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DETECTION OF FRAUDULENT FINANCIAL REPORTING USING RATIO ANALYSIS

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ABSTRACT

Fraudulent financial reporting is a critical issue that undermines the reliability of financial information and stakeholder trust. This study examines the effectiveness of financial ratio analysis as a tool for detecting potential fraud in corporate financial statements. This study focuses on a sample of companies reprimanded by the Securities Commission of Malaysia between 2000 and 2009 for submitting false or misleading financial reports (FMRs). Key financial ratios, including leverage, profitability, liquidity, and efficiency, were analysed using a trend analysis approach to identify abnormal variations over time. A threshold of a 10% annual change in the ratio values was applied to signal potential irregularities or financial mismanagement. The results indicate that significant fluctuations in selected financial ratios are associated with a higher likelihood of fraud. In particular, unusual changes in profitability and leverage ratios are strong indicators of financial manipulation. The findings suggest that ratio analysis can serve as a practical and cost-effective early detection mechanism for identifying fraudulent financial reporting. This study contributes to the existing literature by providing empirical evidence of the usefulness of financial indicators in enhancing fraud detection practices for regulators, auditors, and financial analysts.

Keywords: Fraudulent financial reporting, financial ratios, trend analysis, fraud detection, financial statement analysis

1. INTRODUCTION

Fraudulent financial reporting represents a serious form of corporate misconduct that negatively affects business operations, leading to investor mistrust, reputational damage, and potential legal penalties under the Securities Commission Act 1993 (Ernst and Young, 2009). This issue is of particular concern to external auditors, as the failure to detect irregularities may undermine public confidence in the auditing profession. Typically, fraudulent financial reporting involves the intentional manipulation or falsification of financial statements for organisational benefit (Nia, 2015). Such practices may also result in broader organisational consequences, including the disruption of business relationships, reduced employee morale, and long-term reputational damage (PricewaterhouseCoopers, 2003).

Empirical evidence highlights the severity of this problem in Malaysia. Mohamad Kamal et al. (2016) found that 82% of publicly listed companies prosecuted for fraudulent reporting were involved in earnings manipulation prior to public disclosure. Notable cases, including Transmile Group Bhd and Megan Media Holdings Bhd, demonstrate the scale of financial misstatements, amounting to billions. These incidents underscore the need for effective detection mechanisms to prevent such occurrences.

Financial ratio analysis has been widely recognised as a practical tool for identifying irregularities in financial statements. Prior studies (Widyanti & Hashim, 2016; Widyanti & Nuryatno, 2018) have identified leverage, profitability, and asset composition as significant predictors of fraud. Accordingly, this study examines companies reprimanded by the Securities Commission between 2000 and 2009, utilising nine financial ratios adapted from Spathis (2002) to assess their effectiveness in detecting fraudulent financial reporting.

Ratio analysis was conducted to determine whether fraudulent financial reporting could be predicted.
The nine financial ratios used are adapted from Spathis (2002).

Table 1. *Spathis (2002) Nine Financial Ratios*

Key Ratios	Formula	Purpose
Sales to Total Asset Ratio	Sales/Total Assets	Revenues and receivables are the most common accounts manipulated when committing statement fraud. Increased revenue typically leads to an increase in the number of receivables.
Account Receivable to Sales Ratio	Receivable/Sales	
Net Profit Margin	Net Profit/Sales	These ratios are used because profit margins assess the profitability of a company. A high profit margin attracts investors to a company. Therefore, management is more likely to misstate financial statements to increase the demand for the company's share capital.
Net Profit to Total Asset Ratio	Net Profit/Total Assets	
Gross Profit to Total Asset Ratio	Gross Profit/Total Assets	
Inventories to Sales Ratio	Inventories/Sales	This is because management may manipulate inventories to strengthen a company’s financial position.
Working Capital to Total Asset Ratio	Working Capital/Total Assets	This ratio will be used as companies with relatively low working capital may face liquidity problems.
Debt Percentage	Total Liabilities/Total Assets	These ratios are used because a high debt structure may increase the likelihood of fraud in financial reports. Once confronted with profitability problems, companies can start borrowing money, increasing their debt.
Debt to Equity Ratio	Total Liabilities/Shareholders’ Equity	

2. LITERATURE REVIEW

Accountants and analysts use financial ratios to predict future financial variables, and researchers use them for predictive purposes. Financial ratios include the establishment of a relevant financial relationship between the components of financial statements for further investigation (Barnes, 1987). All the financial ratios studied by Spathis (2002) have significant relationships with fraudulent financial statements, except for the Gross Profit-to-Assets ratio and the percentage of Inventory-to-Total Assets. This means that financial ratios can explain the occurrence of fraudulent financial statements (Mohd Dani et al., 2013).

Dalnial et al. (2014) show that financial ratios can be used to detect fraudulent financial reports. In his study, the total debt to total asset ratio was found to have a significant difference in the mean result, which shows higher leverage for fraudulent firms. The leverage ratio of total debt to total equity is a significant predictor of fraud detection, indicating that companies with higher debt-to-equity ratios are good indicators of fraudulent behaviour. This also means that companies with high total debt to total debt-to-equity valuations are more likely to be listed as fraudulent firms (Dalnial et al., 2014; Spathis, 2002).

Negative financial performance is a key motivator of fraud (Ozcan, 2016). Ozcan (2016) indicates that companies with higher liquidity are more likely to issue fraudulent financial statements. Izzalqurny, Subroto, and Ghofar (2019) also state that liquidity has a negative effect on the risk of financial statement fraud. Profitability positively affects the risk of fraud in financial statements (Izzalqurny et al., 2019; Repousis, 2016)). While studies by Zainudin and Hashim (2016); Lisic, et al. (2014); and Dalnial, et al. (2014) stated that profitability ratio has negative affect on fraudulent financial reporting.

3. METHODOLOGY

The population of this study is the list of companies charged with providing misleading information, which is taken from the SC website (www.sc.com.my) under the enforcement section. Several enforcement actions were taken by the Securities Commission from 2000 to 2009 under the Securities Commission. This study was conducted by compiling secondary data from the Malaysian Stock Exchange Market, Thomson One Banker, and the Malaysian Company Commissioner for 26 companies. The data collected for each selected case study shall be in the form of a financial statement for the five years prior to the date of submission of false or misleading information.

According to Rosplock (1997), detecting inconsistencies in financial reporting depends on the ability and experience of the auditor and financial analyst because financial reporting ratios are subjective. He also stated that financial irregularities occur when a company shows a dramatic increase/decrease in the analysis of its ratio trends. These financial irregularities were measured if the company showed any changes that amounted to more than 10% in trend analysis.

4. RESULTS AND DISCUSSION

Using the ratio change benchmark, this study defines the change ratio where, if the change ratio is greater than 10%, it is marked as one. However, if less than 10% was marked as 0. These changes were classified into two groups: the early period and the year in which fraud occurred, as stated in the Securities Commission enforcement section. The early period of the study is defined as the changes that occur before the year of fraud. The year in which fraud was committed refers to the changes that occurred in the last year prior to the year in which fraud occurred. Please see Figure 1.

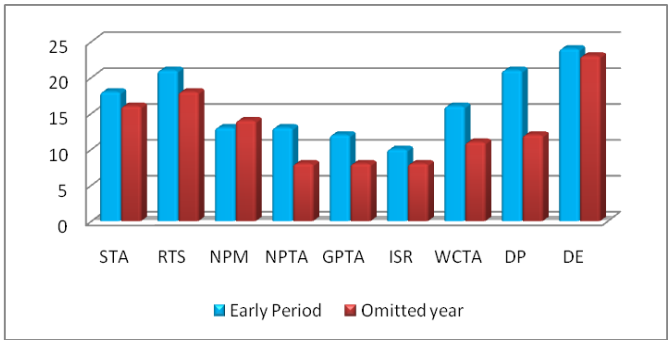

Figure 1. Comparison between the number of companies that showed drastic changes in each ratio between the early period and the year(s) omitted.

Figure 1 shows a comparison between the number of companies that have radically changed according to the ratios of the two groups. It has been found that the number of companies in each ratio is slightly the same. In the early years, however, the trend of change was slightly higher than that of the year(s) that were omitted owing to changes observed over more than two years. However, the dramatic changes in NPM were found to be higher in the year of omission than in the early period. The DE ratio shows the highest number of companies in both groups. This indicates that the companies involved tend to increase their debts dramatically in their early business periods and fraud year(s). Meanwhile, ISR ratios were the lowest for companies in both groups. The trends show that the ratios manipulated by the companies in both groups are slightly similar.

Table 2. *Changes in Ratios of Companies*

	STA	RTS	NPM	NPTA	GPTA	ISR	WCTA	DP	DE	Total
Ocean	1	0	0	1	1	0	1	1	1	6
Polymate	0	1	0	0	0	1	0	0	1	3
Goh Ban Huat	0	1	1	0	1	1	0	1	1	6
Welli	1	0	0	1	0	1	1	1	1	6
Megan	1	1	0	0	0	0	0	1	1	4
Talam	0	1	0	0	0	1	0	0	1	3
Transmile	1	1	1	1	1	0	1	1	1	8
United U-li	1	0	0	1	1	0	1	1	0	5
Multi-code	1	0	0	0	0	0	0	0	0	1
Mems	1	1	1	1	0	0	0	1	1	6
Oil Corp	0	1	0	0	0	1	1	1	1	5
Satang	1	1	0	0	0	0	0	0	1	3
Pilecon	0	1	1	0	0	0	1	1	1	5
Chase	0	1	1	0	0	0	0	1	1	4
Gen-soil	1	1	1	1	1	1	1	1	1	9
Seal	1	1	1	1	1	1	1	1	1	9
Tat Sang	1	1	0	0	1	1	1	1	1	7
Chin Foh	1	0	0	0	0	0	0	1	1	3
Nasioncom	1	1	1	1	1	0	1	1	1	8
Ganad	1	1	0	0	1	0	1	1	1	6
Wembley	0	1	1	1	0	1	1	0	1	6
Hospitech	1	1	0	0	1	1	0	1	1	6
Omega	1	1	1	1	1	0	1	1	1	8
AKI	1	1	1	1	0	0	1	1	1	7
GP Ocean	1	1	1	1	1	0	1	1	1	8
Idris	0	1	1	1	0	0	1	1	1	6
	18	21	13	13	12	10	16	21	24	

* DE(debt to equity), DP(debt percentage), GPTA(gross profit to total asset ratio), ISR(inventory to sales), NPM(net profit margin), NPTA(net profit to total asset ratio), RTS(to sales ratio), STA(sales to total asset ratio), and WCTA(working capital to total asset ratio).

After the coding was processed, it was found that all 26 companies had more than 10% change in at least one ratio for both groups of categories: the initial period and the year of fraud. Consequently, this shows consistency in the signs leading to fraudulent actions for each company analysed in this study.

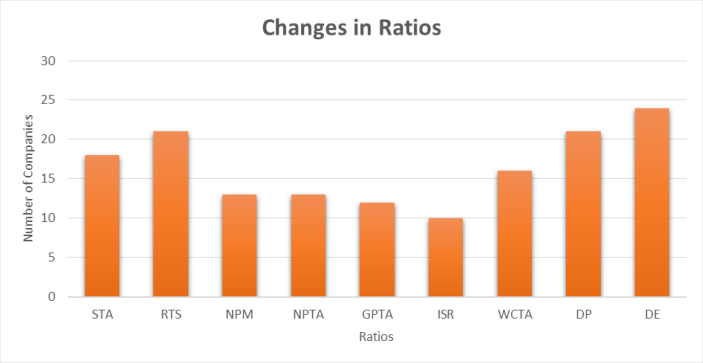

Figure 2. Number of companies that have drastically changes in ratios

Figure 2 shows the changes in the ratio, and the analysis shows that the most common ratio showing signs of financial irregularities is the debt-to-equity ratio, which is approximately 24 out of 26. Furthermore, the inventory-to-sales ratio is the least common, affecting only 10 of the 26 companies. This could be due to the fact that some of these firms do not have an inventory of their operations. Figure 1 shows the number of businesses that have radically changed at each ratio.

This indicates that the companies involved tend to increase their debts dramatically in their early business periods and fraud year(s). Meanwhile, the inventory-to-sale ratios reveal the lowest numbers for companies, and the patterns that show that the ratios have been manipulated by the companies are slightly similar. It was found that most of the companies that had been reprimanded by the securities commission were new companies and those that had submitted proposals to be listed on the Malaysian stock market. The following conclusions can be drawn from the findings:

1. The red flag at the beginning of the fraud can be found in the nine ratios used in this study:
2. Companies that tend to make dramatic changes to their financial ratios early in their business operations will find it difficult to cover losses and costs in the coming years, resulting in more debt and potentially financially dishonest reporting or any illegitimate business actions to ensure their continued success.
3. Incorrect red flags in financial management can be found by the Stock Exchange of Malaysia and the Securities Commission in the early days of the company when they submitted applications for public listing.

5. CONCLUSION

This study examines the effects of financial ratios on fraudulent financial reporting. The companies involved tend to increase their debts dramatically in their early business period and fraud year(s). The amount owed to total assets is acknowledged before it impacts fraudulent financial reporting. The profitability of net profit on income is accepted such that profit affects the reporting of counterfeit finance.

The effect of current assets on total assets is denied until it has no effect on fraudulent financial reporting. The debtor's income is denied until it has no effect on fraudulent financial reporting. The inventory of total assets is rejected so that the efficiency ratios do not have any bearing on false financial reporting. Liquidity with working capital is deducted from total assets so that liquidity does not affect the financial reporting.

Based on the analysis, it can be concluded that financial ratios can be used to detect false financial information provided by companies and other organisations. In fact, the companies reprimanded by the securities commission showed a trend of deviation in at least one of the nine ratios used in this study. The financial ratios of all firms can show the inconsistency of patterns in businesses that are reprimanded by the securities commission. Nevertheless, the effects of financial ratios, together with tools, techniques, or instruments, need to be evaluated to produce accurate results for the model.

It was also found that the financial ratio and inconsistency of the financial statement were shown in previous periods. Many businesses have reported irregularities even in the earlier period, that is, five years prior to the year of fraud charges.

This suggests that fraudulent financial reporting may be detected much earlier if a thorough investigation is conducted into the submission of each financial statement. The symptoms of an overstatement of sales and an increase in debt were observed in earlier periods. Businesses tend to increase their debts, which shows that the company has a liquidity problem and may also mean that the companies are under pressure to maintain profitability.

Companies that tend to make dramatic changes to their financial ratios in the early stages of their business operations will find it difficult to cover losses and expenditures in the years to come, which will cause them to spiral into more debt and finally into fraudulent financial reporting or any illegal business act to ensure the survival of their business and maintain their business image. The other skewed factor, which relates to income, is the increasing value of accounts receivable (AR). Accounts receivable may be used to mask fake income. This study shows that an increase in the sales-to-total asset ratio is associated with an increase in receivable accounts.

This study provides a potential future work that can be used to establish a financial statement review method in the Malaysian scenario. The results will serve as a guide for organisations involved in decision-making based on financial statement research.

This study may serve as a reminder to the Securities Commission that a thorough investigation should be conducted for each report submitted to the Securities Commission regarding financial statements. Securities Commission regulators must conduct a thorough investigation by comparing the information produced in the prospectus with that submitted to the Commissioner of Companies, Malaysia. This further emphasises the need for the SC to investigate the financial statements submitted to the Commissioner of Companies Malaysia by subsidiary companies. This may indicate a red flag for fraudulent financial reporting.

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