Turnarounds: A stage theory perspective. **Canadian Journal of Administrative Sciences/Revue Canadienne des Sciences de l'Administration**, 19(3), 249-266.
- Chueh, R. L. (2013). **A Logit Model for Predicting Takeover Targets in Corporate Mergers and Acquisitions**. (Doctoral dissertation, Walden University).

- Claessens, S., & Djankov, S. (1999). Ownership concentration and corporate performance in the Czech Republic. **Journal of comparative economics**, 27(3), 498-513.
- Clay, D. G. (2002). **Institutional ownership, CEO incentives, and firm value**. (Doctoral dissertation, University of Chicago).
- Coles, J. L., Daniel, N. D., & Naveen, L. (2008). Boards: Does one size fit all? **Journal of financial economics**, 87(2), 329-356.
- Conger, J. A., Finegold, D., & Lawler, E. E. (1998). Appraising boardroom performance. **Harvard business review**, 76, 136-164.
- Connelly, J. T., & Limpaphayom, P. (2004). Board characteristics and firm performance: evidence from the life insurance industry in Thailand. **Chulalongkorn Journal of Economics**, 16(2), 101-124.
- Connelly, J. T., Limpaphayom, P., & Nagarajan, N. J. (2012). Form versus substance: The effect of ownership structure and corporate governance on firm value in Thailand. **Journal of Banking & Finance**, 36(6), 1722-1743.
- Connors, R., & Smith, T. (2011). **Change the Culture, Change the Game: The Breakthrough Strategy for Energizing Your Organization and Creating Accountability for Results**. Penguin.
- Conyon, M. J., & Peck, S. I. (1998). Board control, remuneration committees, and top management compensation. **Academy of Management Journal**, 41(2), 146-157.
- Core, J. E., Holthausen, R. W., & Larcker, D. F. (1999). Corporate governance, chief executive officer compensation, and firm performance. **Journal of financial economics**, 51(3), 371-406.
- Cotter, J., & Silvester, M. (2003). Board and monitoring committee independence. **Abacus**, 39(2), 211-232.
- Council, A. C. G. (2003). **Principles of Good Corporate Governance and Best Practice Recommendations** (Australian Stock Exchange, 2003).
- Crick, D. (2011). Enterprising individuals and entrepreneurial learning: A longitudinal case history in the UK tourism sector. **International Journal of Entrepreneurial Behavior & Research**, 17(2), 203-218.

- Cronin-Gilmore, J. (2012). Exploring marketing strategies in small businesses. **Journal of Marketing Development and Competitiveness**, 6(1), 96-107.
- Cucinelli, D., Schwizer, P., & Soana, M. G. (2012). The Advantages of Board Diversity: An Empirical Analysis on the Italian Market. In **Financial Systems in Troubled Waters** (pp. 99-116). Routledge.
- Cummings, A., Zhou, J., & Oldham, G. R. (1993, August). Demographic differences and employee work outcomes: Effects on multiple comparison groups. In **annual meeting of the Academy of Management, Atlanta, GA**.
- Daily, C. M., & Dalton, D. R. (1994). Corporate governance and the bankrupt firm: An empirical assessment. **Strategic Management Journal**, 15(8), 643-654.
- Daily, C. M., & Dalton, D. R. (1995). CEO and director turnover in failing firms: An illusion of change? **Strategic Management Journal**, 16(5), 393-400.
- Dalton, D. R., Daily, C. M., Johnson, J. L., & Ellstrand, A. E. (1999). Number of directors and financial performance: A meta-analysis. **Academy of Management journal**, 42(6), 674-686.
- Darayseh, M., Waples, E., & Tsoukalas, D. (2003). Corporate failure for manufacturing industries using firms specifics and economic environment with logit analysis. **Managerial Finance**, 29(8), 23-36.
- Darmadi, S. (2011). Board diversity and firm performance: the Indonesian evidence. **Corporate ownership and control Journal**, 8.
- Dassisti, M. (2010). HY-CHANGE: a hybrid methodology for continuous performance improvement of manufacturing processes. **International Journal of Production Research**, 48(15), 4397-4422.
- Daum, J. H., & Whyte, B. M. (2001). Delicate state: Board selection in bankruptcy. **DIRECTORS AND BOARDS-AMERICAN EDITION**-, 25(4), 54-57.
- Davies, E. (2011). Women on boards an independent review into women on boards. **London: Department for Business Innovation and Skills BIS**.
- Davis, S. W., Menon, K., & Morgan, G. (1982). The images that have shaped accounting theory. **Accounting, Organizations and Society**, 7(4), 307-318.

- Dayton, K. N. (1984). Corporate governance-the other side of the coin. **Harvard Business Review**, 62(1), 34-37.
- Deakin, E. B. (1972). A discriminant analysis of predictors of business failure. **Journal of accounting research**, 167-179.
- Deakin, E. B. (1977). **Business failure prediction: an empirical analysis**. Chapter, 4, 72-88.
- Demirgüç-Kunt, A., & Detragiache, E. (1998). The determinants of banking crises in developing and developed countries. **Staff Papers**, 45(1), 81-109.
- Demsetz, H., & Lehn, K. (1985). The structure of corporate ownership: Causes and consequences. **Journal of political economy**, 93(6), 1155-1177.
- Denning, S. (2011). A tipping point for foreign outsourcing economics. **Strategy & Leadership**, 40(1), 8-15.
- Denzin, N. K. (2012). Triangulation 2.0. **Journal of mixed methods research**, 6(2), 80-88.
- Dev, S. (1974). Ratios analysis and the prediction of company failure, In: **Debit, Credit and Profitability**, edited by Edey, H and Yamey, B S. Sweet and Maxwell, London. 61-74.
- Dimitras, A. I., Zanakis, S. H., & Zopounidis, C. (1996). A survey of business failures with an emphasis on prediction methods and industrial applications. **European Journal of Operational Research**, 90(3), 487-513.
- Dodge, L. E. (2017). **DuPont Model approach to financial management: a case study of veterinary practices, A** (Doctoral dissertation, Colorado State University. Libraries).
- Dopuch, N., Holthausen, R. W., & Leftwich, R. W. (1986). Abnormal stock returns associated with media disclosures of 'subject to' qualified audit opinions. **Journal of Accounting and Economics**, 8(2), 93-117.
- Dore, R. P. (2000). **Stock market capitalism: Welfare capitalism: Japan and Germany versus the Anglo-Saxons**. Oxford University Press on Demand.
- Driver, M. (2009). From loss to lack: Stories of organizational change as encounters with failed fantasies of self, work and organization. **Organization**, 16(3), 353-369.

- Drost, E. A. (2011). Validity and reliability in social science research. **Education Research and perspectives**, 38(1), 105.
- Edwards, D., Self, D. R., & Schraeder, M. (2010). Turnaround in the bandits of Bravo Company. **Leadership & Organization Development Journal**, 31(6), 518-533.
- Elsayed, K. (2007). Does CEO duality really affect corporate performance? **Corporate Governance: an international review**, 15(6), 1203-1214.
- Erkens, D. H., Hung, M., & Matos, P. (2012). Corporate governance in the 2007–2008 financial crisis: Evidence from financial institutions worldwide. **Journal of corporate finance**, 18(2), 389-411.
- Ernawati, E., Handojo, S. E., & Murhadi, W. R. (2018). Financial performance, corporate governance, and financial distress. **Advances in Social Science, Education and Humanities Research**, 186.
- Etemadi, H., Rostamy, A. A. A., & Dehkordi, H. F. (2009). A genetic programming model for bankruptcy prediction: Empirical evidence from Iran. **Expert Systems with Applications**, 36(2), 3199-3207.
- Evans, J., & Weir, C. (1995). Decision processes, monitoring, incentives and large firm performance in the UK. **Management Decision**, 33(6), 32-38.
- Fama, E. F. (1980). Agency problems and the theory of the firm. **Journal of political economy**, 88(2), 288-307.
- Fama, E. F., & Jensen, M. C. (1983). Separation of ownership and control. **The journal of law and Economics**, 26(2), 301-325.
- Farrell, K. A., & Whidbee, D. A. (2000). The consequences of forced CEO succession for outside directors. **The Journal of Business**, 73(4), 597-627.
- Fedorova, E., Gilenko, E., & Dovzhenko, S. (2013). Bankruptcy prediction for Russian companies: Application of combined classifiers. **Expert Systems with Applications**, 40(18), 7285-7293.
- Ferris, S. P., Jagannathan, M., & Pritchard, A. C. (2003). Too busy to mind the business? Monitoring by directors with multiple board appointments. **The Journal of finance**, 58(3), 1087-1111.
- Fich, E. M., & Shivdasani, A. (2005). Are Busy Boards Effective Monitors? **Journal of Finance**, forthcoming.

- Fich, E. M., & Shivdasani, A. (2006). Are busy boards effective monitors? **The Journal of finance**, *61*(2), 689-724.
- Filatotchev, I., & Toms, S. (2003). Corporate governance, strategy and survival in a declining industry: A study of UK cotton textile companies. **Journal of Management Studies**, *40*(4), 895-920.
- Filatotchev, I., & Toms, S. (2006). Corporate governance and financial constraints on strategic turnarounds. **Journal of Management Studies**, *43*(3), 407-433.
- Foulke, R. A. (1961). **Practical financial statement analysis**. McGraw-Hill, New York.
- Francis, J. D., & Desai, A. B. (2005). Situational and organizational determinants of turnaround. **Management Decision**, *43*(9), 1203-1224.
- Friedman, M. (1953). **The Methodology of Positive Economics in Essays in Positive Economics**, university of Chicago press.
- Frydman, H., Altman, E. I., & Kao, D. L. (1985). Introducing recursive partitioning for financial classification: the case of financial distress. **The Journal of Finance**, *40*(1), 269-291.
- Furrer, O., Rajendran Pandian, J., & Thomas, H. (2007). Corporate strategy and shareholder value during decline and turnaround. **Management Decision**, *45*(3), 372-392.
- Gallén, T. (2009). Top management team composition and views of viable strategies. **Team Performance Management: An International Journal**, *15*(7/8), 326-342.
- Gentry, J. A., Newbold, P., & Whitford, D. T. (1985). Classifying bankrupt firms with funds flow components. **Journal of accounting research**, 146-160.
- Ghoshal, S., & Bartlett, C. A. (1997). Rebuilding behavioral context: A blueprint for corporate renewal. In **The strategic Management of Intellectual Capital** (pp.141-161): Elsevier.
- Gi-Shian, S., & Hong Tam, V. (2010). The relationship between corporate strategy, capital structure and firm performance: An empirical study of the listed companies in Vietnam. **International Research Journal of Finance and Economics**, *50*, 62-71.

- Goktan, M. S., Kieschnick, R., & Moussawi, R. (2006). **Corporate governance and corporate survival**: University of Texas at Dallas.
- Golovko, E., & Valentini, G. (2011). Exploring the complementarity between innovation and export for SMEs' growth. **Journal of international business Studies**, *42*(3), 362-380.
- Gopinath, C. (1991). Turnaround: recognizing decline and initiating intervention. **Long range planning**, *24*(6), 96-101.
- Gowen III, C. R., & Tallon, W. J. (2002). Turnaround strategies of American and Japanese electronics corporations: How do they differ in formulating plans and achieving results? **The Journal of High Technology Management Research**, *13*(2), 225-248.
- Grinyer, P. H., Mayes, D., & McKiernan, P. (1990). The sharpbenders: Achieving a sustained improvement in performance. **Long Range Planning**, *23*(1), 116-125.
- Going Concern Problems, (1975), New York: **AICPA**.
- Guo, L., Smallman, C., & Radford, J. (2013). A critique of corporate governance in China. **International Journal of Law and Management**, *55*(4), 257-272.
- Hambrick, D. C. (1985). Turnaround strategies. **Handbook of business strategy**, *10*(1), 1-10.
- Hambrick, D. C., & Schecter, S. M. (1983). Turnaround strategies for mature industrial-product business units. **Academy of management journal**, *26*(2), 231-248.
- Harker, M., & Sharma, B. (2000). Leadership and the company turnaround process. **Leadership & Organization Development Journal**, *21*(1), 36-47.
- Hartman, A. (2008). **Ruthless execution**. Pearson Education India.
- Hashim, U. J., & Abdul Rahman, R. (2011, November). Board independence, board diligence, board expertise and impact on audit report lag in Malaysian market. In **Finance and Corporate Governance Conference**.
- Haspeslagh, P. C., & Jemison, D. B. (1991). **Managing acquisitions: Creating value through corporate renewal** (Vol. 416). New York: Free Press.
- He, Y. (2002). **An empirical investigation of financial and market performance in the prediction of business failure for small (public) firms: An over-the-**

- counter (OTC) market experience.** (Doctoral dissertation, Cleveland State University).
- Hermalin, B. E., & Weisbach, M. S. (1991). The effects of board composition and direct incentives on firm performance. **Financial management**, 101-112.
- Hillman, A. J., & Dalziel, T. (2003). Boards of directors and firm performance: Integrating agency and resource dependence perspectives. **Academy of Management review**, 28(3), 383-396.
- Hitt, M. A., Harrison, J. S., & Ireland, R. D. (2001). **Mergers & acquisitions: A guide to creating value for stakeholders.** Oxford University Press.
- Hofer, C. W. (1980). Turnaround strategies. **Journal of business strategy**, 1(1), 19-31.
- Hofer, C. W., & Schendel, D. (1978). **Strategy Formulation: Analytical Concepts,** West Pub. Co., St. Paul.
- Hopwood, N. D., Pluck, A., & Gurdon, J. B. (1989). A *Xenopus* mRNA related to *Drosophila* twist is expressed in response to induction in the mesoderm and the neural crest. **Cell**, 59(5), 893-903.
- Horrigan, J. O. (Ed.). (1978). **Financial ratio analysis: an historical perspective; with an introduction.** Arno Press.
- Hosmer Jr, D. W., Lemeshow, S., & Sturdivant, R. X. (2013). **Applied logistic regression** (Vol. 398). John Wiley & Sons.
- Hovey, M., Li, L., & Naughton, T. (2003). The relationship between valuation and ownership of listed firms in China. **Corporate Governance: An International Review**, 11(2), 112-122.
- Iqbal, J., & Shehzad, S. (2010). **Relationship of Cost of Governance and Firm's Profitability in Pakistan.** SSRN Working Paper series.
- Irabor, R. E. (2014). **Contribution of employee practices to business failure: Energy industry of Texas** (Doctoral dissertation, University of Phoenix).
- Isaac, L. (2014). Corporate governance and organizational performance in the Nigerian banking industry. **Corporate Governance**, 6(25), 110-118.
- Jackling, B., & Johl, S. (2009). Board structure and firm performance: Evidence from India's top companies. **Corporate Governance: An International Review**, 17(4), 492-509.

- Jamal, A. H., & Shah, S. Z. A. (2017). The Impact of Corporate Governance on the Financial Distress: Evidence from Pakistani Listed Companies. **Jinnah Business Review**, 5(2), 52-53.
- Jensen, M. C. (1993). The modern industrial revolution, exit, and the failure of internal control systems. **The Journal of Finance**, 48(3), 831-880.
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. **Journal of financial economics**, 3(4), 305-360.
- Jiraporn, P., Davidson III, W. N., DaDalt, P., & Ning, Y. (2009). Too busy to show up? An analysis of directors' absences. **The Quarterly Review of Economics and Finance**, 49(3), 1159-1171.
- Johnsen, T., & Melicher, R. W. (1994). Predicting corporate bankruptcy and financial distress: Information value added by multinomial logit models. **Journal of Economics and Business**, 46(4), 269-286.
- Johnson, J. L., Daily, C. M., & Ellstrand, A. E. (1996). Boards of directors: A review and research agenda. **Journal of management**, 22(3), 409-438.
- Jones, F. L. (1987). Current techniques in bankruptcy prediction. **Journal of accounting Literature**, 6(1), 131-164.
- Kamel, Y. M. (2005). **A comparative study of the impact of turnaround strategies and leadership factors on successful corporate turnarounds**. Benedictine University.
- Kaminsky, G., Lizondo, S., & Reinhart, C. M. (1998). Leading indicators of currency crises. **Staff Papers**, 45(1), 1-48.
- Kang, H., Cheng, M., & Gray, S. J. (2007). Corporate governance and board composition: Diversity and independence of Australian boards. **Corporate Governance: An International Review**, 15(2), 194-207.
- Karels, G. V., & Prakash, A. J. (1987). Multivariate normality and forecasting of business bankruptcy. **Journal of Business Finance & Accounting**, 14(4), 573-593.

- Kazozcu, S. B. (2011). Role of strategic flexibility in the choice of turnaround strategies: A resource based approach. **Procedia-Social and Behavioral Sciences**, 24, 444-459.
- Keasey, K., Thompson, S., & Wright, M. (Eds.). (1997). **Corporate governance: Economic and financial issues**. OUP Oxford.
- Keasey, K., & Watson, R. (1991). Financial Distress Prediction Models: A Review of Their Usefulness 1. **British journal of Management**, 2(2), 89-102.
- Kesner, I. F. (1988). Directors' characteristics and committee membership: An investigation of type, occupation, tenure, and gender. **Academy of Management journal**, 31(1), 66-84.
- Kesner, I. F., & Dalton, D. R. (1994). Top management turnover and CEO succession: An investigation of the effects of turnover on performance. **Journal of Management Studies**, 31(5), 701-713.
- Keynes, J. N. (2017). **The scope and method of political economy**. Routledge.
- Kilduff, M., Angelmar, R., & Mehra, A. (2000). Top management-team diversity and firm performance: Examining the role of cognitions. **Organization science**, 11(1), 21-34.
- Kiviluoto, K. (1998). Predicting bankruptcies with the self-organizing map. **Neurocomputing**, 21(1-3), 191-201.
- Koh, H. C., & Killough, L. N. (1990). The use of multiple discriminant analysis in the assessment of the going-concern status of an audit client. **Journal of Business Finance & Accounting**, 17(2), 179-192.
- Koh, H. K. (1991). Cutaneous melanoma. **New England Journal of Medicine**, 325(3), 171-182.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (2002). Investor protection and corporate valuation. **The journal of finance**, 57(3), 1147-1170.
- Laamanen, T., & Keil, T. (2008). Performance of serial acquirers: Toward an acquisition program perspective. **Strategic management journal**, 29(6), 663-672.
- Laing, D., & Weir, C. M. (1999). Governance structures, size and corporate performance in UK firms. **Management decision**, 37(5), 457-464.

- Laitinen, E. K. (1991). Financial ratios and different failure processes. **Journal of Business Finance & Accounting**, 18(5), 649-673.
- Lakshan, A. M. I., & Wijekoon, W. M. H. N. (2012). Corporate governance and corporate failure. **Procedia Economics and Finance**, 2, 191-198.
- Lamberto, A. P., & Rath, S. (2008). **The survival of initial public offerings in Australia**: Curtin University of Technology.
- Latham, S., & Braun, M. (2011). Economic recessions, strategy, and performance: a synthesis. **Journal of Strategy and Management**, 4(2), 96-115.
- Lawless, R. M., & Warren, E. (2005). The myth of the disappearing business bankruptcy. **Calif. L. Rev.**, 93, 743.
- Le, S. A. (2006). **An investigation of the impact of the pace of change in post-IPO corporate governance on firm performance**. Louisiana Tech University.
- Lee, T. S., Yeh, Y. H., & Liu, R. T. (2003). **Can corporate governance variables enhance the prediction power of accounting-based financial distress prediction models?** Working Paper No.2003-14, Institute of Economic Research, Hitotsubashi University.
- Lee, T. S., & Yeh, Y. H. (2004). Corporate governance and financial distress: Evidence from Taiwan. **Corporate Governance: An International Review**, 12(3), 378-388.
- Lehmann, E., & Weigand, J. (2000). Does the governed corporation perform better? Governance structures and corporate performance in Germany. **Review of Finance**, 4(2), 157-195.
- Lennox, C. (1999). Identifying failing companies: a re-evaluation of the logit, probit and DA approaches. **Journal of economics and Business**, 51(4), 347-364.
- Lensberg, T., Eilifsen, A., & McKee, T. E. (2006). Bankruptcy theory development and classification via genetic programming. **European Journal of Operational Research**, 169(2), 677-697.
- Leshno, M., & Spector, Y. (1996). Neural network prediction analysis: The bankruptcy case. **Neurocomputing**, 10(2), 125-147.
- Levitan, A. S., & Knoblett, J. A. (1985). Indicators of exceptions to the going concern assumption. **Auditing-A Journal of Practice & Theory**, 5(1), 26-39.

- Levy, L. (1981). Reforming board reform. **Harvard Business Review**, 59(1), 166-172.
- Li, L., & Naughton, T. (2007). Going public with good governance: Evidence from China. **Corporate Governance: An International Review**, 15(6), 1190-1202.
- Li, S., & Wang, S. (2014). A financial early warning logit model and its efficiency verification approach. **Knowledge-Based Systems**, 70, 78-87.
- Libby, R. (1975). The use of simulated decision makers in information evaluation. **The Accounting Review**, 50(3), 475-489.
- Lohrke, F. T., Bedeian, A. G., & Palmer, T. B. (2004). The role of top management teams in formulating and implementing turnaround strategies: a review and research agenda. **International Journal of Management Reviews**, 5(2), 63-90.
- Lune, H., & Berg, B. L. (2016). **Qualitative research methods for the social sciences**. Pearson Higher Ed.
- Lussier, R. N., & Pfeifer, S. (2000). A comparison of business success versus failure variables between US and Central Eastern Europe Croatian entrepreneurs. **Entrepreneurship Theory and Practice**, 24(4), 59-67.
- Mahadeo, J. D., Soobaroyen, T., & Hanuman, V. O. (2012). Board composition and financial performance: Uncovering the effects of diversity in an emerging economy. **Journal of business ethics**, 105(3), 375-388.
- Mangena, M., & Tauringana, V. (2006). Corporate boards, ownership structure and firm performance in an uncertain economic and political environment: the case of Zimbabwe Stock Exchange listed companies. In: **British Accounting Association (BAA) Conference**, Portsmouth.
- Manimala, M. J., & Panicker, S. (2011). Successful Turnarounds: The Role of Appropriate Entrepreneurial Strategies. **IIM Bangalore Research Paper**, (337).
- Manzanaque, M., Priego, A. M., & Merino, E. (2016). Corporate governance effect on financial distress likelihood: Evidence from Spain. **Revista de Contabilidad**, 19(1), 111-121.
- Masulis, R. W., Wang, C., & Xie, F. (2012). Globalizing the boardroom—The effects of foreign directors on corporate governance and firm performance. **Journal of Accounting and Economics**, 53(3), 527-554.

- Mayer, C. (1997). Corporate governance, competition, and performance. **Journal of Law and Society**, 152-176.
- McCue, M. J. (2010). A descriptive analysis of the 2008 credit crisis on multistate healthcare systems: what impact did it have on their financial performance? **Hospital topics**, 88(2), 53-60.
- McGurr, P. T. (1998). **Failure prediction of retail firms through use of financial ratios**. (Doctoral dissertation, Purdue University).
- McKee, T. E. (2000). Developing a bankruptcy prediction model via rough sets theory. **Intelligent Systems in Accounting, Finance & Management**, 9(3), 159-173.
- McKee, T. E., & Lensberg, T. (2002). Genetic programming and rough sets: A hybrid approach to bankruptcy classification. **European Journal of Operational Research**, 138(2), 436-451.
- McKiernan, P. (2003). Turnarounds. In **The Oxford handbook of strategy**.
- Mehran, H. (1995). Executive compensation structure, ownership, and firm performance. **Journal of financial economics**, 38(2), 163-184.
- Menon, K., & Schwartz, K. B. (1987). An empirical investigation of audit qualification decisions in the presence of going concern uncertainties. **Contemporary Accounting Research**, 3(2), 302-315.
- Menon, K., & Williams, J. D. (1994). The use of audit committees for monitoring. **Journal of accounting and public policy**, 13(2), 121-139.
- Miglani, S., Ahmed, K., & Henry, D. (2015). Voluntary corporate governance structure and financial distress: Evidence from Australia. **Journal of Contemporary Accounting & Economics**, 11(1), 18-30.
- Milliken, F. J., & Martins, L. L. (1996). Searching for common threads: Understanding the multiple effects of diversity in organizational groups. **Academy of management review**, 21(2), 402-433.
- Mintzberg, H. (1978). Patterns in strategy formation. **Management science**, 24(9), 934-948.
- Mintzberg, H., & Waters, J. A. (1982). Tracking strategy in an entrepreneurial firm. **Academy of management journal**, 25(3), 465-499.

- Miwa, Y., & Ramseyer, J. M. (2000). Corporate governance in transitional economies: lessons from the prewar Japanese cotton textile industry. **The Journal of Legal Studies**, 29(1), 171-203.
- Mizruchi, M. S., & Stearns, L. B. (1994). A longitudinal study of borrowing by large American corporations. **Administrative Science Quarterly**, 39(1).
- Modarres, M. (2010). Reorganization: Contingent effects of changes in the CEO and structural complexity. **Academy of Strategic Management Journal**, 9(1), 95-109.
- Morck, R., Shleifer, A., & Vishny, R. W. (1988). Management ownership and market valuation: An empirical analysis. **Journal of financial economics**, 20, 293-315.
- Morrow Jr, J. L., Johnson, R. A., & Busenitz, L. W. (2004). The effects of cost and asset retrenchment on firm performance: the overlooked role of a firm's competitive environment. **Journal of Management**, 30(2), 189-208.
- Morrow Jr, J. L., Sirmon, D. G., Hitt, M. A., & Holcomb, T. R. (2007). Creating value in the face of declining performance: Firm strategies and organizational recovery. **Strategic management journal**, 28(3), 271-283.
- Murray, A. I. (1989). Top management group heterogeneity and firm performance. **Strategic management journal**, 10(S1), 125-141.
- Navissi, F., & Naiker, V. (2006). Institutional ownership and corporate value. **Managerial Finance**, 32(3), 247-256.
- Neophytou, E., & Molinero, C. M. (2004). Predicting corporate failure in the UK: a multidimensional scaling approach. **Journal of Business Finance & Accounting**, 31(5-6), 677-710.
- Noke, H., & Hughes, M. (2010). Climbing the value chain: Strategies to create a new product development capability in mature SMEs. **International Journal of Operations & Production Management**, 30(2), 132-154.
- Noteboom, L. J. (1999). Profession in Convergence: Taking the Next Step. **Minn. L. Rev.**, 84, 1359.
- Nworji, I. D., Adebayo, O., & David, A. O. (2011). Corporate governance and bank failure in Nigeria: Issues, challenges and opportunities. **Research Journal of Finance and Accounting**, 2(2), 1-19.

- O'Kane, C., & Cunningham, J. (2014). Turnaround leadership core tensions during the company turnaround process. **European Management Journal**, 32(6), 963-980.
- O'Neill, H. M. (1986). An analysis of the turnaround strategy in commercial banking. **Journal of Management Studies**, 23(2), 165-188.
- O'Regan, N., & Ghobadian, A. (2011). Rescuing a telecom giant from the jaws of bankruptcy: A case study and an interview with Sir Richard Laphorne, chairman of Cable & Wireless. **Journal of Strategy and Management**, 4(1), 82-91.
- Ofek, E., & Yermack, D. (2000). Taking stock: Equity-based compensation and the evolution of managerial ownership. **The Journal of Finance**, 55(3), 1367-1384.
- Ohlson, J. A. (1980). Financial ratios and the probabilistic prediction of bankruptcy. **Journal of accounting research**, 109-131.
- Olsen, M., Bellas, C., & Kish, L. V. (1983). Improving the prediction of restaurant failure through ratio analysis. **International Journal of Hospitality Management**.
- Oman Khan, A. E., & Taiwo, J. N. (2013). The role of corporate governance in the growth of Nigerian banks. **Journal of Business Law and Ethics**, 1(1), 44-56.
- Omar, A., Ramayah, T., Lin, L. B., Mohamad, O., & Marimuthu, M. (2011). Determining factors for the usage of web-based marketing applications by small and medium enterprises (SMEs) in Malaysia. **Journal of Marketing Development and Competitiveness**, 5(2), 70-86.
- Pallant, J. (2013). **SPSS survival manual**. McGraw-Hill Education (UK).
- Palombo, V. J. (2013). **Exploring turnaround strategies for small machine shops** (Doctoral dissertation, Walden University).
- Pandey, M. (2012). Change Though Painful yet all Embrace: A Case Study. **BVIMR Management Edge**, 5(1).
- Parker, S., Peters, G. F., & Turetsky, H. F. (2002). Corporate governance factors and auditor going concern assessments. **Review of Accounting and Finance**, 4(3), 5-29.

- Parulian, S. R. (2012). Hubungan struktur kepemilikan, komisaris independen dan kondisi financial distress perusahaan publik. **IntegrityJurnal Akuntansi dan Keuangan**, Vol.1, No. 3, h.263-274.
- Pass, C. (2004). Corporate governance and the role of non-executive directors in large UK companies: an empirical study. *Corporate Governance: The international journal of business in society*, 4(2), 52-63.
- Patton, M. Q. (2002). **Qualitative research and evaluation methods**. Thousand Oakes: CA: Sage Publications.
- Pearce II, J. A., & Robbins, D. K. (2008). Strategic transformation as the essential last step in the process of business turnaround. **Business Horizons**, 51(2), 121-130.
- Pearce, J. A., & Robbins, D. K. (1994). Retrenchment remains the foundation of business turnaround. **Strategic Management Journal**, 15(5), 407-417.
- Pearce, J. A., & Robbins, K. (1993). Toward improved theory and research on business turnaround. **Journal of management**, 19(3), 613-636.
- Peel, M. J. (1989). The going-concern qualification debate: some UK evidence. **The British Accounting Review**, 21(4), 329-350.
- Pfeffer, J. (1972). Interorganizational influence and managerial attitudes. **Academy of Management Journal**, 15(3), 317-330.
- Pfeffer, J. (1972). Size and composition of corporate boards of directors: The organization and its environment. **Administrative science quarterly**, 218-228.
- Pfeffer, J., & Salancik, G. R. (2003). **The external control of organizations: A resource dependence perspective**. Stanford University Press.
- Powell, R. G. (2001). Takeover prediction and portfolio performance: a note. **Journal of Business Finance & Accounting**, 28(7-8), 993-1011.
- Prescott, J. E. (1983). **Competitive environments, strategic types, and business performance: An empirical analysis**. (Doctoral dissertation, Pennsylvania State University).
- Prescott, J. E., Kohli, A. K., & Venkatraman, N. (1986). The market share-profitability relationship: An empirical assessment of major assertions and contradictions. **Strategic Management Journal**, 7(4), 377-394.

- Price, R., Román, F. J., & Rountree, B. (2011). The impact of governance reform on performance and transparency. **Journal of Financial Economics**, 99(1), 76-96.
- Raghunandan, K., & Rama, D. V. (1995). Audit reports for companies in financial distress: Before and after SAS No. 59. **Auditing**, 14(1), 50.
- Raju, B. S. (2011). Factors influencing employees to work more and make the Rinl turnaround: An experimental study, Rinl, Visakhapatnam. **Management Research**, 3(2).
- Rao, K., & Sanker, K. (1997). **Takeover as a strategy of turnaround**. UTI edited book, 47-56.
- Rasheed, H. S. (2005). Turnaround strategies for declining small business: The effects of performance and resources. **Journal of Developmental Entrepreneurship**, 10(03), 239-252.
- Rath, S. (2008, August). **The survival of initial public offerings in Australia**. In Oxford Business & Economics Conference Program, UK, available at http://www.gcbe.us/2008_OBEC/data/confcd.htm. Accessed on August (Vol. 30, p. 2012).
- Razuk, F. G. (2001). **An assessment of financial ratios as predictors of casino stocks' behavior**. (Master's Thesis, Graduate College University of Nevada).
- Rechner, P. L., & Dalton, D. R. (1991). CEO duality and organizational performance: A longitudinal analysis. **Strategic Management Journal**, 12(2), 155-160.
- Reddy, K., Abidin, S., He, W., & Sinha, P. (2015). Does Ownership Identity of Blockholders Matter: An Empirical Analysis of Publicly Listed Companies in New Zealand. **Asian Journal of Finance & Accounting**, 7(1), 13.
- Reger, A. (2017). **The Impact of Turnaround Strategies on Financial Performance of Small and Medium-Sized Manufacturing Companies**. Lawrence Technological University.
- Rehman, R., & Mangla, I. U. (2012). Does Corporate Governance Influence Banking Performance? *Journal of Leadership, Accountability and Ethics*, 9(3), 86-92.
- Robbins, D. K., & Pearce, J. A. (1992). Turnaround: Retrenchment and recovery. **Strategic management journal**, 13(4), 287-309.

- Rohr, S. L. (2012). How well does the SAT and GPA predict the retention of science, technology, engineering, mathematics, and business students. **Journal of College Student Retention: Research, Theory & Practice**, *14*(2), 195-208.
- Rose, C. (2007). Does female board representation influence firm performance? The Danish evidence. **Corporate Governance: An International Review**, *15*(2), 404-413.
- Ryu, Y. U., & Yue, W. T. (2005). Firm bankruptcy prediction: Experimental comparison of isotonic separation and other classification approaches. **IEEE Transactions on Systems, Man, and Cybernetics-Part A: Systems and Humans**, *35*(5), 727-737.
- Sadi, R., Asl, H. G., Rostami, M. R., Gholipour, A., & Gholipour, F. (2011). Behavioral finance: the explanation of investors' personality and perceptual biases effects on financial decisions. **International journal of economics and finance**, *3*(5), 234-241.
- Sanda, A. U., Mikailu, A. S., & Garba, T. (2005). **Corporate governance mechanisms and firm financial performance in Nigeria**. AERC Research paper 149
Nairobi: [http://www.aercafrica.org/documents/R p.149](http://www.aercafrica.org/documents/R_p.149).
- Sangasubana, N. (2011). How to conduct ethnographic research. **The qualitative report**, *16*(2), 567-573.
- Sapp, S. G. (2008). The impact of corporate governance on executive compensation. **European Financial Management**, *14*(4), 710-746.
- Sarkar, J., & Sarkar, S. (2009). Multiple board appointments and firm performance in emerging economies: Evidence from India. **Pacific-Basin Finance Journal**, *17*(2), 271-293.
- Schoenberg, R., Collier, N., & Bowman, C. (2013). Strategies for business turnaround and recovery: a review and synthesis. **European Business Review**, *25*(3), 243-262.
- Securities and Exchange Commission. (2015). **Good Corporate Governance 2015**. Bangkok: The Securities and Exchange Commission Thailand.
- Securities and Exchange Commission. (2017). **Corporate Governance Code for listed companies 2017**. Bangkok: The Securities and Exchange Commission Thailand.

- Shaughnessy, R. M. & Rudie Harrigan, K. (2009). A Guide to Choosing Genuine Opportunities for Turnarounds. **Strategy & Leadership**, 37(6), 39-43.
- Shepherd, D. A. (2003). Learning from business failure: Propositions of grief recovery for the self-employed. **Academy of management Review**, 28(2), 318-328.
- Shin, K. S., Lee, T. S., & Kim, H. J. (2005). An application of support vector machines in bankruptcy prediction model. **Expert systems with applications**, 28(1), 127-135.
- Shivdasani, A., & Yermack, D. (1999). CEO involvement in the selection of new board members: An empirical analysis. **The journal of finance**, 54(5), 1829-1853.
- Simpson, W. G., & Gleason, A. E. (1999). Board structure, ownership, and financial distress in banking firms. **International Review of Economics & Finance**, 8(3), 281-292.
- Singh, V., & Vinnicombe, S. (2003). The 2002 female FTSE index and women directors. **Women in Management Review**, 18(7), 349-358.
- Solomon, J. (2007). **Corporate governance and accountability**. John Wiley & Sons.
- Sonnenfeld, J. A. (2002). What makes great boards great. **Harvard business review**, 80(9), 106-113.
- Soti, A., Shankar, R., & Kaushal, O. P. (2011). Six Sigma in manufacturing sector in India. **Global Business and Management Research**, 3(1), 38.
- Spence, M. (1978). Job market signaling. In **Uncertainty in economics** (pp. 281-306). Academic Press.
- Staubus, G. J. (1977). **Making Accounting Decisions** (Houston: Scholars Book Co.).
- Sterling, R. R. (1970). **Theory of the measurement of enterprise income**. The university press of Kansas, Kansas.
- Stopford, J. M., & Baden-Fuller, C. (1990). Corporate rejuvenation. **Journal of Management Studies**, 27(4), 399-415.
- Storey, D. J., Keasey, K., Watson, R., & Wynarczyk, P. (2016). **The performance of small firms: profits, jobs and failures**. Routledge.
- Suarez, J. J. (2004). **A neural network model to predict business failure in construction companies, in the United States of America**. University of Florida.

- Sudarsanam, S., & Lai, J. (2001). Corporate financial distress and turnaround strategies: An empirical analysis. **British Journal of Management**, *12*(3), 183-199.
- Suehiro, A. (2001). **Family business gone wrong? Ownership patterns and corporate performance in Thailand**. ADB Institute Working Paper 19, May 2001, Asian Development Bank Institute, Tokyo.
- Swank, A. R. (2010). **Exploring organizational dynamics of organizational culture, entrepreneurial leadership, and strategy in small family businesses: An ethnographic collective case study**. Capella University.
- Sweet, D. N. (2004). **The recovery response of small industrial firms in corporate turnaround** (Doctoral dissertation, Nova Southeastern University).
- Switzer, L. N., & Tang, M. (2009). The Impact of Corporate Governance on the Performance of US Small-Cap Firms. **International Journal of Business**, *14*(4).
- Tabachnick, B. G., Fidell, L. S., & Ullman, J. B. (2007). **Using multivariate statistics** (Vol. 5). Boston, MA: Pearson.
- Taffler, R. J., & Tisshaw, H. (1977). Going, going, gone—four factors which predict. **Accountancy**, *88*(1003), 50-54.
- Talmy, S. (2010). Qualitative interviews in applied linguistics: From research instrument to social practice. **Annual Review of Applied Linguistics**, *30*, 128-148.
- Tavlin, E. M., Moncarz, E. S., & Dumont, D. (1989). Financial failure in the hospitality industry. **Hospitality Review**, *7*(1), 7.
- Terjesen, S., Aguilera, R. V., & Lorenz, R. (2015). Legislating a woman's seat on the board: Institutional factors driving gender quotas for boards of directors. **Journal of Business Ethics**, *128*(2), 233-251.
- Terziovski, M. (2010). Innovation practice and its performance implications in small and medium enterprises (SMEs) in the manufacturing sector: a resource-based view. **Strategic Management Journal**, *31*(8), 892-902.
- Theodore, J. (2011). Mergers of private enterprises: A powerful force for the development of private business organizations in Latin America—the case of

- Ecuador. **International Business & Economics Research Journal (IBER)**, 10(1), 9-13.
- Tikici, M., Omay, E., Derin, N., Seçkin, S. N., & Cüreoğlu, M. (2011). Operating turnaround strategies during crisis periods: A research on manufacturing firms. **Procedia-Social and Behavioral Sciences**, 24, 49-60.
- Tricker, R. I. (1984). **Corporate Governance: Practices, Procedures, and Powers in British Companies and Their Boards of Directors**: Gower Pub. Co. (Aldershot, Hants and Brookfield, Vt.
- Tsinopoulos, C., & Bell, K. (2009). Supply chain integration systems by small engineering to order companies: the challenge of implementation. **Journal of Manufacturing Technology Management**, 21(1), 50-62.
- Tukur, G., & Balkisu, A. A. (2014). Corporate board diversity and financial performance of insurance companies in Nigeria: an application of panel data approach. **Asian Economic and Financial Review**, 4(2): 257-77.
- Turner, J. R. (2010). Using feed process as a means of performance improvement in a dynamic environment. **Performance Improvement**, 49(8), 15-20.
- Turner, P., & Turner, S. (2009). Triangulation in practice. **Virtual Reality**, 13(3), 171-181.
- Vafeas, N. (1999). Board meeting frequency and firm performance. **Journal of financial economics**, 53(1), 113-142.
- Vasiliki, Z. (2007). **Predicting failure for main contractors and specialist trade contractors in the UK construction industry**. University of London, University College London (United Kingdom).
- Venkatraman, N., & Prescott, J. E. (1990). Environment-strategy coalignment: An empirical test of its performance implications. **Strategic Management Journal**, 11(1), 1-23.
- Ventura, J. (2003). **The Business Turnaround & Bankruptcy Kit**. Dearborn Trade Publishing.
- Veprauskaitė, E., & Adams, M. (2013). Do powerful chief executives influence the financial performance of UK firms? **The British accounting review**, 45(3), 229-241.

- Vithessonthi, C. (2011). Financial crisis and corporate restructuring. **The Business Review**. Cambridge.
- Wang, Z., & Zhang, R. (2002). The deficiency and improvement of traditional financial index system. **Technol. Econ**, *10*, 30-35.
- Warfield, T. D., Wild, J. J., & Wild, K. L. (1995). Managerial ownership, accounting choices, and informativeness of earnings. **Journal of accounting and economics**, *20*(1), 61-91.
- Weir, C., & Laing, D. (2001). Governance structures, director independence and corporate performance in the UK. **European Business Review**, *13*(2), 86-95.
- Wennberg, K., Wiklund, J., DeTienne, D. R., & Cardon, M. S. (2010). Reconceptualizing entrepreneurial exit: Divergent exit routes and their drivers. **Journal of Business Venturing**, *25*(4), 361-375.
- Wiwattanakantang, Y. (2001). Controlling shareholders and corporate value: Evidence from Thailand. **Pacific-Basin Finance Journal**, *9*(4), 323-362.
- Woolf, E. (1983). Tackling the delicate question of the going concern. **Accountancy**, 99-102.
- Xu, X., & Wang, Y. (1999). Ownership structure and corporate governance in Chinese stock companies. **China economic review**, *10*(1), 75-98.
- Yao, X., Titus, S. J., & MacDonald, S. E. (2001). A generalized logistic model of individual tree mortality for aspen, white spruce, and lodgepole pine in Alberta mixedwood forests. **Canadian Journal of Forest Research**, *31*(2), 283-291.
- Yeh, Q. J., & Fang, P. (2011). A resource-based analysis of organizational turnaround: The contingency role of organizational life stages. **Journal of Management & Organization**, *17*(6), 782-796.
- Yermack, D. (1996). Higher market valuation of companies with a small board of directors. **Journal of financial economics**, *40*(2), 185-211.
- Yin, R. K. (2009). **Case study research (4th ed.)**. Thousand Oaks: CA: Sage Publications.
- Youn, H. (2005). **Business failure prediction for Korean lodging firms using multiple discriminant analysis and logit analysis**. (Master of Science, University of Nevada, Las Vegas).

- Youn, H. (2008). **Failure prediction for hospitality firms in US and Korea using logit and neural networks models**. (Doctoral Dissertation, University of Nevada, Las Vegas).
- Zahra, S. A., & Pearce, J. A. (1989). Boards of directors and corporate financial performance: A review and integrative model. **Journal of management**, *15*(2), 291-334.
- Zajac, E. J., & Westphal, J. D. (1996, August). DIRECTOR REPUTATION, CEO/BOARD POWER, AND THE DYNAMICS OF BOARD INTERLOCKS. In **Academy of Management Proceedings** (Vol. 1996, No. 1, pp. 254-258). Briarcliff Manor, NY 10510: Academy of Management.
- Zavgren, C. (1983). The prediction of corporate failure: the state of the art. **Journal of Accounting Literature**, *2*(1), 1-38.
- Zeff, S. A. (1999). The increasing importance of current value accounting: A comment on the ASB's revised draft on principles. **Accountancy, International Edition**, *124*, 68-69.
- Zeytinoglu, E., & Akarim, Y. D. (2013). Financial failure prediction using financial ratios: An empirical application on Istanbul Stock Exchange. **Journal of Applied Finance and Banking**, *3*(3), 107.
- Zhiyong, L. (2014). **Predicting financial distress using corporate efficiency and corporate governance measures**. (Doctoral dissertation, University of Edinburgh).
- Zimmerman, M. A. (2008). The influence of top management team heterogeneity on the capital raised through an initial public offering. **Entrepreneurship Theory and Practice**, *32*(3), 391-414.
- Zordan, A. J. (2000). **Cash flow ratios as predictors of business failure**. (Doctoral Dissertation, Nova University).

Biography

Name – Surname: Pornthip Manodamrongsat

Date of Birth: 28 July 1969

Address: Dhonburi Rajabhat University 172 Israpharp Road, Watkanlaya
District, Thonburi, Bangkok, 10600

Education: Master Degree in Accounting

Experience Work: Dhonburi Rajabhat University

Telephone Number: + 6689 677 7578 (Mobile)

E-mail address: pontip_naka@hotmail.com



Declaration

This work contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and beliefs, contains no material previously published or written by another person, except where due reference has been made in the text.

I give consent to this copy of my dissertation, when deposited in the university library, being available for loan and photocopying.

Pornthip Manodamrongsat

