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IMPACT OF FINANCIAL INFORMATION FRAUDULENCE ON FINANCIAL DISTRESS IN MALAYSIA AND SINGAPORE

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By

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October 2020

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Financial distress has been extensively debated since the 1960s by numerous researchers. The huge scandal in financial reporting among gigantic companies such as Enron, Xerox and Worldcom has motivated this study to examine the impact of financial information fraudulence on the accuracy of financial distress prediction. Most of the existing studies had focused on established markets using tests set by the Security Stock Exchange for identifying financial information fraudulence but of which corrective actions are considered too late. This study used consumer product companies listed on the main board and the timeframe is from 2011 till 2015. The Altman Z score indicates that 37 out of 133 and 55 out of 110 Malaysian and Singaporean consumer product companies respectively are financially distressed. Meanwhile, the M score shows that 14 (28 observations) out of 37 and 28 (49 observations) out of 55 companies in Malaysia and Singapore respectively are engaged in financial information fraudulence. However, these results are relatively low because the samples are taken from the main board and fraudulence in their financial statements might be done in lower magnitude in order to avoid sanctions by the Security Exchange Commission. Therefore, objective one is proven whereby some of the distressed companies are found to be engaged in financial information fraudulence activities. Logistic regression was used to measure accuracy in predicting financial distress. This test covered objective two whereby the result of the overall accuracy percentage slightly improved by 0.9 and 2.4 after eliminating fraudulent companies in Malaysia and Singapore, respectively. After comparing the confusion matrix result i.e. before and after the removal of financial information fraudulent companies, the misclassification errors especially type one for both countries improved. This finding satisfied objective three, whereby one of the reasons for the deterioration in financial distress prediction is due to

the upward bias of financial information fraudulence. Overall, this study had proven that the deceitful act starts in the main market so that the companies can remain there. The design of simple models that are cost-saving and easy to operate by all investors seems to be helpful, especially in detecting financial information fraudulence and distressed companies as it can prevent investment losses.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah.

KESAN PENIPUAN MAKLUMAT KEWANGAN TERHADAP GANGGUAN KEWANGAN DI MALAYSIA DAN SINGAPOR

Oleh

DALILA BINTI ABU BAKAR

Oktober 2020

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Masalah kewangan telah menjadi perdebatan dalam kalangan penyelidik sejak tahun 1960. Skandal besar dalam pelaporan kewangan dalam kalangan syarikat gergasi seperti Enron, Xerox dan Worldcom telah mendorong kajian ini untuk mengkaji kesan penipuan maklumat kewangan terhadap ketepatan ramalan masalah kewangan. Sebilangan besar kajian sedia ada tertumpu kepada pasaran yang mapan menggunakan ujian yang ditetapkan oleh Bursa Saham Keselamatan untuk mengenalpasti penipuan maklumat kewangan tetapi tindakan pembetulannya dianggap terlambat. Kajian ini menggunakan syarikat produk pengguna yang tersenarai di papan utama dan jangka masa kajian adalah dari 2011 hingga 2015. Skor Altman Z menunjukkan bahawa 37 daripada 133 dan 55 daripada 110 syarikat-syarikat produk pengguna Malaysia dan Singapura mengalami masalah kewangan. Skor M menunjukkan bahawa 14 (28 pemerhatian) daripada 37 dan 28 (49 pemerhatian) daripada 55 syarikat masing-masing di Malaysia dan Singapura melakukan penipuan maklumat kewangan. Walau bagaimanapun, hasil ini agak rendah kerana sampel diambil dari papan utama dan penipuan dalam penyata kewangan mungkin dilakukan dalam skala yang lebih rendah untuk mengelakkan sekatan Suruhanjaya Sekuriti. Oleh itu, objektif satu dapat dibuktikan di mana beberapa syarikat yang mengalami masalah kewangan terlibat dalam aktiviti penipuan maklumat kewangan. Regresi logistik digunakan untuk mengukur ketepatan ramalan masalah kewangan. Ujian ini merangkumi objektif dua di mana hasil peratusan ketepatan keseluruhan sedikit meningkat sebanyak 0.9 dan 2.4 setelah penghapusan syarikat penipuan di Malaysia dan Singapura. Setelah membandingkan hasil matriks kekeliruan dengan penghapusan penipuan maklumat kewangan sebelum dan sesudah, kesilapan pengkelasan salah terutama jenis satu untuk kedua-dua negara berjaya dikurangkan. Penemuan ini memenuhi objektif ketiga

di mana salah satu sebab kemerosotan ramalan masalah kewangan adalah disebabkan oleh peningkatan penipuan maklumat kewangan. Secara keseluruhan, kajian ini telah membuktikan bahawa tindakan menipu bermula di papan utama agar syarikat-syarikat tersebut kekal di papan utama. Reka bentuk model sederhana yang menjimatkan kos dan mudah dikendalikan oleh semua pelabur dianggap bermanfaat, terutama dalam mengesan penipuan maklumat kewangan dan syarikat yang mempunyai masalah kewangan kerana ia dapat menyelamatkan dari kerugian pelaburan.

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This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

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LIST OF ABBREVIATIONS

MCCG	Malaysian Code on Corporate Governance
Bhd	Berhad
US	United Stated
ACFE	Association of Certified Fraud Examiners
USD	United Stated Dollar
GAAP	Generally accepted accounting principles
SEC	Security Exchange Commission
CEO	Chief Executive Officer
TA	Total Assets
VIF	Variance Inflation Factors
IFRS	International Financial Reporting Standard
MDA	Multivariate Discriminant Analysis

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

Financial distress can be described as a condition when a company is unable to honor its debt obligation (Lee and Yeh, 2004; Beaver, 1966), is incapable of conducting economic activities (Honjo, 2000), has low cash flow and facing financial complications (Ding, Song and Zen, 2008; Sun et al., 2014), recorded three consecutive years of negative net income (Youn and Gu, 2010), has low equity per share (Sun and Li, 2012) and has a net worth less than half of its capital stock (Lee and Yeh, 2004). In general, financial distress is a company's inability to generate sufficient income to cover its expenses.

Financial distress refers to a company's financial health. The credibility of the debtor in repaying its debt is the main concern of the bondholder. Default and credit rating are significant factors that influence the investors' decision to invest their money in a certain company. The company's solvency is thus very crucial in boosting its credit image (Thai, Goh, Teh, Wong and Ong, 2014). Financial distress has been examined from various industry perspectives including small medium enterprises, services sector, financial sector (Kim and Upneja, 2014) and small market capital (Omar, Johari and Smith, 2017).

Several prior researches had used the word 'failure' to define financial distress since the word is arbitrary. The word was applied to a certain arbitrarily chosen year or time period to distinguish companies into two artificial groups (failing and non-failing). The companies in the same group are mutually exclusive within the chosen time period (Balcaen and Ooghe, 2006).

Bankruptcy declaration is the end point of a company. It is in the interest of the stockholders to avoid this unfortunate event. Reorganization is a difficult task when the company is at the edge of bankruptcy (Altman, 1983). Efforts such as changing the top management, rescheduling debt payments to creditors, and retrenchment barely work. The ability to predict financial distress is vital to companies, investors and regulators. Early identification of business failure and timely warning of financial crisis are essential for quick remedial actions.

Company failures can lead to financial panic, especially in a small country (Kaufman, 2014). Similarly, developed countries also try to minimize this

problem. Individual company performance assessment is the central element of numerous studies in the attempt to come up with accurate financial distress predictions. To date, there have been numerous replications and extensions of financial distress models to fit the condition of particular countries (Altman, 1984). Model expansion and testing for prediction (Halteh, Kumar and Gepp, 2018; Liang, Tsai, Dai and Eberle, 2018; Liao and Mehdian, 2016; Taherinia and Talebi, 2019) and classification of financial distress (Agarwal and Taffler, 2008; Bakar, Kiong and Nassir, 2012; Liao and Mehdian, 2016; Supriyanto and Darmawan, 2018) have received significant interest due to the influential works of Beaver (1966) and Altman (1968). Altman (1984)compiled several researches that used the Z-score to predict business failure outside of the United States. One of the compilations indicated that complex module operations contributed significantly to the failures of other companies. Furthermore, business failure is relatively high even during prosperous times due to the intense competitive environment.

Financial distress is related to liquidity and solvency; however, there are several explanations as to why financial distress cannot be detected in a company that seems likely to suffer from one. Restatement activities are a prominent example as to why financial distress cannot be detected. Next is accidental bankruptcy such as those caused by natural disasters. The final explanation is postponed bankruptcy i.e. one that occurs much later then the real moment of failure such as during company restructuring and reorganization especially for large companies. All the above can lead to a biased financial distress prediction.

Financial distress could hinder investment activities, capital flows and company performance. Corporate distress (financial distress) happens when the company has difficulties in servicing the principles and interest of their debt (Supriyanto and Darmawan, 2018). High fixed cost, illiquid assets, and revenue that are too sensitive to economic stability make it more vulnerable to financial distress. The implications linked to this situation include increased borrowings and additional external financing, less dynamic employees, loss of investors' confidence due to being viewed as an incompetent company, and opportunity cost of the project (Khaliq, Altarturi, Thaker, Harun and Nahar, 2014; Omar et al., 2017).

The workers in the financially distressed company are often demotivated and stressed out due to the probability of the company going bankrupt. The thought of losing their jobs makes them unproductive. Corrective actions to prevent financial distress are only taken when the company's operating cash flows fail to satisfy its current obligation. Prolonged and late detection of financial distress will lead to bankruptcy. Financial distress could reduce the efficiency of the management due to expensive financing, demotivated employees and opportunity cost of projects (Bae, 2012).

Economic recession can drive companies into financial distress such as in the 1980-1982 economic recession which dragged large companies into defaults and bankruptcy. The awareness of bankruptcy has increased and has become a critical issue in 2008 when the US subprime crisis occurred. The world witnessed gigantic companies such as Enron, Xerox and Worldcom fall into bankruptcy (Ardekani, Younesi and Hashemijoo, 2012). This incident proved that the size of the company does not provide any immunity against bankruptcy (Altman, 1983, 2006). Some of the companies had been experiencing financial distress for a long time, but resorted to financial information fraudulence to camouflage their actual situation.

Cost fluctuations, unexpected pricing and negative shock to revenues are among the phenomena that lead to financial distress. The tightening of credit supply and increased interest rates exacerbate financial distress and hasten bankruptcy (Battiston, Delli Gatti, Gallegati, Greenwald, and Stiglitz, 2007). At this stage, it is difficult to attain the needed funds to carry out reorganization efforts as the cost of the debt increases. This leaves a distressed company with no option except to file for bankruptcy petition. However, it is not easy to file for bankruptcy especially for established companies and those that are listed on the stock exchange. Letting go of the privilege that they once had seems an unwise reaction. Thus, this situation lures them into behaving unethically such as engaging in financial information fraudulence (Flanagan, Muse, and O'Shaughnessy, 2008).

Beasley, Carcello, and Hermanson (2001) claimed that overstating revenues or assets helps in plummeting the company's stock price. Companies experiencing net losses or those that never reached breakeven positions have the tendency to fabricate their financial statements. The fabrication starts with the manipulation of the quarterly financial statements and up to the annual financial statements. The discovery of fraudulent companies always results in unfavorable outcomes such as losing investors' confidence, decreasing market value, increasing cost of capital, and losing company and manager reputation (Flanagan et al., 2008).

The cases of fraudulent financial reporting are soaring overtime. It is now a common prevalence among large companies (Kaufman, 2014). Companies with assets and revenues under $100 million dollars are often alleged to be engaging in financial statement fraudulence (Beasley, Carcello, Hermanson and Neal, 2010). Discretion in financial statements signal private management information where they try to obscure important aspects of the company's financial performance (Beaver, McNichols and Rhie, 2005)

Financial information fraudulence is normally preceded by financial restatement[1]. Regulators are highly responsive towards financial restatement issues. Numerous cases have been exposed and made public. The growth of high profile participation in financial restatement cases such as Enron and Worldcom had forced the United States to come out with the Sarbanes-Oxley Act[2] in 2002 for fraudulent prevention. The Act was designed to fix the auditing in public companies in the US. The main goal is to enhance the responsibility of chief executives with respect to the truthfulness and relevance of compulsory financial statements.

Managers cover up the truth because its helps in avoiding useless and expensive conflicts since telling the truth might not be the most suitable strategy. Moreover, revealing unfavorable conditions leave a bad image to clients and creditors. This might lead the creditors to ask for a higher default premium (Besancenot and Vranceanu, 2009). During times of crisis, managers might prefer to communicate falsehoods to get favorable contracting terms and push down the indirect costs (Dichev and Skinner, 2002; Jaggi and Lee, 2002; Besancenot and Vranceanu, 2009).

Malaysia followed suit by introducing the Malaysian Code on Corporate Governance (MCCG). Table 1-1 shows a list of Malaysian companies involved in financial restatement.

[1] Financial restatement is an act of manipulating financial statements by inflating and/or deflating accounting figures.

[2] The Sarbanes-Oxley Act (SOX) was introduced in 2002 by the Unites States Congress to protect shareholders from financial information fraudulent activities. This Act basically aims to improve companies' financial disclosure and prevent accounting fraud.

Table 1.1: Cases of restatements in Malaysia

Company	Restatements
CSM Corporation Bhd	Directed by the SC in 2002 to restate its 1999 financial statements (Securities Commission, 2002).
OilCorp Bhd	Directed by the SC to restate its 2004 financial statements (Securities Commission, 2005).
Aktif Lifestyle Bhd	Directed by the SC to restate its 2002 and 2003 financial statements (Securities Commission, 2005).
Goh Ban Huat Bhd	Ordered by the SC to reissue its 2004 fourth quarter report after being found to overstate its profits by RM121 million (Securities Commission, 2005).
Celcom Bhd (a subsidiary of Telekom Malaysia Bhd)	The auditor discovered fictitious invoices issued to the Group amounting to RM259.32 million (about USD70 million).
Transmile Group	Misstatement was discovered in a special audit that the Company has inflated its revenue by RM522 million for financial years 2004-2006. An additional RM341 million and RM189 million of invalid transactions were also discovered during the period. As a result, the price of Transmile's share declined from RM15 to RM2 per share, resulting in a total paper loss, thus far, of RM3.4 billion.
BBS Consortium Bhd, Karensoft Technology Bhd, Paxelent Corp Bhd, and Lityan Holdings Bhd	Substantial discrepancies between the companies' unaudited and audited results (Oh, 2005).

(Source: Abdullah, Yusof, and Nor, 2010)

The Malaysian stock exchange came out with the Malaysian Code on Corporate Governance (MCCG) in 2000 to deter financial statement frauds. Due to the evolvement of financial information fraudulent techniques overtime, MCCG was revised in 2007 to adapt to new fraud techniques (Abdullah et al., 2010). The growth of financial statement fraudulent activities had eradicated investors' confidence in Malaysia.

Generally, economic crisis provides prolific grounds for companies to engage in financial information fraudulence as demonstrated by companies such as the Lehman Brothers (Grove and Basilico, 2011), Enron (Nigrini, 2005), Worldcom, Xerox, Sunbeam, Waste Management, Adelphia, Tyco, HealthSouth, Global

Crossing, and others (Coates, 2007). Most major bankruptcy cases around the globe involved financial information fraud (Abbasi, Albrecht, Vance, and Hansen, 2012; Albrecht, Albrecht, and Albrecht, 2008). In early 2000, the United States criminal investigations pointed out that during the information technology bubble years, several top executives had manipulated earnings to push their companies' share value up and then cashed the overvalued stock before the company collapsed (Demski, 2003; Hall, 2003). To account for such fraudulence, the management shifted the companies' regulatory strategy in favor of tougher sanctions to decrease direct bankruptcy cost (Besancenot and Vranceanu, 2009).

Massive drops in a company's stock price are related to the announcement of organizational fraud. This will cause the company's stakeholders to suffer huge amounts of losses followed by the delisting of the company. Abdul Hamid, Shafie, Othman, Wan Hussin, and Fadzil, (2013) observed that market capitalization shrinks in companies that are involved in financial information fraud. They concluded that the Transmile Group Bhd shareholder fund reduced from RM424 million to negative RM289 million. The company also suffered RM1.2 billion market capitalization loss. In another case, a debt restructuring plan was needed by Megan Media Bhd when two of its subsidiaries defaulted in their payment to all of their maturing trade facilities. In the end, after the investigation by the authorities, the company was found to be involved in financial information fraud. The company did not survive as its financial health had weakened tremendously. The company received the same fate as Transmile Group Bhd, where its share price dropped by 85% within three months after the news was released to the public. The authors claimed that too much focus on financial results instead of operating results had dragged these two companies to smooth the income to avoid a decline in company share price and debt contractual obligation.

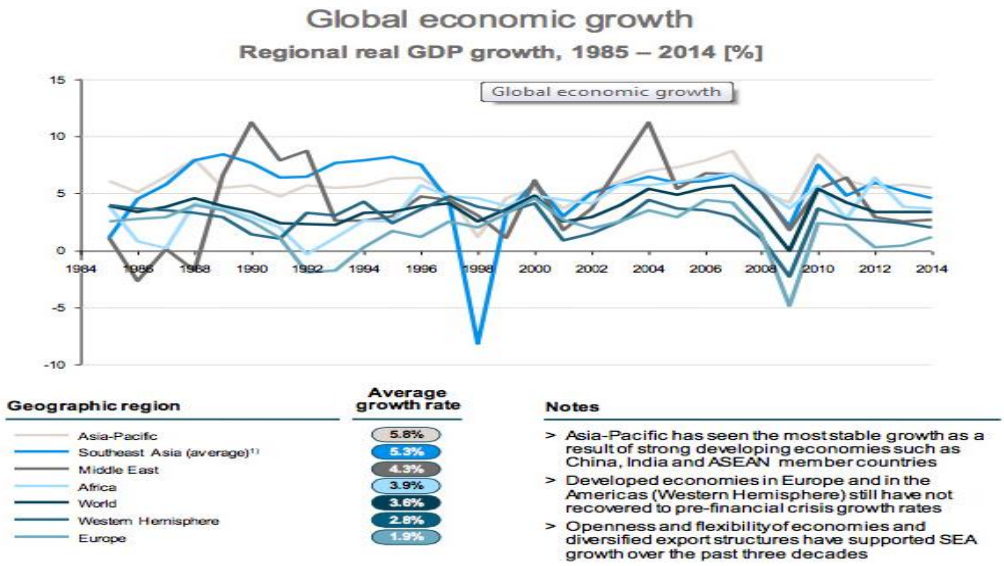

Figure 1.1: Global Economic Growth (1985-2014) (Source: www.consultancy.uk)

The Asian Financial crisis occurred in 1997. The financial collapse of the Thai baht occurred after the government floated the baht due to lack of foreign currency to support its currency peg to the US dollar. At the time, Thailand had a huge amount of foreign debts that can make the country go bankrupt even before the collapse of its currency. The crisis started to spread around most of Southeast Asia. Hasan (2002) argued that the 1997-1998 financial crisis hit Malaysia not because of the weak economic fundamentals, but due to massive unpredictable flights of short-term portfolio investments. Panic among lenders and large credit withdrawals had caused Malaysia's real gross domestic product to fall 7.4% in 1998. Credit withdrawal from the crisis involved several countries[3] leading to a credit crunch and further bankruptcies.

The economies of Southeast Asia started to experience dramatic economic decline in 1997 and continued until 1998. In late 1998, the economies started to

[3] Indonesia, South Korea, Thailand, Hong Kong, Laos, Malaysia, the Philippines, Brunei, Singapore, China, Taiwan and Vietnam.

recover from the Asian financial crisis and remained stable until 2006. The second wave of financial crisis hit this region once again in 2007. This time, the whole world felt the impact of the decline in the United States' economy. The collapse of large financial institutions in the United States had triggered this crisis. The burst of housing bubble in the US (which peaked in 2004) caused the securities' values tied to the US real estate to fall, damaging financial institutions globally. The downturn of economic crisis was prolonged until 2012, leading to a global recession and dragging the European sovereign debt crisis. After 2008, bankruptcy rates became highly volatile and kept on increasing more than ever before.

In general, financial information fraud is an activity which involves the presentation of misleading information to the public and has significant consequences towards economic and social costs[4]. The definition of financial information fraudulence is the deliberate act of misstating or omitting amounts or financial statements disclosures with an intent to deceive the financial statement users (Crawford and Weirich, 2011). Initially, companies involved in financial information fraudulence try to conceal their fraudulent activities by portraying good financial conditions. The truth is revealed when the companies' condition gets worst and the fraudulent activities can no longer be hidden (Jaggi and Lee, 2002). During times of financial distress, companies engage in financial information fraudulent activities to achieve the targets set by the stock exchange in order to remain on the main board. After being exposed, these companies will no longer be listed under the main board; instead, they will be put under PN17 for monitoring purposes. In the context of Malaysia, distressed firms are classified under PN4 and PN17 by Bursa Malaysia (Ong, Yap, and Khong, 2011). However, the PN4 classification no longer exists in Bursa Malaysia as it has been assigned under PN17. PN17 encompasses financially distressed companies, companies engaged in fraudulent financial information, and reorganized companies.

Social cost and companies' market value decline are not the only impacts of business failure. Suppliers, creditors, investors as well as the company management and employees are also affected by this failure (Charitou, Lambertides, and Trigeorgis, 2007). During times of distress, the management may have various incentives or feel the pressure of managing the company's financial matters. Basically, there are two possible explanations as to why financially distressed firms are involved in earning upward management (Charitou et al., 2007) namely: 1) the management is motivated to report higher

[4] Social cost is like company retrenchment (some employees need to fired), failed to paid creditor, shareholder dividend, bondholder principles and interest.

earnings to preserve debt covenant and avoid bankruptcy, and 2) the management manipulates earning upwards out of self-interest due to various reasons but mostly driven by compensation.

1.1.1 Financial Statements

Financial statement or financial report is a formal documentation record of a company's financial activities in a particular year (Supriyanto and Darmawan, 2018). It shows the financial, performance and liquidity strengths of the company. It can be categorized into three types of financial statements: 1) balance sheet (which reports on company assets, liabilities and ownership equity at a given point in time), 2) income statement or profit and loss report (a report on the company's revenue, expenses and profit over a period of time), and 3) statement of cash flows (which reports on a company's cash flow activities particularly its operating, investing and financing activities). The distribution of the financial statements is done on a regular basis. They are developed internally under the supervision of the Chief Financial Officer who is responsible for monitoring the company's overall financial health.

Financial ratios extracted from financial statements have their own usability and provide various information but sometimes conflicting with each other (Supriyanto and Darmawan, 2018). The objective of financial reporting is to provide a high quality report of companies' financial information which will allow users to make coherent decisions (Bushman and Smith, 2001). The international standard definition for accounting information quality is "the reliability and transparency of financial statement figures" (Minanoa and Campa, 2014). It is crucial for financial statements to represent the "true and fair view" of companies. The failure to do so will lead to biased decisions. Financial statements are used in four different ways namely: 1) owners and managers require financial reports to make crucial business decisions that affect their companies' continued operations, 2) employees use these reports for collective bargaining agreements in discussing their compensation, promotion and ranking, 3) investors use the reports to assess the feasibility of investing in a business, and 4) financial institutions such as banks and lending companies use the reports to make decisions on company credit granting.

Hope, Thomas, and Kolk, (2011)found that credible financial information experience significant reductions in external financing constraint. It also reduces information asymmetry between the company and the external financial provider, alleviates information problems and makes managers more accountable for their job scope. Market price and security returns reflect the information embedded in the company's accounting reports (Beaver, Correia, and Mcnichols, 2012). This shows that the usefulness of the information contained in financial statements

has not declined (Brown, Lo, and Lys, 1999) and instead has increased (Francis and Schipper, 1999).

Financial statement is a crucial element in financial ratio calculation and shows a company's current financial performance in a particular year. It has been used extensively when market data quality is poor and unavailable (Chiaramonte, Croci and Poli, 2015). Financial distress variables consist of financial ratios that have been calculated based on company annual financial statements. Companies that failed to meet their payment obligations will not automatically go bankrupt. It takes several years of financial distress before bankruptcy can take place. All of these events will be captured in the financial statements (Francis and Schipper, 1999). The discretion in producing the financial statements needs to be highlighted since financial statements are an essential element in constructing financial distress prediction. Financial information deteriorates in the presence of financial information fraudulence and it starts even before it is detected (Trejo-Pech, Weldon and Gunderson, 2016).

1.1.2 Financial Distress Prediction

Identifying financial distress in listed companies is vital for bondholders and shareholders so that risks can be recognized ahead and investment reallocations can be carried out (Chen, Zhang and Zhang, 2013). Theoretically, financial distress can be in one of two forms i.e. mild financial distress entailing temporary cash flow difficulties and serious financial distress entailing the company filing for bankruptcy. A company in financial distress may experience a dynamic changing process which could be persistent if the abnormality in business operations continues (Sun, Li, Huang and He, 2014).

Another inescapable condition of distress is default involving the relationship between the debtor and the creditors. Technically, default is the violation of debt where the creditor has the right to take legal actions on the debtor. In reality, such default can be renegotiated and signals a company's deteriorating performance. Such violations rarely lead to formal defaults or bankruptcy proceedings. Filing bankruptcy is like a "death sentence" for a financially distressed company. The chances for a company to re-emerge after a bankruptcy filing is quite low (Dewaelheyns and Van Hulle, 2009). According to Altman (2006), law and procedures have been established to protect the society from the inherent cost of failures. Such protections include contractual rights, provision of orderly liquidation or unproductive assets and moratorium on certain claims. Managerial incompetence is the most pervasive reason for a company's distress. The cost of financial distress can be classified as either direct or indirect. Direct cost entails out-of-pocket expenses such as lawyers and

restructuring advisers whilst indirect cost entails unobservable opportunity costs like loss of customers, higher debt cost and loss of key employees.

Prior to 1966, the incident of bankruptcy rarely happened in large-asset sized companies. Rus and Abdullah (2005) found that size (total assets) is negatively significant for a financially distressed company where higher levels of total assets will lower the probability of going bankrupt. However, the trend changed in the late 1970s where some big companies started to lose their immunity with the appearance of several large bankruptcies. After that, company assets size was no longer significant as they found that even giant companies are vulnerable to bankruptcy.

Initially, “early warning” has been used by the stock exchanges to provide signals to investors about financially distressed companies. The “early warning” term originated from the military, but has been adopted in finance to notify investors about the unhealthy state of a certain firm. Moreover, “early warning” is important especially for corporate management (Khaliq et al., 2014; Kim and Upneja, 2014) because it gives space for the management to reorganize (Minanoa and Campa, 2014). Bankruptcy prediction foretells whether a company will go bankrupt based on the company’s performance (Cho, Hong and Ha, 2010; Tinoco and Wilson, 2013). Unfavorable financial condition is the prominent symptom before a company goes bankrupt which is demonstrated by a reduction in sales or revenue, increase in liabilities, decline in assets and inability to service debts. Bankruptcy prediction is important since the economy of a country particularly a small country, is vulnerable to financial crisis resulting from the failures of big organizations (Altman, 1984). Thus, the ability to recognize distressed firms in the early stages is crucial and significant to prevent unfavorable costs and crisis.

Various words have been used to describe bankruptcy such as “failure”, “insolvency”, “liquidation”, “loan default”, “credit risk”, “corporate distress” and “financial distress” (Altman, 2006). However, there is yet any precise definition for bankruptcy. Bankruptcy and financial distress are most commonly used because the root of bankruptcy is financial distress. Bankruptcy is a condition when a company is unable to service its debt obligation (Lee and Yeh, 2004). Beaver (1966) uses the word “failure” to define the inability of a firm to repay its financial obligations as they mature. As a result, the company is no longer capable of conducting economic activities (Honjo, 2000). Zmijewski (1984) claims that a company filing a petition for bankruptcy is a company facing financial distress. Characteristics of financially distressed companies that have been documented in previous studies include: 1) low cash flow without being insolvent and facing financial complications (Ding, Song, and Zen, 2008; Sun et al., 2014), 2) three consecutive years of negative net income (Youn and Gu, 2010), and 3) low equity per share (Sun and Li, 2012). Wu, Tzeng, Goo, and Fang, (2007) defined listed companies classified under the alter trading method

category in the Taiwan stock exchange and having a company's net worth below half of its capital stock (Lee and Yeh, 2004) as being under financial distress.

Poor operating performance contributes to financial distress and 31 percent of the companies completing leverage recapitalization subsequently experience financial distress (Denis and Denis, 1995). One of the initiatives taken to tackle this issue entails the sales of assets even at a low price. The financially distressed company's assets sales announcement poses cumulative effects that are economically quite large. Financially distressed companies experience negative abnormal returns surrounding the announcement.

Continuous reductions on net profit are a preliminary sign of financial distress since dividend payments and retained earnings are derived from it. If the company adopts a constant dividend growth model, the shrinking of dividend payment will give out negative signals and cause doubts on the company's financial performance. The shareholders of this kind of company are more prone to the dividend relevancy theory where they prefer the certainty of short term returns (dividend) rather than future or long term returns (capital gain).

Generally, bankruptcy commonly takes place following these four signs: 1) after liquidation, when the firm still cannot meet its outstanding debt obligation, 2) its creditors or company apply for bankruptcy petition, 3) companies are unable to satisfy the principal or interest scheduled repayment, and 4) the book net assets of the firm are negative.

Predicting financial distress in a timely and accurate manner has become a crucial issue for economic agents (banks, investors, firms, shareholders and auditors) for financial decision-making purposes. It helps fast decision-making, ensuring credit allocation, diminishing possible risks and encouraging significant future savings (Tsai and Wu, 2008). Moreover, companies can monitor their financial performance and identify internal problems to ensure the soundness of their businesses. Wrong decision-making may result in opportunity costs and contribute negative impacts on investor profitability.

Financial statements are extensively used in forecasting bankruptcy to predict whether a company is in financial distress or not (Fallahpour, Lakvan and Zadeh, 2017; Gogas, Papadimitriou and Agrapetidou, 2018). Due to their important role in decision making, various models have been developed to predict corporate bankruptcy (Anandarajan, Lee, and Anandarajan, 2001). However, most of the models cannot produce 100 percent accuracy due to misclassification errors that deteriorate the accuracies, efficiency and effectiveness of the model. This refers to the measurement error which happens when a subject is incorrectly classified

into a group in which the subject does not belong. Misclassification error is costly towards investors when an unhealthy firm is classified as healthy and opportunity slips when a healthy firm is classified as unhealthy. Thus, the accuracy, reliability and validity of bankruptcy prediction are vital in helping investors make decisions that are beneficial for them.

Bankruptcy prediction models have gone through extensive evolutions from the traditional statistical method (Altman, 1986; Beaver, 1966) to the artificial intelligent method (Gogas et al., 2018; Liang et al., 2018), from parametric to non-parametric models and from single classifier to hybrid and ensemble classifier (Sun et al., 2014). All of these advancements had helped to enhance the accuracy and reliability of bankruptcy prediction for real wold practice.

Aivazian and Zhou (2012) stated that filling bankruptcy petition helps companies to reorganize, improve operating cash flows by shedding assets significantly (financial distress companies tend to have more intangible assets), and cut levels of debt such as reducing interest expenses and boosting operating performances in the long run. Low profitability, less liquidity and small market value of equity make it easy for firms to default and lead to bankruptcy filing or reorganization through some private workout. The intention is to help rehabilitate economically viable firms in facing temporary difficulties.

All the negative impacts of financial distress can drive a company to engage in unethical behaviors such as falsifying its financial statement. Such unlawful act has been rampant in the corporate world for some time. It became a massive issue when several giant companies including Enron, Xerox and Worldcom were inflicted with this financial scandal. The drive to stay in the market is one of the strong reasons for the companies' engagement in financial information fraudulence (Rosner, 2003). The companies continued with their deceit until they cannot cover their financial difficulties anymore.

1.1.3 Financial information fraudulence

The activities of financial information fraudulence have been showing an upward trend in the past decade. The activities consist of the fabrication of assets, income, liabilities and losses where they no longer represent the true picture of the company. However, human beings and mistakes are inseparable whether intentionally or unintentionally. Spathis (2002) shed some light on the difference between mistakes and financial information fraudulence. He stated that financial information fraudulence is an intentional act, a scheme planned by the management to deceive stakeholders by producing fictitious documents to support the activities. Meanwhile, mistakes are unintentional errors during the

financial reporting process such as misstatements or omissions of disclosure. Sometimes, errors can simply be errors; however, an increase in errors would be doubtful and could be linked to financial information fraudulence (Flanagan et al., 2008). There are several explanations as to why companies engage in financial information fraudulence including to raise capital through public offerings, to get tax exemptions, and to cover default payments and stock overvaluation (Lau and Ooi, 2016; C. Spathis, Doumpos and Zopounidis, 2002; Spathis, 2002).

Misleading financial statements pose negative and significant consequences on the information user (Crawford and Weirich, 2011; Kirkos, Spathis, and Manolopoulos, 2007). Financial information fraudulence is defined as the deliberate misrepresentation of the firm's financial condition accomplished through the intentional misstatement or amounts omission or disclosures in the financial statements to deceive financial statement users. Therefore, the GAAP that is used in preparing financial statement is violated (Feng and Li, 2012). Engaging in fraudulent financial information helps companies to increase their stock price (Rosner, 2003). Accounting fraud could entail fraudulent reporting and/or assets misappropriation (Kotsiantis *et al*., 2010; Song, Lee and Cho, 2013). However, companies with better quality information disclosure are less likely to engage in financial statements fraud. Impressive sales growth and high stock returns do not always indicate a good sign (Goel and Thakor, 2003). If the accrual is high, it could be due to financial information fraudulence since accrual is commonly used for this illegal activity (Trejo-Pech et al., 2016).

Under the Association of Certified Fraud Examiners (ACFE) 2020 report, occupational fraud encompasses corruption, assets misappropriation and financial information fraudulence. There are 103 cases of fraud in Southern Asia and the median loss is up to USD117 thousand. The percentage of financial information fraudulence is 2 percent from the total occupational fraud. Even though 2 percent might seem small, when converted to actual number it is quite significant. For detail, 26 percent of the total victimized organizations are from public companies listed on the stock exchange and the estimated median loss is USD 150 thousand. In Malaysia, local companies that have engaged in financial information fraudulence are Transmile Group Berhad, Megan Media Holdings Berhad and Tat Sang Berhad.

Financial information fraudulence happens when the reporting method and estimation do not portray the company's current financial situation. Based on previous studies gathered by Greenfield, Norman and Wier (2008), it was concluded that two ways GAAP permits earnings management whereby: 1) the company is allowed to report income that will be received later, and 2) income smoothing is permissible in GAAP. Financial information fraudulence is one of the biggest offences and is against the listing requirement made by the Security

Exchange Commission (SEC). There is a rising demand for studies on financial information fraudulence in various spectrum since the dawn of the millennium (Ardekani et al., 2012). Two types of financial information fraudulence are being practiced so far. One is specifically through the misappropriation of assets and the other is through financial reporting as a whole (Dalnial, Kamaluddin, Sanusi, and Khairuddin, 2014). For fraudulence in financial reporting, Flanagan et al. (2008) observed that there are three major purposes involved namely revenue recognition, cost and expenses, and restructuring assets and inventory.

There are four tools used by managers to manipulate financial statements namely: 1) discretionary accrual and liabilities, 2) revenue recognition, 3) generous reserve accounting and excessive provision, and 4) intentional minor breaches of financial reporting standards (Ardekani et al., 2012).

Financial information fraudulent companies manipulate their production cost (real earnings) for two years before the fraud event and manipulate cash flow operations (accrual) prior to the fraud event (Md Nasir, Ali, Razzaque and Ahmed, 2018). Fraudsters prefer to manipulate earnings using accruals instead of real earnings due to the substitute nature of two forms of earnings management. The earnings quality for fraudulent companies is relatively low compared to the non-fraudulent companies.

It takes three to six years for authorities to detect financial information fraudulent companies (Omar et al., 2017). At the time of being caught, all related evidence have either been removed or distorted. This motivates previous researches to develop models to detect financial information as early as possible with some combination of available data that is easy to operate rather than waiting for the security exchange commission to do an investigation. From the perspective of the management, financial information fraudulence acts as the first layer of defense before the illegal activity becomes public.

During economic crises, companies have many incentives to minimize the negative effect of economic downturn in order to survive. Practically, earning management helps to clean the negative “signal” of financial distress (Jaggi and Lee, 2002; Sweeney, 1994) by sacrificing the integrity of financial reports (Kotsiantis, Kanellopoulos, and Tampakas, 2010; Minanoa and Campa, 2014). Fraudulence in financial information will hinder financial distress prediction performance. Manipulation activity is a deviation from normal operational practices, motivated by the top management’s desire to mislead the information users into believing that certain financial objectives have been met in the operations normal course (Johnson, Fleischman, Valentine, and Walker, 2012)

According to Minanoa and Campa (2014), firms that received “liquidation” decisions are more likely to be involved in upward earning management compared to firms that received “reorganise” decision and that this action leads to misclassification error. Moreover, companies that have weak economic and financial performance will use pervasive earning management techniques in an attempt to postpone their actual failure. Fraudulence or manipulation in financial statements makes the bankruptcy prediction inaccurate and invalid. Manipulation or fraudulence in financial statements can make the classifier to wrongly classify the companies due to the accounting adjustments made by the management to mask the company’s financial condition.

Battiston et al. (2007) mentioned that the unexpected shock to revenue or cost that lowers down the company’s average return is one example that triggers financial distress. When the company fails to fulfill the debt covenant, it may hamper supplier solvency and affect the upper level of its own supplier. It is like a domino effect where it will jeopardize the chain of the company where the repercussions are systematic.

Based on Beasley et al. (2010), financial information fraudulent companies experience abnormal stock price decline after the announcement. The tendency of these companies to face bankruptcy and delisting is much more higher compared to non-fraudulent companies. However, a company that receives the chance to restructure will take the opportunity to change its management, but additional tools is demanded to inspect the new management integrity. There is no certain size and industry for companies to commit fraud.

The error cost of each type of misclassification is asymmetric and varies for different stakeholder groups. The opportunity cost of misclassifying financially distressed companies as healthy (false positive) is an unnecessary audit cost. The ratios between loss in stock value in financial information fraudulence and financial distress is 20:1 (Abbasi, Albrecht, Vance and Hansen, 2012). The cost of failing to detect financial information fraudulence is higher compared to the cost of false positive. This proves that early detection of financial information fraudulence is vital in avoiding significant financial losses.

1. 2 Problem Statement

Many papers have been written to discuss and analyze financial distress prediction involving many countries around the globe (Becchetti and Sierra, 2003; Etemadi, Anvary Rostamy and Dehkordi, 2009; Saden and Prihatiningtias, 2015; Tsai and Wu, 2008; Van Gestel, Baesens and Martens, 2010) and used distressed companies that have been identified earlier by the Security Exchange

Commission as samples. Despite this, none of the financial distress models correctly identified the entire sample. An abundance of procedures have been used to identify financially distressed companies; in the context of Malaysia, these companies are put under PN17 (Alifiah, Salamudin and Ahmad, 2013). Regardless of the evolution of financial distress prediction, there is one loop that has been left out in financial distress studies namely the misclassification error which often appears in a majority of financial distress prediction studies.

Previous literatures have extensively discussed the best model to predict financial distress. It all started with the traditional application of financial ratios done by Beaver (1966) and improved by Altman (1968) right to the modern application that used artificial intelligence (Gogas et al., 2018; Youn and Gu, 2010) for prediction. Many initiatives have been taken to improve classification accuracy and one of it is cross validation (Thai et al., 2014; Youn and Gu, 2010). This is to validate the developed classifier accuracy when testing new data. However, all this effort will be in vain if the data provided does not reflect the true picture of the company. Financial information fraudulence is one of the factors that deteriorate financial distress prediction accuracy.

During economic crisis, the trend of financial distress and bankrupt companies is inclining (Kamaluddin, Ishak, and Mohammed, 2019; Pramudena, 2017). It has serious implications on shareholders and poses a negative social stigma. To fix the internal problems immediately and to ensure the soundness of the business. Minanoa and Campa (2014) claimed that investors' confidence in financial reporting was shaken after the revelation of several multinational companies' scandal in financial statements integrity. They found that financially distressed companies that received "liquidation" decision are more likely to manipulate their sales and production cost compared to bankrupt companies that received "reorganise" decision and healthy ones. It can be detected through the historical data of the company's accounting statements in subsequent years (Cecchini, Aytug, Koehler, and Pathak, 2010).

In a layman terms, fraud can be defined as any intentional or deliberate act to deceive or use other unfair means. It can be committed either internally and externally. The company's management believes that fraud provides a shortcut towards achieving short term targets during tough economic conditions. Lenient and tolerant attitudes towards fraud would motivate managers to be involved in it rather than take proactive actions in solving various issues. Protracted fraud activities would lead to serious and worsening economic conditions and pose a severe threat in the future such as losing investors' trust in the government and regulators.

Agrawal and Chatterjee (2015) result indicated that the engagement in financial information fraudulence among low distressed companies are high compared to that of high distressed company and it is statistically significant at a 1 percent level. The possible reason of the result offered by the authors is that the managers of low distressed firms engage in financial information fraudulence because they want to reduce threats such as bonus cutting. In contrast, high distressed companies prefer to report their true financial condition for debt convenient renegotiation.

Hasan, Omar, Barnes and Handley Schachler (2017) conducted a cross-country study on financial information fraudulence among several Asian countries (Japan, Singapore, Malaysia, Indonesia, Thailand, Hong Kong and China) and found that 34 percent of the samples are involved in financial information fraudulence. As much as 72 percent of the financial reports were manipulated. According to their study, 17 percent out of the total Malaysian sample and 38 percent out of the total Singapore sample engaged in financial information fraudulence. They concluded that the difference between the countries is statistically significant at a 5 percent level.

During the scandal period[6], the investment of peer companies in fraudulent earning overstatement company increased (Hasan et al., 2017). Thus, to enhance financial information credibility, the auditor needs to provide independent verification that it is free from any material misstatements (Hope et al., 2011) and to ensure that the reported amounts accurately reflect the actual business activities. Anastasopoulos and Anastasopoulos (2012) concluded that the auditor is partially informed about the auditee firm and comprehensive audit is necessary to guarantee the quality of the audit. Their results comply with the International Federation of Accountants Code of Ethics for Professional Accountants that requires the key audit partner to be rotated after a predefined period. The auditor rotation is to provide a reasonable assurance that the financial reports are free from material misstatements.

Income increasing had been widely used as an indicator to detect earning manipulation and managers of failing companies optimistically expect the financial crisis to be temporary (Rosner, 2003). Managers are of the view that income-increasing earning management is acceptable in order to conceal the deteriorating financial conditions until their companies' financial condition improves. However, many fraudulent companies failed to manage the financial distress and starts reporting the true condition and end up as bankrupt. The

[6] Denote the period of fraudulent financial reporting prior to detection (Beatty *et al*., 2013).

corporate event for financial information fraudulence announcement reduces the company's stock price by 8% on average (Ak, Dechow, Sun, and Wang, 2013). "Needing cash" and having a high growth potential is one of the main reasons these corporate events (downsizing, bankruptcy and financial distress) happened.

Rosner (2003) concluded that failing companies manipulate earnings in pre-bankruptcy non-going-concern years. He also stated that during non-going concern year, non-stressed bankrupt companies resemble SEC fraud companies. The result showed that during going concern years, earning manipulation is lower with decreased income.

Franceschetti and Koschtial (2013) argue on the Deloitte Forensic Centre Report that companies filing for bankruptcy protection are three times more likely to engage in financial statement fraud than non-bankrupt companies and face enforcement actions by the Securities and Exchange Commission relating to fraud behavior. The study found that bankrupt companies reported 1.6 times red flags than non-bankrupt companies. Approaching bankruptcy, bankrupt companies present less red flags than the non-bankrupt companies.

Prior studies have proven that financial information fraudulence in distressed companies is still an on-going phenomenon and enhancements have been made to conceal it. Even companies with low distress levels are involved in financial information fraudulence for their personal benefit. This shows that financial manipulation techniques have evolved. Even though the issue has been discussed for decades, there is no indication that it will end anytime soon. Sophisticated accounting techniques make it even harder to be detected. Therefore, it is vital to identify fraudulent activities in the main market since most early studies had used distressed and fraudulent companies identified by the Security Exchange Commission. A majority of investors use financial and market data to make investment decisions; some studies had proven that financial manipulation starts in the market. There is a gap between the sample used in this study and in prior studies; this current study uses consumer product companies that are listed in the main market as the sample for detecting fraudulent activities.

Previous studies had rarely highlighted the significance of financial information reliability in determining bankruptcy prediction. Even though accounting and market data had been discussed comprehensively in previous research in terms of which one is providing more explanatory power for bankruptcy prediction, it will become pointless if the figures in the financial statements are fictitious. Therefore, the reliability of the accounting data itself should be taken into consideration in order to capture the condition of the company without

questioning the integrity of the financial statements. Although distressed companies attempted financial information fraudulence, when compared to healthy companies, their weaker position is evident. Perhaps healthy companies conceal their financial information fraudulence more successfully than distressed companies (Beaver, 1966)

Financial statement as a variable in predicting financial information fraudulence remains strong overtime unless there is an intervention of discretion in the financial report itself (Beaver et al., 2005). The adage of being too big to fail (Altman, 1968) is not relevant anymore as big companies also have the tendency to go bankrupt. Very limited studies had been conducted on financial information fraudulence among companies listed on the main board, being identified as distressed by the Altman z-score. This overlooked issue might explain the misclassification error. This issue had driven this study to shed some light regarding this matter, and apply it to different population from what had been done in prior studies.

In predicting bankruptcy resolution, Barniv, Agarwal, and Leach (2002) found that liquidated companies are significantly involved in financial reporting fraud compared to emerging and acquisition companies. This is to obscure financial distress because liquidated companies tend to have more secure debts. Violation on debt covenant could increase the default premium (Besancenot and Vranceanu, 2009). The study failed to provide 100 percent accuracy in classifying final bankruptcy resolution which might be due to fraud in financial reporting. Bakar et al. (2012) proposed three models for predicting bankruptcy in the context of Malaysia he suggested that further research on the determinant of misclassification type 1 and type 2 errors seem necessary since two of his model had failed to provide 100 percent bankruptcy prediction accuracy.

This study attempts to shade light on misclassification errors which are rarely discussed in previous literatures particularly their effect on prediction accuracy. Most researchers had focused on finding the best model classifier and attaining the highest accuracy in prediction, but none have highlighted factors that jeopardize prediction accuracy and the determinants of misclassification errors. This study proposes that financial information fraudulence is one of the determinants of misclassification. Financial information fraudulence is related to misclassification errors as there is a tendency that a company would fall into wrongful classifications due to wrong financial data. Financial ratios are the essential components in bankruptcy prediction.

1. 3 Research Objectives

Based on the previous studies, it is basically presumed that financially distressed companies manipulate their financial information to conceal their bad financial condition. It is expected to involve upward earnings rather than downward earnings management in order to strike certain particular objectives. This action will jeopardize the accuracy of financial distress prediction and increase the misclassification errors. Therefore, the following research objectives are established:

RO1: To investigate the financial information fraudulence practice among financially distressed companies.

RO2: To investigate the effect of financial information fraudulent on bankruptcy prediction accuracy.

RO3: To examine the effect of financial information fraudulence towards misclassification errors.

In accordance with the above objectives, below are the hypotheses that have been developed and will be tested in this study in order to answer the research questions.

Hypotheses

$H_{0,1}$: Companies which are facing financial distress do not practice fraudulence in their financial statements.

$H_{1,1}$: Companies which are facing financial distress practice fraudulence in their financial statements.

$H_{0,2}$: Financial information fraudulence do not deteriorates bankruptcy prediction accuracy.

$H_{1,2}$: Financial information fraudulence deteriorates bankruptcy prediction accuracy.

$H_{0,3}$: Financial information fraudulence do not increases the misclassification errors.

$H_{1,3}$: Financial information fraudulence increases the misclassification errors.

1.4 Research Questions

Below are the research questions for this study as developed from the problem statement:

RQ1: Do financially distressed companies practice financial information fraudulence?

RQ2: Does financial information fraudulence affect the accuracy of bankruptcy prediction?

RQ3: Is financial information fraudulence one of the determinants of misclassification errors?

1.5 Conceptual Framework

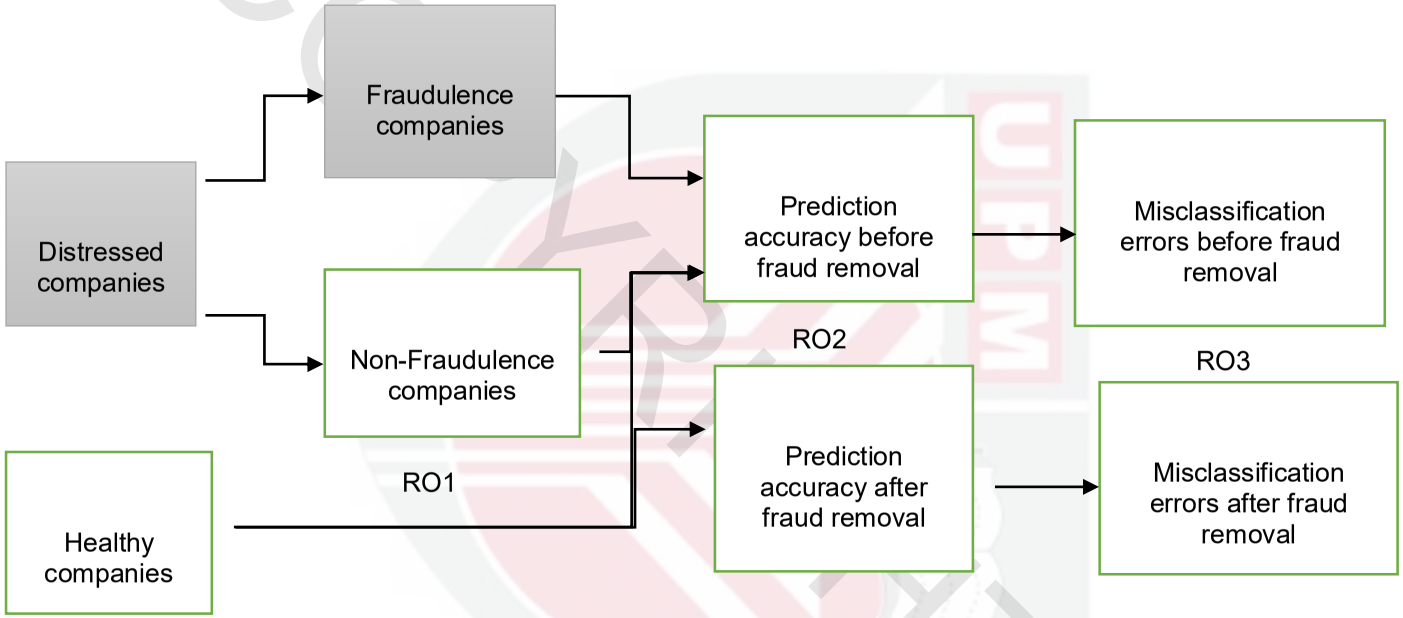

Figure 1.2: Conceptual framework

Figure 1.2 presents the conceptual framework for this study. According to the above framework, financially distressed and healthy consumer product companies for Singapore and Malaysia will be separated using the Altman (1968) Z-score. This is the most commonly used method in previous studies due to its simplicity, less demanding data and accounting information calculation (ratios) (Chiaramonte et al., 2015; Lepetit and Strobel, 2015). It has been widely used as a benchmark for measuring financial distress in a company and for predicting corporate default (Joshi, 2019; Agrawal and Chatterjee, 2015; Spathis, 2002). The difference in the z-score value between a healthy and a distressed company would be significant. To test objective one, the M-score introduced by Beneish (1999) is employed to identify financially distressed companies that engage in financial information fraudulence. This model is used to find anomalies in company financial statements which could translate into fraud (Abdul Aris, Othman, Mohd Arif, Abdul Malek and Omar, 2013; Taherinia and Talebi, 2019). According to Arshad, Iqbal and Omar (2015), 83.3 percent of distressed companies are engaged in financial information fraudulence. They employed the Beneish M-score to identify fraudulent companies in their study. There are several theories associated with this unethical activity. Rezaee (2005) used the CRIME fraud scheme to explain the motivations behind such scandal and stated that the biggest incentives would include bonus, lack of monitoring and the intent to remain in the market. Meanwhile, Perols and Lougee (2011) found that meeting or beating analysis forecast is one of the reasons why companies engage in financial information fraudulence. Jiraporn, Miller, Yoon and Kim, (2008) used the agency theory as a tool to distinguish between opportunistic and beneficial behavior with regards to earnings manipulation. They suggest that earnings management, on average, is not opportunistic and perhaps even beneficial. They concluded that earning management does not appear in firms with high agency costs but is associated with firm value. Therefore, maximum shareholder wealth is a catalyst for a company to engage in financial information fraudulence. On the bigger spectrum, this intention will pose a severe negative impact on shareholders after disclosure.

Financially distressed companies are likely to manipulate their financial information (Minanoa and Campa, 2014). This will downgrade prediction accuracies due to the unreliability of the accounting data and render the results to become inaccurate and biased. If accounting-based variables are likely to be distorted in some way, their usefulness for financial distress prediction decreases (Ak, Dechow, Sun and Wang, 2013). In the context of Malaysian consumer product companies, Alifiah et al. (2013) in their cross validation study found that prediction accuracy is between 50 to 70 percent for five years before the distress event. Many studies had utilized Artificial Neural Network models to find the most powerful statistical classification techniques and to compare the models' performance in terms of accuracy (Chaudhuri and De, 2011; Chen and Du, 2009; Hu, 2009; Liou, 2008; Min, Lee and Han, 2006). However, none of the Artificial Neural Network models can precisely classify the sampled companies and that there are always several companies that had been misclassified thus

contributing to misclassification errors. Therefore, this argument will be used to test the impact of financial information fraudulence on the prediction of distressed companies. Specifically, it will be used to test the hypotheses in objectives 2 and 3 i.e. to investigate prediction accuracy and misclassification errors. To achieve objectives 2 and 3, this study uses logistic regression to access the discrepancy between companies that engage and does not engage in financial information fraudulence. Financial information fraudulence is used as the moderating variable in the study sample. This is to see if there is any improvement in financial distress prediction and reduction in misclassification error by taking financial information fraudulent companies into consideration. Therefore, the sample is run twice: the first round incorporates the financial information fraudulent companies whilst in the second round the companies are removed from the sample. By doing this, it is easier to observe the changes in prediction accuracy and misclassification errors especially type one error whereby the distressed companies are misclassified as healthy companies. The opportunity cost for type one error is more severe than for type two error as the investor misses the chance to invest in a healthy company.

1. 6 Significance of the Study

This study contributes to the existing literature on financial distress by examining the impact of financial information fraudulence on prediction accuracy and misclassification error. Prior studies often emphasized on the accuracies of various models in predicting bankruptcy in order to find which model is more superior. Many enhancements have been done due to improvements in the existing models to make the prediction more accurate and reliable. However, the significance of the reliability of financial statement is often neglected in past studies in predicting bankruptcy accuracies. This study tries to highlight the importance of financial information integrity and quality before bankruptcy prediction can be done. It also tries to add one more step before performing financial distress prediction which entails investigating the trustworthiness of financial information provided by companies. The process can be called as “fraudulence in financial statement detection”. This mechanism is vital since predictions of bankruptcy are based on financial ratios that have been calculated from financial statements.

The definition of fraud is any crime committed by a perpetrator that uses deception in order to gain something as the element of opportunity, pressure and rationalization (Abdul Aris, Othman, Mohd Arif, Abdul Malek, and Omar, 2013). This is the essence why fraud detection and prevention need to be done first before bankruptcy prediction can take place. Enhancements in financial statements fraudulent detection will provide large-scale economic benefits especially for investors, audit firms (Cecchini et al., 2010) and government regulators (Abbasi et al., 2012). Several literatures regarding financial

information fraudulence have drawn intention to study this matter especially in the Southeast Asia perspective.

Various characteristics to denote bankrupt companies had been used in previous studies including companies that had received bankruptcy notices from legal courts (R. Chen, Guo, and Lin, 2010; Minanoa and Campa, 2014), companies that had actually gone bankrupt (Jo and Han, 1996) or companies which had filed for bankruptcy (Altman, G.Haldeman, and Narayanan, 1977; Min, Lee, and Han, 2006; Zhang, Wang, and Ji, 2013). This current study is different in that it uses the Altman Z-score model to identify financially distressed and healthy companies. The usage of the Z-score in finding healthy companies to be matched with financially distressed companies is undeniable. However, using the Altman Z-score to identify financially distressed companies is unprecedented. Earlier studies mostly harnessed distressed companies from established sources which have been validated by authorities like the SEC.

Companies that are being audited by a brand name audit company is less likely to engage in accounting fraud due to the consistent supply of higher-quality external monitoring (Lennox and Pittman, 2010). Perols and Lougee (2011) found that companies engage in financial information fraudulence to meet or beat analysis forecast. They will continue engaging in such unethical behavior when there is no evident of prior earning management (Lau and Ooi, 2016; Perols and Lougee, 2011). These companies engage in fraud to avoid breaching debt covenants and to raise new capital (Lau and Ooi, 2016). According to Md Nasir et al. (2018), the financial information fraudulence activity is usually done prior to the fraud event. There is an upward trend in the engagement of large companies in financial information fraudulence following a financial crisis (Lennox and Pittman, 2010) which has not yet been detected or publicly revealed (Lau and Ooi, 2016). In order to contain this phenomenon, the Beneish model is found to be significantly effective in detecting the existence of fraudulent events as well as the magnitude of the fraud (Jones, Krishnan and Melendrez, 2008) despite its simplicity and low-cost operation. Many enforcement actions have been taken against publicly traded companies by the security exchange commission for alleged financial statement fraudulence (Rezaee, 2005). A majority of researchers had used the fraudulent companies' data as their sample. This current study is the first to utilize the Beneish model to identify financial information fraudulence in distressed companies that are still listed on the main market without being sanctioned by the security exchange commission. Since the Beneish model can detect the existence of fraud activities (Jones, Krishnan and Melendrez, 2008), this current study intends to use this model for the early detection and prevention of financial information fraudulence. This is consistent with the suggestion of Lau and Ooi (2016) who stated that such illegal activities have been ongoing in the main market without being detected (Perols and Lougee, 2011)

The findings of this study will benefit investors as this study fully utilizes the simple and proven method agreed by previous studies in assisting early detection that could save the investors' investment. This is beneficial for investors who are interested in the stock market but are skeptical about the companies' condition due to the basic knowledge on investment discipline. In today's challenging era, the society is left with no choice but to find extra income to sustain their living. Instead of saving their money in banks and waiting for interest returns, they could invest in the stock market which provides more returns than banks. Thus, simple methods such as the Altman Z-score and Beneish M-score could be used by investors who are new to the stock market to identify financial distress and financial information fraudulence, respectively. This is consistent with all national aims of anchoring the growth of people including alleviating the people's economy and wellbeing. In improving the model after treating the sample from financial information fraudulence, the logistic model will be used for financial distress prediction. These findings aim to enrich the current literature as well as to contribute to the elaboration of efficient prevention and recovery strategies.

The next benefit is for policymakers and regulators in charge of monitoring companies to ensure that they provide adequate disclosures and are free from fabricating accounting information in their annual reports. The auditor is the person accountable for every audited report produced and he must conduct it in a transparent and diligent manner. Negligence within the auditor's knowledge will come with a heavy price; in the Enron scandal, the company's auditor Arthur Andersen had to pay a huge penalty for his recklessness (Lennox and Pittman, 2010). Therefore, this current study provides a preliminary mechanism for detecting financial information fraudulence in the early stages before extensive investigations can be done. Apart from that, the Security Exchange Commission could use this study as a platform to test or enhance the predictability of the Beneish model and Altman model in detecting financial information fraudulence and financial distress, respectively. Modifying the model according to the nature of the business could help in the identification process. It can also be used as a signal and notification to the Security Exchange Commission for further examination.

Our findings can also help academics to identify the determinants of misclassification errors. This contributes to the literatures on financial distress prediction accuracy. The level of pervasiveness of financial information fraudulence in Southeast Asia may assist investors and analysts to look for early warning signs of financial statement fraud activity. Other financial statement users such as financial institutions and creditors may benefit from this study because they rely on financial statement information in their decision-making processes. Therefore, this study could supply a preliminary warning for financial statement users to do investigation if before investment been made.

1.7 Organization of the Study

This study consists of five chapters. Chapter one presents the background of the study, the agency theory, problem statement, research objective and hypotheses, research questions, conceptual framework and significance of the study. Chapter Two encompasses the review of past literatures that are related to financial information fraudulence and financial distressed prediction. All the details of the independent variables used in this study will be discussed extensively in this chapter. Next is Chapter Three which provides details of the techniques used to investigate the research issue in order to answer all the research questions mentioned in Chapter One. Chapter Four presents all the results and relevant discussions, and concludes whether the objectives set have been achieved. Finally, Chapter Five presents the summary, conclusion and recommendations. The first section of Chapter Five will discuss the summary and conclusion based on the results in Chapter Four, followed by policy implications and recommendations for the stakeholders, relevant agencies and body of knowledge, and finally suggestions for future research.

REFERENCES

Abbadi, S. S., Hijazi, Q. F., and Al-rahahleh, A. S. (2016). Corporate Governance Quality and Earnings Management : Evidence from Jordan Corporate. *Australasian Accounting, Business and Finance Journal*, *10*(2), 54–75.

Abbasi, A., Albrecht, C., Vance, A., and Hansen, J. (2012). Meta Fraud: A Meta-Learning framework for detecting financial fraud. *MIS Quarterly*, *36*(4), 1293–1327.

Abdul Aris, N., Othman, R., Mohd Arif, S. M., Abdul Malek, M. A., and Omar, N. (2013). Fraud Detection : Benford ' s Law vs Beneish Model. In *IEEE Symposium in Humanities, Science and Engineering Research (SHUSER)* 726–731.

Abdul Hamid, F. Z., Shafie, R., Othman, Z., Wan Hussin, W. N., and Fadzil, F. H. (2013). Cooking the Books : The Case of Malaysian Listed Companies. *International Journal of Business and Social Science*, *4*(13), 179–186.

Abdul Rahman, R., Hj Omar, N., Rahman, A., and Muda, R. (2018). Islamic ethical values of corporate top leadership and real earnings management. *International Journal of Law and Management*, *60*(3), 869–884.

Abdullah, N. A. H., Halim, A., Ahmad, H., and Rus, R. M. (2008). Predicting Corporate Failure of Malaysia?s Listed Companies: Comparing Multiple Discriminant Analysis, Logistic Regression and the Hazard Model. *International Research Jou*rnal of Finance and Economics, 15(2008), 201–217.

Abdullah, S. N., Yusof, N. Z. M., and Nor, M. N. M. (2010). Financial restatements and corporate governance among Malaysian listed companies. Managerial Auditing Journal, 25(6), 526–552.

Wan Abdullah, W. R. (2012). Earnings management: Evidence concerning Shariah approved companies in Malaysia (Doctoral dissertation, Lincoln University).

Abellán, J., and Mantas, C. J. (2014). Improving experimental studies about ensembles of classifiers for bankruptcy prediction and credit scoring. *Expert Systems with Applications*, *41*(8), 3825–3830.

ACFE. (2014). Report to the Nations on Occupational Fraud and Abuse

ACFE. (2020). Report to the Nations on Occupational Fraud and Abuse

Agarwal, V., and Taffler, R. (2008). Comparing the performance of market-based and accounting-based bankruptcy prediction models. *Journal of Banking and Finance*, *32*(8), 1541–1551.

Agrawal, A., and 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.

Agrawal, K., and Chatterjee, C. (2015). Earnings Management and Financial Distress : Evidence from India. *Global Business Review*, *16*(5), 140–154.

Aivazian, V. A., and Zhou, S. (2012). Is chapter 11 efficient?. Financial Management, 41(1), 229-253.

Ak, B. K., Dechow, P. M., Sun, Y., and Wang, a. Y. (2013). The use of financial ratio models to help investors predict and interpret significant corporate events. *Australian Journal of Management*, *38*(3), 553–598.

Albrecht, W. S., Albrecht, C., and Albrecht, C. C. (2008). Current trends in fraud and its detection. *Information Security Journal: A Global Perspective*, *17*(1), 2–12.

Albrecht, W. S., Hill, N. E. D. C., and Albrecht, C. C. (2006). The ethics development model applied to declining ethics in accounting. *Australian Accounting Review*, *16*(1), 30–40.

Alexeev, M., and Kim, J. (2012). Bankruptcy and institutions. *Economics Letters*, *117*(3), 676–678.

Alifiah, M. N., Salamudin, N., and Ahmad, I. (2013). Prediction of financial distress companies in the consumer products sector in Malaysia. Jurnal Teknologi, 64(1) 85–91.

Altman, E. I. (1968). The Prediction of Corporate Bankruptcy. *The Journal of Finance*, *XXIII*(4), 589–609.

Altman, E. I. (1983). Exploring the Road to Bankruptcy. *Journal of Business Strategy*, *4*(2), 36–41.

Altman, E. I. (1984). The success of business failure prediction models an international survey. *Journal of Banking and Finance*, *8 (2)*, 171–198.

Altman, E. I. (2013). Predicting financial distress of companies: revisiting the Z-score and ZETA® models. In Handbook of research methods and applications in empirical finance, Edward Elgar Publishing.

Altman, E. I. (2006). *Corporate Financial Distress and Bankruptcy,* 3rd Ed. New York, NY: wiley.

Altman, E. I., G.Haldeman, R., and Narayanan, P. (1977). ZETA ANALYSIS: A New Model To Identify Bankruptcy Risk Corporations. *Journal of Banking and Finance 1(1)*, 29–54.

Altman, E. I., Marco, G., and Varetto, F. (1994). Corporate distress diagnosis: Comparisons using linear discriminant analysis and neural networks (the Italian experience). *Journal of Banking and Finance*, *18*(3), 505–529.

Amershi, A. H., and Feroz, E. H. (2000). The occurrence of Finobacci numbers in time series of financial accounting ratios: Anomalies or indicators of firm survival, bankruptcy and fraud? An exploratory study. *Managerial Finance*, *26*(11), 5–20.

Anandarajan, M., Lee, P., and Anandarajan, A. (2001). Bankruptcy Prediction Of Financially Stressed Firms: An Examination Of The Predictive Accuracy Of Artificial Neural Networks. *International Journal of Intelligent Systems in Accounting, Finance and Management*, *10*(2), 69–81.

Anastasopoulos, N. P., and Anastasopoulos, M. P. (2012). The Evolutionary Dynamics of Audit. *European Journal of Operational Research*, *216*(2), 469–476.

Anderson, H. (1997). Insolvency and Fraud. *International Insolvency Review*, *6*, 1–25.

Andrés, J. De, Landajo, M., and Lorca, P. (2012). Bankruptcy Prediction Models Based On Multinorm Analysis: An Alternative To Accounting Ratios. *Knowledge-Based Systems*, *30*, 67–77.

Anjum, S. (2012). Business bankruptcy prediction models : A significant study of the Altman ' s Z-score model. *Asian Journal of Management Research*, *3*(1), 212–219.

Ardekani, A. M., Younesi, N., and Hashemijoo, M. (2012). Acquisition, Earnings Management and Firm's Performance: Evidence from Malaysia. *Journal of Business Studies Quarterly*, *4*(1), 91–110.

Arman, M., and Sharmin, S. (2019). Likelihood of a Company ' s Manipulation of Its Financial Statement : An Empirical Analysis Using Beneish M-Score Model In *International Conference on Management and Information Systems* 29, 117-125.

Arshad, R., Iqbal, S. M., and Omar, N. (2015). Prediction of Business Failure and Fraudulent Financial Reporting: Evidence from Malaysia. *Indian Journal of Corporate Governance*, *8*(1), 34–53.

Bae, J. K. (2012). Predicting financial distress of the South Korean manufacturing industries. *Expert Systems with Applications*, *39*(10), 9159–9165.

Bakar, S., Kiong, I. T. W., and Nassir, A. M. (2012). Examining and Validating a Bankruptcy Prediction Models in Malaysia. In *Statistics in Science, Business, and Engineering (ICSSBE)* 220–224.

Bakri, H. H. M., Mohamed, N., and Said, J. (2017). Mitigating asset misappropriation through integrity and fraud risk elements: Evidence emerging economies. *Journal of Financial Crime*, *24*(2), 242–255.

Balcaen, S., and Ooghe, H. (2006). 35 Years of Studies on Business Failure: an Overview of the Classic Statistical Methodologies and Their Related Problems. *The British Accounting Review*, *38*(1), 63–93.

Barniv, R., Agarwal, A., and Leach, R. (2002). Predicting Bankruptcy Resolution. *Journal of Business Finance and Accounting, 29(3-4), 497–5*18.

Battiston, S., Delli Gatti, D., Gallegati, M., Greenwald, B., and Stiglitz, J. E. (2007). Credit chains and bankruptcy propagation in production networks. *Journal of Economic Dynamics and Control*, *31*(6), 2061–2084.

Beasley, M. S., Carcello, J. V, and Hermanson, D. R. (2001). Financial Reporting Fraud: Could It Happen to You? *The Journal of Corporate Accounting and Finance*, 12(4), 3–9.

Beasley, M. S., J. V. Carcello, D. R. Hermanson, and T. L. Neal. (2010), Fraudulent Financial Reporting: 1998–2007. An Analysis of US Public Companies (Committee of Sponsoring Organizations of the Treadway Commission, Durham, North Carolina), [Internet document] (Committee of Sponsoring Organizations of the Treadway Commission) [created May 2010], available from: http://www.coso.org/.

Beattie, V., Brown, S., Ewers, D., John, B., Manson, S., Thomas, D., and Turner, M. (1994). Extraordinary items and income smoothing: a positive accounting approach. *Journal of Business Finance and Accounting*, *21*(6), 791–811.

Beatty, A., Liao, S., and Jiewei, J. (2013). The spillover effect of fraudulent financial reporting on peer. *Journal of Accounting and Economics*, *55*(2–3), 183–205.

Beaver, W. H. (1966). Financial Ratios as Predictors. *Journal of Accounting Research*, *4*, 71–111.

Beaver, W. H., Correia, M., and Mcnichols, M. F. (2012). Do differences in financial reporting attributes impair the predictive ability of financial ratios for bankruptcy ? *Review of Accounting Studies*, *17*(4), 969–1010.

Beaver, W. H., McNichols, M. F., and Rhie, J.-W. (2005). Have Financial Statements Become Less Informative? Evidence from the Ability of Financial Ratios to Predict Bankruptcy. *Review of Accounting Studies*, *10*(1), 93–122.

Becchetti, L., and Sierra, J. (2003). Bankruptcy risk and productive efficiency in manufacturing firms. *Journal of Banking and Finance*, *27*(11), 2099–2120.

Beneish, M. D. (1999). The Detection of Earnings Manipulation. *Financial Analysts Journal*, *55*(5), 24–36.

Beneish, M. D., Lee, C. M. C., and Nichols, D. C. (2012). Fraud Detection and Expected Returns. *SSRN Working Paper*, 1–52.

Besancenot, D., and Vranceanu, R. (2009). Strategic managerial dishonesty and financial distress. *Research in Economics*, *63*(1), 11–21.

Brown, K., Elayan, F. A., Li, J., and Liu, Z. (2018). Comparing the financial reporting quality of Chinese and US public firms. *China Finance Review International*, *8*(4), 399–424.

Brown, S., Lo, K., and Lys, T. (1999). Use of R2 in accounting research: measuring changes in value relevance over the last four decades. *Journal of Accounting and Economics*, *28*(2), 83–115.

Burgstahler, D., and Dichev, I. (1997). Earnings management to avoid earnings decreases and losses. *Journal of Accounting and Economics*, *24*(1), 99–126.

Bushman, R. M., and Smith, A. J. (2001). Financial accounting information and corporate governance. *Journal of Accounting and Economics*, *32*(1–3), 237–333.

Carpenter, T. D., and Reimers, J. L. (2005). Unethical and fraudulent financial reporting : Applying the theory of planned behavior. *Journal of Business Ethics*, *60 (2)*, 115–129.

Cecchini, M., Aytug, H., Koehler, G. J., and Pathak, P. (2010). Detecting Management Fraud in Public Companies. *Management Science*, *56*(7), 1146–1160.

Charalambakis, E. C. (2015). On the prediction of corporate financial distress in the light of the financial crisis: Empirical evidence from Greek listed firms. *International Journal of the Economics of Business*, 22(3), 407-428.

Charitou, A., Lambertides, N., and Trigeorgis, L. (2007). Earnings behaviour of financially distressed firms: The role of institutional ownership. *Abacus*, *43*(3), 271–296.

Charitou, A., Neophytou, E., and Charalambous, C. (2004). Predicting corporate failure: empirical evidence for the UK. *European Accounting Review*, *13*(3), 465–497.

Chaudhuri, A., and De, K. (2011). Fuzzy Support Vector Machine for bankruptcy prediction. *Applied Soft Computing*, *11*(2), 2472–2486.

Chen, M. Y. (2011). Predicting corporate financial distress based on integration of decision tree classification and logistic regression. *Expert Systems with Applications*, *38*(9), 11261–11272.

Chen, R., Guo, R.-J., and Lin, M. (2010). Self-Selectivity in firm's decision to withdraw IPO: Bayesian inference for hazard odels of bankruptcy with feedback. *Journal of the American Statistical Association*, *105*(492), 1297–1309.

Chen, W.-S., and Du, Y.-K. (2009). Using neural networks and data mining techniques for the financial distress prediction model. *Expert Systems with Applications*, *36*(2), 4075–4086.

Chen, Y., Zhang, L., and Zhang, L. (2013). Financial Distress Prediction for Chinese Listed Manufacturing Companies. *Procedia Computer Science*, *17*, 678–686.

Chi, L.-C., and Tang, T.-C. (2006). Bankruptcy prediction: application of LOGIT analysis in export credit risks. *Australian Journal of Management*, *31*(1), 17–27.

Chiaramonte, L., Croci, E., and Poli, F. (2015). Should we trust the Z-score? Evidence from the European Banking Industry. *Global Finance Journal*, *28*, 111–131.

Cho, E., and Chun, S. (2015). Corporate social responsibility, real activities earnings management, and corporate governance: evidence from Korea. *Asia-Pacific Journal of Accounting and Economics*, *23*(4), 400–413.

Cho, S., Hong, H., and Ha, B.-C. (2010). A hybrid approach based on the combination of variable selection using decision trees and case-based reasoning using the Mahalanobis distance: For bankruptcy prediction. *Expert Systems with Applications*, *37*(4), 3482–3488.

Chua, Y. L., Cheong, C. S., and Gould, G. (2012). The impact of mandatory IFRS adoption on accounting quality: Evidence from Australia. *Journal of International Accounting Research*, *11*(1), 119–146.

Chunhui Liu, Yao, L. J., Hu, N., and Liu, L. (2011). The impact of ifrs on accounting quality in a regulated market: An empirical study of China. *Journal of Accounting, Auditing and Finance*, *26*(4), 659–676.

Climent, F., Momparler, A., and Carmona, P. (2019). Anticipating bank distress in the Eurozone: An Extreme Gradient Boosting approach. *Journal of Business Research*, *101*, 885–896.

Coates, J. C. (2007). The Goals and Promise of the Sarbanes–Oxley Act. *Journal of Economic Perspectives*, *21*(1), 91–116.

Crawford, R. L., and Weirich, T. R. (2011). Fraud guidance for corporate counsel reviewing financial statements and reports. *Journal of Financial Crime*, *18*(4), 347–360.

Daghsni, O., Zouhayer, M., and Mbarek, K. B. H. (2016). Earnings Management and Board Characteristics: Evidence from Malaysia. *Account and Financial Management Journal*, *1*(2), 92–110.

Dalnial, H., Kamaluddin, A., Sanusi, Z. M., and Khairuddin, K. S. (2014). Accountability in Financial Reporting: Detecting Fraudulent Firms. *Procedia - Social and Behavioral Sciences*, *145*, 61–69.

Daske, H., Hail, L., Leuz, C., and Verdi, R. (2008). Mandatory IFRS reporting around the world: Early evidence on the economic consequences. *Journal of Accounting Research*, *46*(5), 1085–1142.

Dechow, P. M., Sloan, R. G., and Sweeney, A. P. (1995). Detecting Earnings Management. *The Accounting Review*, *70*(2), 193–225.

Demski, J. S. (2003). Corporate Con icts of Interest. *Journal Of Economic Perspectives*, *17*(2), 51–72.

Denis, D. J., and Denis, D. K. (1995). Causes of financial distress following leveraged recapitalizations. *Journal of Financial Economics*, *37*(2), 129–157.

Dewaelheyns, N., and Van Hulle, C. (2009). Filtering speed in a Continental European reorganization procedure. *International Review of Law and Economics*, *29*(4), 375–387.

Dichev, I. D., and Skinner, D. J. (2002). Large-sample evidence on the debt covenant hypothesis. *Journal of Accounting Research*, *40*(4), 1091–1123.

Ding, Y., Song, X., and Zen, Y. (2008). Forecasting financial condition of Chinese listed companies based on support vector machine. *Expert Systems with Applications*, *34*(4), 3081–3089.

Diri, M. El, Lambrinoudakis, C., Alhadab, M., Building, M. K., Ls, L., and Kingdom, U. (2020). Corporate governance and earnings management in concentrated markets. *Journal of Business Research*, *108*(2019), 291–306.

Eisenbeis, R. A. (1977). Pitfalls in the Application of Discriminant Analysis in Business, Finance, and Economics. *The Journal of Finance*, *32*(3), 875–900.

El Gammal, W., Yassine, N., Fakih, K., and El-Kassar, A. N. (2020). The relationship between CSR and corporate governance moderated by performance and board of directors' characteristics. *Journal of Management and Governance*, *24*(2), 411–430.

Elias, R. Z. (2004). The impact of corporate ethical values on perceptions of earnings management. *Managerial Auditing Journal*, *19*(1), 84–98.

Etemadi, H., Anvary Rostamy, A. A., and Dehkordi, H. F. (2009). A genetic programming model for bankruptcy prediction: Empirical evidence from Iran. *Expert Systems with Applications*, *36*(2), 3199–3207.

Fallahpour, S., Lakvan, E. N., and Zadeh, M. H. (2017). Using an ensemble classifier based on sequential floating forward selection for financial distress prediction problem. *Journal of Retailing and Consumer Services*, *34*, 159–167.

Feng, M., and Li, C. (2012). How do earnings manipulators guide investors? Working paper, University of Pittsburgh and University of Washington

Fischer, M., and Rosenzweig, K. (1995). Attitudes of students and accounting practitioners concerning the ethical acceptability of earnings management. Journal of Business Ethics, 14(6), 433–444.

Flanagan, D. J., Muse, L. A., and O'Shaughnessy, K. C. (2008). An overview of accounting restatement activity in the United States. International Journal of Commerce and Management, 18(4), 363–381.

Foo, S. L. (2015). Financial Health and Corporate Performance of Listed Manufacturing Companies in Hong Kong and Singapore : A Comparative Study of the Two Asian Tigers, 3(2), 148–154.

Franceschetti, B. M., and Koschtial, C. (2013). Do bankrupt companies manipulate earnings more than the non- bankrupt ones ? Journal of Finance and Accountancy, 12, 1–22.

Francis, J., and Schipper, K. (1999). Have financial statements lost their relevance? Journal of Accounting Research, 37(2), 319–352.

Goel, A. M., & Thakor, A. V. (2003). Why do firms smooth earnings?. The Journal of Business, 76(1), 151-192.

Goel, S. (2014). The quality of reported numbers by the management. Journal of Financial Crime, 21(3), 355–376.

Gogas, P., Papadimitriou, T., and Agrapetidou, A. (2018). Forecasting bank failures and stress testing: A machine learning approach. International Journal of Forecasting, 34(3), 440–455.

Greenfield, A. C., Norman, C. S., and Wier, B. (2008). The Effect of Ethical Orientation and Professional Commitment on Earnings Management Behavior. *Journal of Business Ethics*, *83*, 419–434.

Grice, J. S., and Ingram, R. W. (2001). Tests of the generalizability of Altman's bankruptcy prediction model. *Journal of Business Research*, *54*(1), 53–61.

Grove, H., and Basilico, E. (2011). Major financial reporting frauds of the 21st century: Corporate and risk lessons learned. *Journal of Forensic and and Investigative Accounting*, *3*(2), 191–226.

Gupta, J., Wilson, N., Gregoriou, A., and Healy, J. (2014). The effect of internationalisation on modelling credit risk for SMEs: Evidence from UK market. *Journal of International Financial Markets, Institutions and Money*, *31*, 397–413.

Hall, B. J. (2003). Six challenges in designing equity-based pay. *Journal of Applied Corporate Finance*, *15*(3), 21–33.

Halteh, K., Kumar, K., and Gepp, A. (2018). Financial distress prediction of Islamic banks using tree-based stochastic techniques. *Managerial Finance*, *44*(6), 759–773.

Hasan, M. S., Omar, N., Barnes, P., and Handley Schachler, M. (2017). A cross-country study on manipulations in financial statements of listed companies Evidence from Asia. *Journal of Financial Crime*, *24*(4), 656–677.

Hasan, M. S., Omar, N., and Hassan, A. B. M. R. (2018). Financial health and management practices: a multi-year cross country analysis of PLCs. *Journal of Financial Crime*, *25*(3), 646–657.

Hasan, Z. (2002). The 1997 - 1998 financial crisis in Malaysia: causes, response, and results. *Islamic Economic Studies*, *9*(2), 1–15.

Hashed, A. A., and Almaqtari, F. A. (2021). The impact of corporate governance mechanisms and ifrs on earning management in Saudi Arabia. *Accounting*, *7*(1), 207–224.

Hollow, M. (2014). Money, morals and motives: An exploratory study into why bank managers and employees commit fraud at work. *Journal of Financial Crime*, *21*(2), 174–190.

Holthausen, R. W., Larcker, D. F., and Sloan, R. G. (1995). *Annual bonus schemes and the manipulation of earnings*. *Journal of Accounting and Economics* 19(1), 29-74.

Honjo, Y. (2000). Business failure of new firms: an empirical analysis using a multiplicative hazards model. *International Journal of Industrial Organization*, *18*(4), 557–574.

Hope, O.-K., Thomas, W., and Kolk, A. (2011). Financial credibility, ownership, and financing constraints in private firms. *Journal of International Business Studies*, *42*(7), 935–957.

Hu, Y.-C. (2009). Bankruptcy prediction using ELECTRE-based single-layer perceptron. *Neurocomputing*, *72*(13–15), 3150–3157.

Hutchinson, M. R., Percy, M., and Erkurtoglu, L. (2008). An investigation of the association between corporate governance, earnings management and the effect of governance reforms. *Accounting Research Journal*, *21*(3), 239–262.

Ibrahim, M. S., Darus, F., Yusoff, H., and Muhamad, R. (2015). Analysis of Earnings Management Practices and Sustainability Reporting for Corporations that Offer Islamic Products and Services. *Procedia Economics and Finance*, *28*, 176–182.

Inam, F., Inam, A., Mian, M. A., Sheikh, A. A., and Awan, H. M. (2019). Forecasting Bankruptcy for organizational sustainability in Pakistan. *Journal of Economic and Administrative Sciences*, *35*(3), 183–201.

Islam, M. A., Ali, R., and Ahmad, Z. (2011). Is Modified Jones Model Effective in Detecting Earnings Management? Evidence from A Developing Economy. *International Journal of Economics and Finance*, *3*(2), 116–125.

Ismail, W. A. W., Kamarudin, K. A., Van Zijl, T., and Dunstan, K. (2013). Earnings quality and the adoption of IFRS-based accounting standards: Evidence from an emerging market. *Asian Review of Accounting*, *21*(1), 53–73.

Jaggi, B., and Lee, P. (2002). Earnings Management Response to Debt Covenant Violations and Debt Restructuring. *Journal of Accounting, Auditing and Finance*, *17*(4), 295–324.

Jayadev, M. (2006). Predictive Power of Financial Risk Factors: An Empirical Analysis of Default Companies. *Vikalpa*, *31*(3), 45–56.

Jiraporn, P., Miller, G. a., Yoon, S. S., and Kim, Y. S. (2008). Is earnings management opportunistic or beneficial? An agency theory perspective. *International Review of Financial Analysis*, *17*(3), 622–634.

Johnson, E. N., Fleischman, G. M., Valentine, S., and Walker, K. B. (2012). Managers' ethical evaluations of earnings management and its consequences. *Contemporary Accounting Research*, *29*(3), 910–927.

Jones, K. L., Krishnan, G. V., and Melendrez, K. (2008). Do Models of Discretionary Accruals Detect Actual Cases of Fraudulent and Restated Earnings? An Empirical Evaluation. *Contemporary Accounting Research*, *25*(2), 499–531.

Joshi, P. D. (2019). A study on application of Altman ' s Z score model in predicting the bankruptcy of Reliance Communication. *International Journal of 360 Management Review*, *7*(2), 35–47.

Kamaluddin, A., Ishak, N., and Mohammed, N. F. (2019). Financial Distress Prediction Through Cash Flow Ratios Analysis. *Internatinal Journal of Finance Research*, *10*(3), 63–76.

Karels, G. V., and Prakash, A. J. (1987). Multivariate Normality and Forecasting of Business Bankruptcy. *Journal of Business Finance and Accounting*, *14*(4), 573–593.

Kaufman, G. G. (2014). Too big to fail in banking: What does it mean? *Journal of Financial Stability,* 13, 214-22.

Khaliq, A., Altarturi, B. H. M., Thaker, H. M. T., Harun, M. Y., and Nahar, N. (2014). Identifying Financial Distress Firms : A Case Study of Malaysia ' s Government Linked Companies (GLC). *International Journal of Economic, Finance and Management*, *3*(3), 141–150.

Khanin, D., and Mahto, R. V. (2012). Regulatory risk, borderline legality, fraud and financial restatement. *International Journal of Accounting and Information Management*, *20*(4), 377–394.

Kim-soon, N., Mohammed, A. A. E., and Agob, F. K. M. (2013). A Study of Financial Distress Companies Listed in the Malaysian Stock Exchange using Financial Liquidity Ratios and Altman ' s Model. *European Journal of Scientific Research*, *114*(4), 513–525.

Kim, S. Y., and Upneja, A. (2014). Predicting restaurant financial distress using decision tree and AdaBoosted decision tree models. *Economic Modelling*, *36*, 354–362.

Kirkos, E., Spathis, C., and Manolopoulos, Y. (2007). Data mining techniques for the detection of fraudulent financial statements. *Expert systems with applications*, 32(4), 995-1003.

Kotsiantis, S., Kanellopoulos, D., and Tampakas, V. (2010). Financial application of Multi-Instance Learning: Two Greek case studies. *Journal of Convergence Information Technology*, *5*(8), 42–53.

Kumar, K. (2012). A comparison of bankruptcy models. *International Journal of Marketing, Financial Service and Management Research*, *1*(4), 76–86.

Land, J. K. (2010). CEO turnover around earnings restatements and fraud. *Pacific Accounting Review*, *22*(3), 180–198.

Lau, C. K., and Ooi, K. W. (2016). A case study on fraudulent financial reporting: Evidence from Malaysia. *Accounting Research Journal*, *29*(1), 4–19.

Lee, T.-S., and Yeh, Y. H. (2004). Corporate governance and financial distress: evidence from Taiwan. *Corporate Governance*, *12*(3), 378–388.

Lennox, C. S., and Pittman, J. A. (2010). Big Five Audits and Accounting Fraud. *Contemporary Accounting Research*, *27*(1), 209–247.

Lepetit, L., and Strobel, F. (2015). Bank insolvency risk and Z-score measures: A refinement. *Finance Research Letters*, *13*, 214–224.

Liang, D., Tsai, C. F., Dai, A. J., and Eberle, W. (2018). A novel classifier ensemble approach for financial distress prediction. *Knowledge and Information Systems*, *54*(2), 437–462.

Liao, Q., and Mehdian, S. (2016). Measuring Financial Distress and Predicting Corporate Bankruptcy: An Index Approach. *Review of Economic and Business Studies*, *9*(1), 33–51.

Lifschutz, S., and Jacobi, A. (2010). Predicting Bankruptcy : Evidence from Israel. *International Journal of Business and Managemen*t , 5(4), 133–142.

Liou, F. M. (2008). Fraudulent financial reporting detection and business failure prediction models: A comparison. *Managerial Auditing Journal*, *23*(7), 650–662.

Liou, F. M., and Yang, C. H. (2008). Predicting business failure under the existence of fraudulent financial reporting. *International Journal of Accounting and Information Management*, *16*(1), 74–86.

Liou, F., and Yang, C. (2008). Predicting business failure under the existence of fraudulent financial reporting. *International Journal of Accounting and Information Management*, *16*(1), 74–86.

Lo, A. W. (1986). Logit versus discriminant analysis: a specification test and application to corporate bankruptcies. *Journal of Econometrics*, *31*(2), 151–178.

Lotfi, N., and Chadegani, A. A. (2017). Detecting Corporate Financial Fraud using Beneish M-Score Model. *International Journal of Finance and Managerial Accounting*, *2*(8), 29–34.

Lussier, R. . (1995). A nonfinancial business success versus failure prediction model for young firms. *Journal of Small Business Management*, *33*(1), 8–20.

M.Hamer, M. (1983). Failure prediction: Sensitivity of classification accuracy to alternative statistical methods and variable sets. *Journal of Accounting and Public Policy*, *2*(4), 289–307.

Mahama, M. (2015). Detecting Corporate Fraud And Financial Distress Using The Altman And Beneish Models. *International Journal of Economics, Commerce and Management, 3*(1), 1–18.

Md Nasir, N. A. binti, Ali, M. J., Razzaque, R. M. R., and Ahmed, K. (2018). Real earnings management and financial statement fraud: evidence from Malaysia. *International Journal of Accounting and Information Management*, *26*(4), 508–526.

Mehta, A., and Bhavani, G. (2017). Application of forensic tools to detect fraud: The case of Toshiba. *Journal of Forensic and Investigative Accountin*g, 9(1), 692-710.

Miglani, S., Ahmed, K., and Henry, D. (2015). Voluntary Corporate Governance Structure and Financial Distress : Evidence from Australia. *Journal of Contemporary Accounting and Economics*, *11*(1), 18–30.

Min, S. H., Lee, J., and Han, I. (2006). Hybrid genetic algorithms and support vector machines for bankruptcy prediction. *Expert Systems with Applications*, *31*(3), 652–660.

Minanoa, M. del- M. C., and Campa, D. (2014). Integrity of financial information as a determinant of the outcome of a bankruptcy procedure. *International Review of* Law and Economics, 37, 76–85.

Mohammed, A., A, E., Soon N, K. (2013). Using Altman's Z-score model to predict the financial hardship of firms listed in the trading services sector of Bursa Malaysia. Paper presented at the first FPTP Postgraduate Seminar, Universiti Tun Hussein Onn Malaysia.

Mokhatab Rafiei, F., Manzari, S. M., and Bostanian, S. (2011). Financial health prediction models using artificial neural networks, genetic algorithm and multivariate discriminant analysis: Iranian evidence. *Expert Systems with Applications*, *38*(8), 10210–10217.

Nagar, N., and Sen, K. (2017). Do financially distressed firms misclassify core expenses? *Accounting Research Journal*, *30*(2), 205–223.

Nanni, L., and Lumini, A. (2009). An experimental comparison of ensemble of classifiers for bankruptcy prediction and credit scoring. *Expert Systems with Applications*, *36*(2), 3028–3033.

Ng, K. S., Mohammed, A. A. E., Ahmad, A. R., and Huam, H. T. (2013). Applicability of Altman's revised model in predicting financial distress: a case of PN17 companies quoted in Malaysian Stock Exchange.

Nigrini, M. J. (2005). An assessment of the change in the incidence of earnings management around the Enron-Andersen episode. *Review of Accounting and Finance*, *4*(1), 92-110.

Ntim, C. G. (2016). ScienceDirect Corporate governance , corporate health accounting , and fi rm value : The case of HIV / AIDS disclosures in Sub-Saharan Africa. *International Journal of Accounting*, *51*(2), 155–216.

Ohlson, J. A. (1980). Financial ratios and the probabilistic prediction of bankruptcy. *Journal of Accounting Research*, *18*(1), 109–131.

Ojo, A. T., and Ayadi, O. F. (2014). Financial malpractices and stock market development in Nigeria: An exploratory study. *Journal of Financial Crime*, *21*(3), 336–354.

Omar, N., Johari, Z. A., and Smith, M. (2017). Predicting fraudulent financial reporting using artificial neural network. *Journal of Financial Crime*, *24*(2), 362–387.

Ong, S. W., Yap, V. C., and Khong, R. W. L. (2011). Corporate failure prediction: a study of public listed companies in Malaysia. *Managerial Finance*, *37*(6), 553–564.

Patrick, E. A., Paulinus, E. C., and Nympha, A. N. (2015). The Influence of Corporate Governance on Earnings Management Practices : A Study of Some Selected Quoted Companies in Nigeria. *American Journal of Economics, Finance and Management*, *1*(5), 482–493.

Peng, S., and van der Laan Smith, J. (2010). Chinese GAAP and IFRS: An analysis of the convergence process. *Journal of International Accounting, Auditing and Taxation*, *19*(1), 16–34.

Perols, J. L., and Lougee, B. A. (2011). The relation between earnings management and financial statement fraud. *International Journal of Cardiology*, *27*(1), 39–53.

Pramudena, S. M. (2017). The Impact of Good Corporate Governance on Financial Distress in the Consumer Goods Sector. *Journal of Finance and Banking Review*, *2*(4), 46–55.

Rauterkus, A., Rauterkus, S., and Munchus, G. (2013). Effect of Board Composition on Firm Bankruptcy: An Empirical Study of United States Firms. *International Journal of Management*, *30*(2), 767–777.

Rezaee, Z. (2005). Causes, consequences, and deterence of financial statement fraud. *Critical Perspectives on Accounting*, *16*(3), 277–298.

Rosner, R. L. (2003). Earnings manipulation in failing firms. *Contemporary Accounting Research*, *20*(2), 361–408.

Rus, R. M., and Abdullah, N. A. H. (2005). An Empirical Investigation Of Failing Companies And Their An Empirical Investigation Of Failing Companies And Their Determinants Using The Hazard Model In An Emerging Abstract. In *16th Asian Finance Association Conference (AsianFA 2005)*.

Saden, N. S., and Prihatiningtias, Y. W. (2015). Financial Distress Prediction of Mining Companies Listed In Indonesian Stock Exchange : An Analysis Using Altman Z- Score Model. *Jurnal Ilmiah Mahasiswa*, *4*(1), 1-15.

Saleh, N. M., and Ismail, A. H. (2010). The Role of Audit Quality and Corporate Governance in Mitigating Earnings Management for Malaysian Ipo. *International Conference On Business And Economic Research- ICBER*, paper 124, 1–15.

Sekaran, U., and Bougie, R. (2013). Research Methods for Business: A Skill-Building Approach, 6th Ed. *Jhon Wiley and Sons.* (pp. 240–252).

Sharma, K. (2014). Detecting Earnings Management in India : A sector-wise study. *European Journal of Business and Management*, *6*(11), 11–18.

Shin, K. S., and Lee, Y. J. (2002). A genetic algorithm application in bankruptcy prediction modeling. *Expert Systems with Applications*, *23*(3), 321–328.

Song, D. B., Lee, H. Y., and Cho, E. J. (2013). The association between earnings management and asset misappropriation. *Managerial Auditing Journal*, *28*(6), 542–567.

Spathis, C., Doumpos, M., and Zopounidis, C. (2002). Detecting falsified financial statements: a comparative study using multicriteria analysis and multivariate statistical techniques. *European Accounting Review*, *11*(3), 509–535.

Spathis, C. T. (2002). Detecting false financial statements using published data: some evidence from Greece. *Managerial Auditing Journal*, *17*(4), 179–191.

Sun, J., and Li, H. (2012). Financial distress prediction using support vector machines: Ensemble vs. individual. *Applied Soft Computing*, *12*(8), 2254–2265.

Sun, J., Li, H., Huang, Q. H., and He, K. Y. (2014). Predicting financial distress and corporate failure: A review from the state-of-the-art definitions, modeling, sampling, and featuring approaches. *Knowledge-Based Systems*, *57*, 41–56.

Supriyanto, J., and Darmawan, A. (2018). the Effect of Financial Ratio on Financial Distress in Predicting Bankruptcy. *Journal of Applied Managerial Accounting*, *2*(1), 110–120.

Surya, M., and Anwar, Y. (2015). Corporate Governance , Earnings Management and Tax Management. *Procedia - Social and Behavioral Sciences*, *177*, 363–366.

Sweeney, A. P. (1994). Debt-covenant violations and managers' accounting responses. *Journal of Accounting and Economics*, *17*(3), 281–308.

Taherinia, M., and Talebi, R. (2019). Ability Of Fraud Triangle , Fraud Diamond , Beneish M Score , And Altman Z Score To Predict Financial Statements. *Journal of Economic and Social Research*, *18*(2), 213–226.

Thai, S. B., Goh, H. H., Teh, B. H., Wong, J. C., and Ong, T. S. (2014). A Revisited of Altman Z- Score Model for Companies Listed in Bursa Malaysia. *International Journal of Business and Social Science*, *5*(12), 197–207.

Tinoco, M. H., and Wilson, N. (2013). International Review of Financial Analysis Financial distress and bankruptcy prediction among listed companies using accounting , market and macroeconomic variables. *International Review of Financial Analysis*, *30*, 394–419.

Trejo-Pech, C. J. O., Weldon, R. N., and Gunderson, M. A. (2016). Earnings Management through Specific Accruals and Discretionary Expenses: Evidence from U.S. Agribusiness Firms. *Canadian Journal of Agricultural Economics*, *64*(1), 89–118.

Tsai, C., and Wu, J. (2008). Using neural network ensembles for bankruptcy prediction and credit scoring. *Expert Systems with Applications*, *34*(4), 2639–2649.

Uwuigbe, O. R., Olorunshe, O., Uwuigbe, U., Ozordi, E., Asiriuwa, O., Asaolu, T., and Erin, O. (2019). Corporate Governance and Financial Statement Fraud among Listed Firms in Nigeria. *International Conference on Energy and Sustainable Environment*, 331(1), 1-14.

Van Gestel, T., Baesens, B., and Martens, D. (2010). From linear to non-linear kernel based classifiers for bankruptcy prediction. *Neurocomputing*, *73*(16–18), 2955–2970.

Wang, Y., and Campbell, M. (2010). Business Failure Prediction for Publicly Listed Companies in China. *Journal of Business and Management*, *16*(1), 75–88.

Wells, P. (2002). Earnings management surrounding CEO changes. *Accounting and Finance*, *42*(2), 169–193.

Wu, C. H., Tzeng, G. H., Goo, Y. J., and Fang, W. C. (2007). A real-valued genetic algorithm to optimize the parameters of support vector machine for predicting bankruptcy. *Expert Systems with Applications*, *32*(2), 397–408.

Wu, W., Lee, V. C. S., and Tan, T. Y. (2006). Data preprocessing and data parsimony in corporate failure forecast models: evidence from Australian materials industry. *Accounting and Finance*, *46*(2), 327–345.

Yang, T. H., Hsu, J., and Yang, W. B. (2016). Firm's motives behind SEOs, earnings management, and performance. I*nternational Review of Economics and Finance*, 43, 160-169.

Youn, H., and Gu, Z. (2010). Predicting Korean lodging firm failures: An artificial neural network model along with a logistic regression model. *International Journal of Hospitality Management*, *29*(1), 120–127.

Zhang, Y., Wang, S., and Ji, G. (2013). A rule-based model for bankruptcy prediction based on an improved genetic ant colony algorithm. *Mathematical Problems in Engineering*, 2013.

Zmijewski, M. E. (1984). Methodological issues related to the estimation of financial distress prediction models. *Journal of Accounting Research*, *22*, 59–82.

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LIST OF PUBLICATIONS

Journal

Dalila and Mohamed Hisham (2021). Financial Information Fraudulence and Financial Distress : Evidence from Singapore. *Turkish Journal of Computer and Mathematics Education (TURCOMAT), 12*(9), 2732–2746.

Dalila and Mohamed Hisham (2021). Impact Of Financial Information Fraudulence To Financial Distress In Malaysia. *Turkish Journal of Computer and Mathematics Education (TURCOMAT)*, *12*(6), 896–914.

Conference

Dalila, Alfred and Rasheedul Haquee (2018). Examining Key Factor Influencing Motivation Towards Being An Entrepreneur: A Comparative Study Among International And Local Students In Private University. In *International Digital Conference On Morden Business Management And Social Science*.

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