Detecting Financial Statement Fraud by Malaysian Public Listed Companies:
The Reliability of the Beneish M-Score Model

(Mengesan Penipuan Penyata Kewangan oleh Syarikat Tersenarai di Bursa Malaysia:
Keberkesanan Model Beneish M-Score)

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ABSTRACT

Various fraud prediction tools have been developed to detect financial statement fraud triggered by earnings manipulation. Among them is the Beneish M-Score model as a financial forensic tool to gauge potential earnings manipulation in firms' financial statements. The model was found to be effective in detecting 76% of earnings manipulating firms subjected to accounting enforcement actions by the United States Securities and Exchange Commission (U.S. SEC). Furthermore, the earnings manipulation model was also successful in discovering 71% of the most prominent fraudulent financial reporting scandals in the United States prior to public announcement. The current study assesses the reliability of the Beneish M-Score model in detecting earnings manipulation and financial statement fraud committed by Malaysian public listed companies prior to public announcement. The research sample consists of 17 public listed companies of which their directors and top management have been charged and prosecuted by the Securities Commission Malaysia (SC) for committing fraudulent reporting and misstatement from 1996 until 2014. The results show that the Beneish M-score model is reliable in detecting earnings manipulation and financial statement fraud by 82% in 14 out of 17 listed companies charged for fraudulent financial reporting. The findings provide support for the application of the Beneish M-Score model by the management of the company to check for any irregularities in firms' financial report so that adjustment can be made before submission to Bursa Malaysia to prevent from any potential backlash that could damage firm reputation. The model application is likewise beneficial to prospective and existing shareholders to assist their investment decision making in reducing risk of losses due to fraud. In addition, the findings suggest that the model can be applied by researchers, auditors, and enforcement agencies as an effective detection tool to signal potentially fraudulent reporting companies in Bursa Malaysia for further investigation and enforcement action.

Keywords: Earnings manipulation; Beneish M-Score model; financial statement fraud

ABSTRAK

Di dalam mengesan penipuan penyata kewangan yang dicetuskan oleh manipulasi pendapatan, pelbagai model ramalan penipuan telah dibangunkan baru-baru ini. Antaranya ialah model Beneish M-Score yang telah digunakan sebagai alat forensik kewangan untuk mengesan potensi manipulasi pendapatan dalam penyata kewangan firma, yang dianggap sebagai menyalahi undang-undang dan peraturan perakaunan Amerika Syarikat. Model ini telah didapati berkesan dalam mengesan 76% daripada syarikat-syarikat yang telah memanipulasi pendapatan yang tertakluk kepada tindakan penguatkuasaan perakaunan oleh Suruhanjaya Sekuriti dan Bursa Amerika Syarikat (SEC). Tambahan pula, model pengesanan manipulasi pendapatan ini juga telah berjaya mengesan 71% daripada syarikat-syarikat yang terlibat di dalam skandal penipuan laporan kewangan yang paling menonjol di Amerika Syarikat sebelum pengumuman awam dilaksanakan. Kajian ini bertujuan untuk menilai keberkesanan model Beneish M-Score untuk mengesan manipulasi pendapatan dan penipuan penyata kewangan yang dilakukan oleh syarikat-syarikat tersenarai di Bursa Malaysia sebelum pengumuman awam dilakukan. Sampel kajian ini terdiri daripada 17 syarikat-syarikat tersenarai di Bursa Malaysia di mana pengarah dan pengurusan tertinggi berkaitan telah didakwa oleh Suruhanjaya Sekuriti Malaysia (SC) kerana melakukan penipuan laporan kewangan dan salah nyata dari tahun 1996 sehingga 2014. Keputusan kajian ini mendapati bahawa model Beneish M-score berkesan di dalam mengesan manipulasi pendapatan dan penipuan penyata kewangan pada kadar 82% bagi 14 daripada 17 syarikat-syarikat yang telah didakwa oleh Suruhanjaya Sekuriti Malaysia (SC) kerana melakukan penipuan laporan kewangan dan salah nyata. Penemuan kajian ini juga menyokong pengaplikasian model Beneish M-score oleh pihak pengurusan syarikat yang tersenarai di Bursa Malaysia untuk mengesan potensi penyelewengan di dalam laporan kewangan berkaitan supaya pelarasan boleh dilakukan sebelum dikemukakan kepada Bursa Malaysia, bagi mengelak daripada sebarang tindak balas yang berpotensi menggugat reputasi syarikat jika penipuan dikesan. Pengaplikasian model ini juga berfaedah dan boleh memberi manfaat kepada pemegang saham berpotensi dan sedia ada untuk membantu meraka bagi membuat keputusan pelaburan yang tepat bagi mengurangkan risiko kerugian

disebabkan oleh penipuan penyata kewangan. Di samping itu, model Beneish-Mscore ini boleh dimanfaatkan oleh penyelidik, juruaudit dan agensi-agensi penguatkuasaan sebagai alat pengesanan penipuan penyata kewangan yang berkesan bagi memberi isyarat kepada mereka untuk melakukan siasatan selanjutnya sebelum melaksanakan tindakan penguatkuasaan.

Kata kunci: Manipulasi pendapatan; model Beneish M-Score; penipuan penyata kewangan

INTRODUCTION

Financial statement fraud is the costliest type of fraud, generating median losses valued at USD 1 million (Association of Certified Fraud Examiners 2014). It can negatively influence the capital markets as a consequence of losing the investors' confidence, and can irrevocably damage the company's reputation (Centre for Audit Quality 2010). Other major implications include significant losses of shareholders values due to abnormal stock price decline, delisting from stock exchange, and material assets sales upon fraud discovery (COSO 2010). Furthermore, based on the report issued by the Committee of Sponsoring Organisations of the Treadway Commission (COSO) in year 2010, there were 347 alleged cases of public companies committing fraudulent financial reporting from 1998 to 2007, in comparison to 294 cases from 1987 to 1997 in the United States. This statistic was contributed to, amongst others, by the high-profile frauds in Enron, WorldCom, and other firms bringing about the total cumulative misstatement or misappropriation of nearly USD120 billion across 300 fraud cases. Malaysia also has its share of high-profile corporate fraudulent reporting scandals, as evidenced in the enforcement action taken by the Malaysian Securities Commission and its public media releases. Among the recent high-profile Malaysian fraudulent financial reporting cases as reported on the Malaysian Securities Commission website were Megan Media Holdings Bhd., Mems Technology Berhad, Transmile Group Bhd., Axis Incorporation Berhad, and Silver Bird Berhad which resulted in total misstatement worth billions of ringgit. Furthermore, 18 additional public companies listed on the main board have been found to have misstated their financial statements in post years 2012 to 2015 as testified by Bursa Malaysia (2015), upon the introduction of Malaysian Codes of Corporate Governance 2012 (MCCG 2012), which was supposed to enhance the integrity of financial statements (Securities Commission Malaysia 2012).

Despite successful attempts to nab fraudulent financial reporting companies, numerous corporations committing financial statement fraud remain well-camouflaged from detection by the enforcement authorities (Association of Certified Fraud Examiners 2012; Chen, Firth, Gao & Rui 2006). This is because according to Zhou and Kapoor (2011), the perpetrator has the necessary resources to fool the system and any detection mechanism resulting in discovery of fraud to be extremely difficult. Even upon the discovery of financial statement fraud, it will take a year and a half for it to be made public (Beneish, Lee & Nichols 2013). In addition, the Securities Commission might be selective in pursuing only those fraud cases subjected to decline in share performance after revelation of manipulation due to larger losses inflicted to shareholders (Dechow, Ge, Larson & Sloan 2011). Furthermore, without the assistance of internal whistle blowers in highlighting potential fraud scandal in a company, financial statement fraud detection by enforcement authorities will be challenging (US Securities and Exchange Commission 2014). However, the rate of whistleblowing by US workforce relating to accounting misstatements was only at the rate of 40% in 2013 (Ethics Resource Center 2013), which means that the majority of potential accounting fraud cases remain unreported.

To resolve this issue, the application of earnings manipulation detection model issued by Beneish et al. (2013) and Beneish (1999) should be considered to ensure immediate detection of potential financial statement fraud being made before public announcement by enforcement authorities and to narrow the whistleblowing gap. This model has proved capable of accurately detecting 76% of the public listed corporations subjected to U.S. SEC's accounting enforcement actions (Beneish 1999) and 71% of the most prominent financial reporting scandals before public announcement was made by relying on only accounting data disclosed in the annual report (Beneish et al. 2013). Nevertheless, the reliability of the Beneish M-score in detecting financial statement fraud has only been proven in the United States and has yet to be extended to Malaysia. Accordingly, this paper tests the reliability of the Beneish M-score model in detecting financial statement fraud scandals by Malaysian public companies listed on the main board of Bursa Malaysia indicted for fraudulent financial reporting by the Malaysian Securities Commission.

The sample for this study consists of 17 public listed companies of which their directors and top management have been charged and prosecuted for financial statement fraud by the Malaysian Securities Commission from 1996 until 2014. The test reveals that the Beneish M-score model has been successful in detecting 14 out of 17 companies prosecuted for fraudulent financial reporting by the Malaysian SC at 82% accuracy rate. This study is important as it provides strong support for the application of the Beneish M-score model in detecting potential financial statement fraud before public announcements. This will be beneficial for the management of a company as they can utilise the model to verify whether the company's financial statements contain any irregularities before submission to Bursa Malaysia to avoid future potential penalty or backlash. It is also useful for stakeholders such as prospective and existing shareholders, auditors, forensic

investigators, and academic researchers in utilising the model to not only detect potential financial statement fraud, but to also predict potential companies subject to prosecution for violation of accounting rules.

This study also contributes towards the knowledge on financial statement fraud investigation as it extends support by proving the reliability of the Beneish M-score model in detecting fraudulent financial reporting beyond the United States border by extending it to Malaysian public listed companies. Due to the model's high reliability rate of financial statement fraud detection in Malaysia, it will be possible to use the M-score model for identifying potential proxies to represent actual financial statement fraud cases in a current research setting.

This paper proceeds as follows; the literature review related to earnings manipulation and fraudulent financial reporting as well as the Beneish M-Score Model is elaborated on in the next section followed by methodological issues pertinent to this study. The results are then presented and discussed, followed by conclusion and suggestion for future research.

LITERATURE REVIEW

EARNINGS MANIPULATION AND FRAUDULENT FINANCIAL REPORTING

Earnings manipulation is defined as the violation of accounting rules by management to positively reflect the company's financial performance through illegal earnings management schemes (Beneish 1999). Such schemes involve deliberate misstatements on financial statements which violate Generally Accepted Accounting Principles (GAAP) or Accounting Standards (Magrath & Weld 2002), resulting in fraudulent financial reporting. On the other hand, fraudulent financial reporting is defined by International Standards on Auditing 240 (2009) as the deception of users of financial statements through intentional misstatements and omissions of amounts and disclosure in the financial statements. The link between earnings manipulation scheme which involve deliberate misstatements on financial statements and fraudulent financial reporting is supported by the following studies. The first study sponsored by the Committee of Sponsoring Organisations of the Treadway Commission (COSO) in 2010 analysed US public companies identified for committing fraudulent financial reporting from 1998 to 2007. The COSO 2010 sponsored study found 61% of the corporations' fraudulent reporting scandals resulted from misstatement in revenue recognition. Another study conducted by the United States Government Accountability Office in 2013 analysed financial restatements data of both exempt and non-exempt companies required to make internal auditor attestation in the United States. The study found more than 50% of restatement cases in both exempt and non-exempt companies in the United States from 2005 to 2011 were caused by misstatements in expenses and

inaccurate revenue recognition. In addition, Abdullah, Mohamad Yusof and Mohamad Nor (2010) investigated the incidence of financial restatements among Malaysian public listed companies from 2002 to 2005 and found 54% of restatement cases derived from misstatements in revenue and expenses. Thus, based on the above studies, it can be generalised that the majority of financial statement frauds were contributed to by earnings manipulation practices employed by corporations.

Two main studies examining the development of a model to detect earnings manipulation in financial statements were carried out by Beneish (1997) and Beneish (1999). Beneish (1997) developed a model and found that the model is capable to distinguish firms committing earnings manipulation in violation of US GAAP against firms practicing earnings management with high discretionary accruals. Furthermore, the model estimated that potential earnings manipulators are four to five times more likely to violate accounting rules as compared to firms engaging in earnings management with aggressive accruals (high discretionary accrual). Beneish (1999) later developed a model to distinguish manipulators from non-manipulators by utilising financial statements variables, as identified in Beneish (1997). He matched 74 companies that manipulated earnings with 2,332 COMPUSTAT non-manipulators based on two-digit SIC industry and year. He then calculated an index for eight financial statement ratios being analysed, with higher index values indicating potential earnings manipulation. The study also revealed that day's sales in receivables index, gross margin index, asset quality index, sales growth index, and accruals are significant in explaining manipulation, which later led him to develop a probit model with probability cut offs that reduce the expected costs of misstatements. The model was found to accurately identify potential earnings manipulators in 76% of the public listed corporations subjected to the U.S. Securities and Exchange Commission's (SEC) accounting enforcement actions. In addition, Dechow, Ge, Larson and Sloan (2011) examined financial characteristics of misstating firms and developed a model to predict misstatements by compiling a database of firms subjected to enforcement actions by the U.S. SEC for allegedly misstating their financial statements. They found that at the time of misstatement, accrual quality is low and both financial and non-financial measures of performance declined. Furthermore, off-balance sheet financing is more likely to take place during misstatement periods and managers of misstating firms appear sensitive to their firm's stock price. The researchers also developed a composite measure of the likelihood of manipulation (F-score) that can be used as a red flag or signal of the likelihood of earnings management or misstatement. The F-scores model was later used to predict misstatement in a holdout sample of firm-years from 1999 until 2002, which correctly identified misstating firms by 51.4%.

Further evidence to prove the connection between earnings manipulation and financial statement fraud is

provided by Beneish, Lee and Nichols (2013) who attempted to study whether the similar M-score model useful for detecting earnings manipulation can be used reliably to detect the most prominent fraudulent financial reporting scandals prior to public disclosure. The result proves the worthiness of the M-score model of detecting 71% of the most prominent financial reporting scandals in addition to earnings manipulation. This is confirmed in another study by Omar, Koya, Sanusi and Shafie (2014) who examined a case of financial statement fraud on a Malaysian listed company named Megan Media Holdings Berhad (MMHB). They utilised both the Beneish M-score model and ratio analysis to confirm whether these tools were effective in detecting fraudulent financial reporting in MMHB, which had been subjected to enforcement action by the Malaysian SC. The result revealed that Beneish M-score model is effective for detecting financial statement fraud in MMHB during the year of misstatement, which is in line with the findings by Beneish, Lee and Nichols (2013). Furthermore, according to Mantone (2013), the high accuracy rate of detecting potential earnings manipulation and financial statement fraud by the Beneish M-score model can assist forensics examiners to investigate fraud in the most effective and efficient manner. Rather than that, the M-score model has been extensively used to detect earnings manipulation and assess the quality of financial statements as evidenced in texts and articles issued to auditors, professional investors, and certified fraud examiners (Beneish, Lee & Nichols 2013; Golden, Skalak, Clayton & Pill 2006; Mantone 2013; Warshavsky 2012). The model has also been supportive towards certified fraud examiners (CFEs) in sensing fraudulent financial reporting signs in corporations (Harrington 2005).

Based on previous studies, Beneish (1999) and Beneish et al. (2013) have proven the capability of the M-score model in detecting potential financial statement fraud with high accuracy rate of 76% and 71% respectively. Nevertheless, these results were only applicable to US samples. Furthermore, limited attempts were made to test the M-score model fraud detection capability as evidenced in the study conducted by Omar et al. (2014), which was limited to one sample of fraudulent financial reporting companies identified by the Malaysian SC. The study revealed successful fraud detection by M-score model but the results prohibit generalisation on the reliability of the M-score model for Malaysian public listed companies due to limited samples used. Thus, the current study attempts to fill this gap to gauge the reliability of the Beneish M-score model in detecting financial statement fraud by Malaysian public listed companies. Although there are many other fraud prediction model available for consideration, the Beneish M-Score model is selected due to its overwhelming reputation as argued by Beneish, Lee and Nichols (2013), Golden, Skalak, Clayton, and Pill (2006), Mantone (2013), and Warshavsky (2012). Furthermore, even

though Dechow, Ge, Larson, and Sloan (2011) attempted to extend the study of the Beneish M-score model by formulating a new model known as F-score to predict financial misstatements, it was only capable of correctly identifying 51.4% of misstating firms in a holdout sample of firm-years from 1999 until 2002 which was lower than M-score's performance.

Thus, in line with the above argument, the following hypothesis is developed:

H_1 The Beneish M-score model is reliable in detecting the majority of companies committing financial statement fraud as disclosed by the Malaysian Securities Commission.

BENEISH M-SCORE MODEL

Beneish (1999) developed a model to distinguish earnings manipulators who violate accounting rules from non-manipulators by utilising financial statement variables. Prior to its development, he created a profile of earnings manipulating firms as identified by the US SEC's accounting enforcement actions. The model named Beneish M-score, consisted of 8 ratios to capture either financial statement distortions resulted from earnings manipulation or to identify inclination to engage in earnings manipulation as reflected below.

$$M\text{-Score} = -4.84 + 0.92DSRI + 0.528GMI + 0.404AQI + 0.892SGI + 0.115DEPI - 0.172SGAI + 4.679TATA - 0.327LVGI$$

The details of the eight variables in the form of indices based on Beneish (1999) are as stated below:

Variable	Details
DSRI	Days' Sales in Receivables Index. This measures the ratio of days' sales in receivables versus prior year as an indicator of revenue inflation.
GMI	Gross Margin Index. This is measured as the ratio of gross margin versus prior year. A firm with poorer prospects is more likely to manipulate earnings.
AQI	Asset Quality Index. Asset quality is measured as the ratio of non-current assets other than plant, property and equipment to total assets, versus the prior year. It intends to measure the company's risk propensity to capitalise cost.
SGI	Sales Growth Index. This measures the ratio of sales versus prior year. While sales growth is not itself a measure of manipulation, the evidence suggests that growth companies are likely to find themselves under pressure to manipulate in order to keep up appearances.
DEPI	Depreciation Index. This is measured as the ratio of the rate of depreciation versus prior year. A slower rate of depreciation may mean that the firm is revising useful asset life assumptions upwards, or adopting a new method that is income friendly.

SGAI   Sales, General and Administrative expenses Index. This measures the ratio of SGA expenses to the prior year. This is used on the assumption that analysts would interpret a disproportionate increase in sales as a negative signal about firms' future prospects

LVGI   Leverage Index. This measures the ratio of total debt to total assets versus prior year. It is intended to capture debt covenants incentives for earnings manipulation

TATA   Total Accruals to Total Assets. This assesses the extent to which managers make discretionary accounting choices to alter earnings. Total accruals are calculated as the change in working capital accounts other than cash less depreciation. It measures a risk relating to accrual policies being used as financing mechanism for losses.

The formula used to calculate the Beneish M-score's variables indices based on Beneish (1999) are as follows:

$$\textbf{DSRI} = \frac{\text{Receivables}_t / \text{Sales}_t}{\text{Receivables}_{t-1} / \text{Sales}_{t-1}}$$

$$\textbf{GMI} = \frac{(\text{Sales}_{t-1} - \text{Cost of goods sold}_{t-1}) / \text{Sales}_{t-1}}{(\text{Sales}_t - \text{Cost of goods sold}_t) / \text{Sales}_t}$$

$$\textbf{AQI} = \frac{(1 - \text{Current Assets}_t + \text{PP\&E}_t) / \text{Total Assets}_t}{(1 - \text{Current Assets}_{t-1} + \text{PP\&E}_{t-1}) / \text{Total Assets}_{t-1}}$$

$$\textbf{SGI} = \frac{\text{Sales}_t}{\text{Sales}_{t-1}}$$

$$\textbf{DEPI} = \frac{\text{Depreciation}_{t-1} / (\text{Depreciation}_{t-1} + \text{PP\&E}_{t-1})}{\text{Depreciation}_t / (\text{Depreciation}_t + \text{PP\&E}_t)}$$

$$\textbf{SGAI} = \frac{\text{Sales, general and administrative expense}_t / \text{Sales}_t}{\text{Sales, general and administrative expense}_{t-1} / \text{Sales}_{t-1}}$$

$$\textbf{LVGI} = \frac{(\text{LTD}_t + \text{Current liabilities}_t) / \text{Total Assets}_t}{(\text{LTD}_{t-1} + \text{Current liabilities}_{t-1}) / \text{Total Assets}_{t-1}}$$

$$\textbf{TATA} = \frac{\substack{\Delta\text{Current Assets}_t - \Delta\text{Cash}_t) - \Delta\text{Current liabilities}_t - \\ \Delta\text{Current maturities of LTD}_t - \Delta\text{income tax payable}_t \\ - \text{Depreciation and amortization}_t}}{\text{Total assets}}$$

Beneish, Lee and Nichols (2013) made a minor change on the M-score model by replacing the Total Accruals Total Assets (TATA) variable with Accruals (Accruals) in order to make use of information available in cash flow statements rather than the statement of financial position. Furthermore, according to them, the change was made in order to be consistent with literature on accrual, and although calculation for the TATA variable is slightly different than the Accruals variable, they yielded similar results. The new variable replacing the TATA variable in the M-score model based on Beneish, Lee and Nichols (2013) is reflected below.

Accruals   This measures component of accounting profit not contributed by cash profit during the current year.

$$\text{Accruals} = \frac{\text{Income before extraordinary item} - \text{Operating cash flow}}{\text{Total Assets}}$$

The M-score is used to describe the degree of possible manipulation on earnings and any other type of fraudulent activity (Mantone 2013). The model's total score indicates the level of probability of earnings manipulation and financial statement fraud. Mantone (2013), Warshavsky (2012), Omar et al. (2014) and many other researchers proposed a total M-score greater than -2.22 as an indicator of potential earnings manipulation and financial statement fraud. Nevertheless, Beneish (1999) recommends either (1) a score greater than -1.89 with detection accuracy of 76% but potential misclassification of 24% of manipulators and 17.5% of non-manipulators; or (2) a score greater than -1.78 with detection accuracy of 74%, but potential misclassification of 26% of manipulators and 13.8% of non-manipulators. Nevertheless Beneish, Lee and Nichols (2013) have applied a score greater than -1.78 based on Beneish (1999) to test the ability of the M-score model to detect financial statement fraud among prominent fraudulent financial reporting scandals with 71% accuracy rate. It has also assisted in identifying potential fraudulent companies prior to enforcement action taken by the authority in the United States such as in the case of Enron (Warshavsky 2012).

On top of analysing the M-score model total score to distinguish earnings manipulator against non-manipulators, each of the 8 individual variables that make up the model can also be scrutinised independently to assist in identifying which area in the financial statement is actually the cause for concern to trigger further investigation. To complement this, Beneish (1999) came up with a defined threshold for each of the 8 variables of the M-score model based on the mean score to assist in distinguishing between potential manipulators and non-manipulators.

The defined threshold for the 8 variables based on Beneish (1999) are as follows:

Index Type	Manipulators	Non-Manipulators
Days Sales in Receivables Index	1.465	1.031
Gross Margin Index	1.193	1.014
Asset Quality Index	1.254	1.039
Sales Growth Index	1.607	1.134
Depreciation Index	1.077	1.001
Sales, General, Administrative Expenses Index	1.041	1.054
Leverage Index	1.111	1.037
Total Accruals to Total Assets	0.031	0.018

The Beneish M-score model's variables of indexes are potentially powerful gauges that can assist in further examination of any unexpected results in the company's financial statements (Golden et al. 2006). Nevertheless, according to Beneish (1999), the individual indexes are not faultless and can potentially produce inaccurate results. Thus, the underlying components of those indexes may need further evaluation if any of those indexes exceed

the defined threshold above, and the potential for fraud is higher when there is no plausible explanation for the difference (Golden et al. 2006).

Details extracted from two consecutive periods' financial statements (fraud year and prior to fraud year) of fraudulent reporting companies are to be used to calculate the Beneish M-score model total score. Cut-off scores greater than -2.22, -1.89, and -1.78 are to be applied to gauge potential earnings manipulation practice and fraud in financial statements of the companies investigated. Furthermore, each of the 8 variables indexes of the Beneish M-Score is to be scrutinised against the defined manipulation threshold as provided by Beneish (1999).

FRAUD TRIANGLE THEORY AND RESEARCH FRAMEWORK

A study on detection of financial statement fraud can be explained by Fraud Triangle theory. Cressey (1953) established a fraud triangle theory which explained the violation of trust by trusted persons under specific circumstances. According to him,

…trusted persons become trust violators when they conceive of themselves as having financial problem which is non-sharable, are aware that this problem can be secretly resolved by violation of the position of financial trust, and are able to apply to their own conduct in that situation verbalisations which enable them to adjust their conceptions of themselves as trusted persons with their conceptions of themselves as users of the entrusted funds or property. (Cressey 1953: 30)
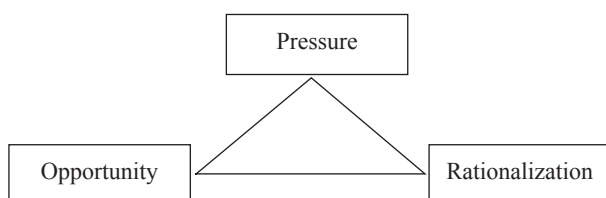

FIGURE 1. Fraud Triangle Theory
Source: Wells (2005)

In line with Cressey (1953), frauds comprise three common characteristics. Firstly, opportunity or incentive for the fraudster to commit fraud. Secondly, there is a pressure or perceived non-sharable financial need for the fraudster. Thirdly, the fraudster rationalised that their personal codes of ethics is coherent with their fraudulent act. Thus, the three traits of pressure, opportunity, and rationalisation formed a fraud triangle critical in identifying factors constantly present in fraud.

The fraud triangle theory as developed by Cressey (1953) was widely supported and used by audit professionals and standards' setters as a tool for detecting fraud (Kassem & Higson 2012). This is evidenced in the revised standards issued by the International Auditing Standards Board in 2009 specifically known as International Standard on Auditing 240 (ISA 240): The Auditor's Responsibilities Relating to Fraud in an Audit of Financial Statements which stated that "Fraud, whether fraudulent financial reporting or misappropriation of

assets, involves incentive or pressure to commit fraud, a perceived opportunity to do so and some rationalisation of the act" (Ref: Para. 3). The standard also provided examples for the three fraud risk factors. For example, incentive or pressure to commit fraudulent financial reporting may exist when management is under pressure, from sources outside or inside the entity, to achieve an expected (and perhaps unrealistic) earnings target or financial outcome. A perceived opportunity to commit fraud may exist when the trust violator is in a position of trust or has knowledge of specific deficiencies in internal control. The standard also mentioned that individuals may be able to rationalise committing a fraudulent act. Furthermore, the Fraud Triangle provides an efficient conceptual model that has broadly served as an aid to the anti-fraud community in understanding the antecedents to fraud (Dorminey, Fleming, Kranacher & Riley 2012).

In this study, the Beneish M-score model as studied in Beneish et al. (2013) and Beneish (1999) is used as a framework for testing its reliability in detecting financial statement fraud cases disclosed by the Malaysian Securities Commission. The model comprises the following equation formula:

$$M\text{-Score} = -4.84 + 0.92DSRI + 0.528GMI + 0.404AQI + 0.892SGI + 0.115DEPI - 0.172SGAI + 4.679ACCRUALS - 0.327LVGI \qquad (1)$$

The composite M-score total will be analysed against pre-determined cut-off score of greater than -2.22, -1.89 and -1.78, to detect financial statement fraud.

METHODOLOGY

All public companies listed on the Malaysian stock exchange (Bursa Malaysia) that have been identified and charged for committing fraudulent financial reporting by the Malaysian Securities Commission from year 1993 to 2014 were selected as the research sample. The list of those companies was obtained from the Malaysian Securities Commission's website which provides a comprehensive disclosure of the companies being charged for violations of various Securities Commission Act and Regulations. In order to ensure that the list of companies taken as samples is consistent with the fraudulent financial reporting offence, only those companies that have violated Section 122A, Section 122B, Section 122C, Section 122D of the Securities Industry Act 1983 and Regulation 4 of the Securities Industry (Compliance with Approved Accounting Standards) Regulation 1999 related to fraudulent and misstated financial statements were considered.

Details of the companies committing various violations of the Securities Commission Act and Regulations were obtained from various sources; (1) Enforcement actions list which is divided into criminal prosecution list, civil actions and regulatory settlements list, cases compounded

list and administrative list; (2) Enforcement related press release and; (3) Press release by media. These sources were accessible from the Malaysian Securities Commission's website. Details of those companies were further reviewed and screened to select only those relevant public listed companies that have violated Section 122A, Section 122B, Section 122C, Section 122D of the Securities Industry Act 1983 and Regulation 4 of the Securities Industry (Compliance with Approved Accounting Standards) Regulation 1999 relevant to the fraudulent and misstated financial reporting offence. Based on the review, 19 public listed companies have been found to have committed fraudulent financial reporting in violation of the Securities Commission Act and Regulations between 1993 and 2014. Relevant quarterly and final year's financial statements for two consecutive periods (fraud period and period prior to fraud) related to those 19 fraudulent reporting companies were obtained from the Bursa Malaysia's website. Two out of 19 fraudulent reporting companies were excluded from the sample as one was committed fraudulent reporting within the same year after being listed on Bursa Malaysia and the other was due to inadequate financial statement data for the application of the Beneish M-Score model. To detect earnings manipulation, the model requires two consecutive periods of the company's financial statements data, namely the period when the fraud is committed and the prior period. This leaves a final sample of 17 public listed companies related to fraudulent reporting to be examined for earnings manipulation using the Beneish M-Score model. Data extracted from the relevant fraudulent and misstated financial statements for two consecutive periods were used to calculate the Beneish M-Score total.

The results of the Beneish M-score's total calculation for the fraudulent reporting companies were observed and documented. The results were then analysed to determine the number and percentage of fraudulent reporting companies scoring greater than -2.22, -1.89, and -1.78 to prove the reliability of the Beneish M-Score model in detecting potential earnings manipulation and fraud in financial statements of fraudulent reporting companies as identified by SC Malaysia before public announcement was made in press. Furthermore, 8 variables indexes that form the Beneish M-Score model were analysed for every fraudulent reporting company and compared against a defined index threshold provided by Beneish (1999).

EMPIRICAL RESULTS

Table 1 provides the results of the calculation of Beneish M-score total and its 8 variable indexes for the 17 sampled companies.

Three of the fraudulent reporting companies scoring the highest M-score totals in ranking order are Aktif Lifestyle Berhad (73.92), Inix Technologies Berhad (2.82) and Oilcorp Berhad (-0.02). The company with the highest M-score total also has the highest variables index exceeding defined threshold suggested by Beneish (1999) for Asset Quality Index (AQI = 26.61), Depreciation Index (DEPI = 4.95), and Accruals (Accruals = 14.28), indicating potential severe earnings manipulation. Further investigation also revealed that Aktif Lifestyle Berhad had earlier been charged in 2004 for failure to comply with approved accounting standards, specifically FRS 122 on business combination which resulted in material misstatements in the financial statements to the extent of being issued with adverse audit report. Inix Technologies Berhad, the company with the second highest total M-score, also scored the highest for Sales Growth Index (SGI = 6.95), above median score for its Sales, General, Administrative Expenses Index (SGAI = 1.14) and Accruals (Accruals = 0.16). Furthermore, when investigated, Inix Technologies Berhad had been

TABLE 1. Total M-Score for the companies with fraudulent and misstated financial statements

Misstatement yr	Company	DSRI	GMI	AQI	SGI	DEPI	SGAI	LVGI	Accruals	MSCORE
2011	Silver Bird Bhd	1.40	1.23	0.93	1.22	0.99	0.80	1.00	0.05	-1.56
2007	Mems Tech Bhd	0.70	1.13	1.36	1.07	1.44	0.77	3.24	-0.13	-3.76
2007	LFE Corp Bhd	1.03	0.40	0.79	1.19	0.54	0.68	0.91	0.03	-2.53
2007	Axis Incorp Bhd	1.02	1.03	0.83	1.26	0.83	0.50	1.04	0.12	-1.65
2007-2006	Oilcorp Berhad	1.50	1.53	0.88	2.90	0.86	0.62	1.16	0.02	-0.02
2007	Talam Corp Bhd	2.60	-0.49	1.02	0.36	0.96	0.75	1.00	-0.03	-2.48
4th quarter 2006	Inix Technologies	0.23	1.19	0.48	6.95	0.42	1.14	0.57	0.16	2.82
dec06/qtrs07	Satang Hold Bhd	1.17	0.91	0.48	1.26	0.52	1.02	1.41	0.33	-1.02
2006	Kosmo Tech Ind Bhd	1.87	1.06	2.27	1.13	0.45	1.78	1.04	0.10	-0.78
2006	Megan Media Hold Bhd	1.65	0.95	0.86	1.14	0.91	0.92	1.04	-0.02	-1.93
4th quarter 2006	Transmile Group Bhd	1.91	0.88	0.89	1.80	1.00	1.43	0.81	0.08	-0.70
2005	Nasioncom Hold Bhd	2.18	1.05	0.78	1.21	0.77	0.98	1.21	0.17	-0.56
2005	Welli Multi Corp Bhd	0.99	1.38	0.92	1.30	0.72	0.70	1.02	0.06	-1.76
2004	United U-Li Corp Bhd	1.09	1.00	1.00	1.23	0.95	0.91	1.13	0.15	-1.53
4th quarter 2004	Goh ban Huat Berhad	0.93	1.60	0.64	0.91	1.13	2.41	0.65	0.33	-1.01
2004	Aktif Lifestyle Berhad	0.84	0.33	26.61	1.01	4.95	1.80	0.10	14.28	73.92
2003	Plymate Hold Bhd	1.33	0.87	0.45	1.21	0.66	0.95	1.05	0.11	-1.81

found of submitting false statement to Bursa Malaysia for the year ended December 2006, with its revenue being overstated.

Table 2 displays descriptive statistics results for the Beneish M-Score, including its 8 variables indexes.

With reference to Table 2, 12 companies (71%) were found to have variable Accruals (Accruals) score higher than the threshold limit of 0.03. The result shows that the majority of examined companies breached the Accruals threshold limit more than other variables' indexes, which may be the contributing factor that triggers accounting enforcement action by SC Malaysia. The second highest variable index to have breached the suggested threshold limit is Days Sales Receivables Index (DSRI) with 6 (35%) of the fraudulent reporting companies detected of exceeding. This may suggest that 6 of these companies overstated their revenue abnormally, which in return prompts an investigation by the authority. The third highest variable index is shared by the Leverage Index (LVGI) and Sales, General, Administrative Index, having 5 (29%) fraudulent companies respectively exceeding their suggested threshold limit. Gross Margin Index (GMI) falls in the fourth place with 4 (24%) of the fraudulent companies exceeding the threshold limit, followed by 3 indexes of AQI, SGI, and DEPI with 3 (18%) fraudulent reporting companies respectively exceeding their recommended threshold limit.

Table 3 shows the percentage of fraudulent reporting companies having the total Beneish M-Score greater than -2.22, -1.89 and -1.78.

Based on Table 3, fourteen (82%) out of seventeen fraudulent reporting companies were found to have total M-score higher than -2.22. Furthermore, when a score greater than -1.89 and greater than -1.78 were applied, the former identified thirteen (76%) out of 17 companies as earnings manipulator and fraudster while the latter detected twelve (71%) out of 17 companies. The findings suggest that Beneish M-score model is more than capable of detecting the majority of companies committing earnings manipulation and financial statement fraud even when different total recommended score of greater than -2.22, -1.89, and -1.78 be considered. Furthermore, by choosing the total score greater than -2.22 will ensure fraudulent financial reporting companies to be detected at 82% accuracy rate which is higher than 76% accuracy rate as in Beneish (1999) and exceeding 71% accuracy rate as in Beneish, Lee and Nichols (2013). This finding supports hypotheses 1 that the Beneish M-score model is reliable in detecting the majority of companies committing financial statement fraud as disclosed by the Malaysian Securities Commission. Nevertheless, a score greater than -2.22 would expose higher percentage of misclassification of potential manipulators and non-manipulators by the model if used on hold out samples. Total score of greater than -1.89 for the Beneish M-score model also shows a promising result with detection rate of 76% of fraudulent reporting companies, which is similar to the detection accuracy rate of earnings manipulation in Beneish (1999) but exceeding the detection rate of 71% in Beneish, Lee, and Nichols (2013). However, when a total score of -1.78 is selected for the model, the detection accuracy rate of fraudulent reporting companies stays at 71% which is lower than Beneish (1999) at 76% but similar to Beneish, Lee and Nichols (2013) at 71%.

CONCLUSION

Earnings manipulation involves deliberate misstatements of financial statements in violation of the accounting rules to deceive users into believing bogus positive performance. The impact will be detrimental towards stakeholders who can be misled into making erroneous decisions and business strategies while relying on the materially misstated financial statements, resulting in huge monetary losses on their side. Nevertheless,

TABLE 2. Descriptive statistics for the Beneish M-Score total and indexes

	DSRI	GMI	AQI	SGI	DEPI	SGAI	LVGI	Accruals	MSCORE
Mean	1.32	0.94	2.42	1.54	1.06	1.07	1.08	0.93	3.16
Median	1.17	1.03	0.88	1.21	0.86	0.92	1.04	0.10	-1.53
Max	2.60	1.60	26.61	6.95	4.95	2.41	3.24	14.28	73.92
Min	0.23	-0.49	0.45	0.01	0.42	0.50	0.10	-0.13	-3.76
Index threshold limit	1.47	1.19	1.25	1.61	1.08	1.04	1.11	0.03	
No o companies above threshold limit	6	4	3	3	3	5	5	12	
% of companies above threshold limit	35%	24%	18%	18%	18%	29%	29%	71%	

TABLE 3. % of M-score > -2.22; -1.89; -1.78

	Total M-score > -2.22	Total M-score > -1.89	Total M-score > -1.78
Number of Fraudulent reporting companies exceeding out of 17	14	13	12
Detection accuracy rate %	82%	76%	71%

earnings manipulation scheme and financial statement fraud are difficult to establish as they are well-concealed by the perpetrator. Thus, various tools to assist detection of earnings manipulation and fraud are available with the Beneish M-score model garnering some fame for being used as a financial forensic tool by fraud examiners, and being referred to in professional articles, academic textbooks, and reference materials in the United States. Although the model is quite popular in the US, its reliability in assisting stakeholders to detect earnings manipulation and financial statement fraud in Malaysian listed companies is still not well documented. Thus, this study aimed at proving the reliability of the Beneish M-score model in detecting earnings manipulation and fraudulent financial reporting of Malaysian public listed companies that have been investigated and charged by SC Malaysia before a public announcement was made.

The study reveals that 82% of the public listed companies prosecuted for fraudulent financial reporting by SC Malaysia have been detected by the Beneish M-score model for committing earnings manipulation and financial statement fraud during the fraud year before a public announcement was made. The model remains reliable even when a more conservative total score id used as cut-off point as in Beneish (1999) to distinguish between potential manipulators and non-manipulators with detection accuracy rate of 76% and 71% respectively and with a lower misclassification rate. Thus, the model is well supported by the findings to be reliable and capable of identifying potential listed companies in Malaysia that practice earnings manipulation and having the potential of being investigated and charged for fraudulent financial reporting in violation of the Malaysian Securities Commission Act and Regulations.

This study contributes by enhancing knowledge on financial statement fraud and investigation domain as it extends support on the reliability of the Beneish M-score model for detecting fraudulent financial reporting not just in the United States' public listed companies but also effective for public listed corporations in Malaysia. The results will be important to stakeholders especially the management of the company who can rely on the M-score model to check for irregularities in its financial report before submission to Bursa Malaysia to prevent from any potential backlash that could damage its reputation. Should the model detect any potential fraud, this will allow the management to trigger immediate investigation and corrections to ensure the company's financial statements show a true and fair financial position. Other than prospective and existing shareholders, auditors, and forensic investigators can also benefit from this model to assist them in verifying the integrity of the company's financial statements for further decision making on matters related to shareholding and investigation. In addition, academic researchers can apply the M-score model to identify potential fraudulent financial reporting companies in the present setting as a proxy to represent

actual financial statement fraud corporations for further analysis. This may overcome the problem where only a small number of companies prosecuted for accounting fraud were made known to the public with the rest remaining undetected.

Some limitations of this study are as follows. Firstly, the Beneish M-Score model according to Beneish's (1999) can incorrectly classify 24% of manipulators as non-manipulators while having the tendency to misclassify 17.5% of the non-manipulators as earnings manipulators, when the total score cut-off point is greater than -1.89. The percentage of misclassification reduces further when a total M score of greater than -1.78 is used with manipulator misclassification stands at 26% and non-manipulator misclassification at 13.8% Secondly, the model can be only used to analyse financial statement data of the public listed companies and cannot be reliably applied in the private limited companies' environment.

Future research should attempt to apply the Beneish M-score model on all financial statements of public companies listed on the main board to detect and classify them into potential financial statement fraud companies and non-potential financial statement fraud companies in the latest year setting. This can be extended to another related future research where analysis can be made on corporate governance characteristics between potential financial statement fraud companies and non-potential fraud companies and to confirm whether any differences exist. Other future research can also focus on studying share price performance and shareholders' return between both potential financial statement fraud companies and non-potential fraud companies for the benefit of stakeholders.

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