The Effect of Fraud Pentagon and F-Score Model in Detecting Fraudulent Financial Reporting in Indonesia

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Abstract

This study analyzes the effect of fraud pentagon and the efficacy of the F-score model in detecting fraudulent financial reporting in Indonesia. The sample used is the company's annual report subject to Financial Service Authority (OJK) sanctions and a twofold comparative annual study from companies not subject to sanctions in the same reporting year and industry type. The sample was selected using a purposive sampling method. The data was analyzed using the logistic regression analysis. The test results prove that pressure, opportunity, and rationalization in the fraud pentagon can be used to detect bogus financial reporting. The results reveal that the F-score model is unsuitable for hypothesis testing; consequently, some variables should be eliminated. Therefore, the F-score model has limited usefulness in detecting counterfeit financial reporting in Indonesia.

Keywords: F-Score, accounting fraud, fraud detection, fraud pentagon, fraudulent financial reporting

Introduction

Today, fraud is a phenomenon that continues to grow throughout the world. The Report to The Nations (RTTN) in 2020 states that 86% of fraud cases are asset abuse, 43% corruption, and 10% financial statement fraud. Financial statement fraud caused the largest median loss from those cases, $954,000, followed by the corruption of $200,000 and asset misappropriation of $100,000 (ACFE, 2020). Previously, the median loss on financial statement fraud in 2018 was $800,000 (ACFE, 2018), or an increase of $154,000 in 2020. Financial statement fraud needs to be treated seriously because even though it has the smallest percentage of cases, it produces the highest loss and continues to increase.

Fraud in Indonesia consist of 67% is corruption, 31% is misappropriation of assets, and 2% is financial statement fraud (ACFE, 2018). These results align with the Asia-Pacific regional focus in the 2018 RTTN, which is 51% of schemes fraud in the form of corruption, 13% fraud of financial statement, and the rest are various schemes fraud (ACFE, 2018). Based on the occurrence of frauds, corruption provides a percentage of losses of 77%, misuse of assets by 19%, and fraud

financial statement by 4%. However, the percentage of losses due to fraudulent financial statements in Indonesia in 2016 differed significantly from the results of a survey conducted by ACFE in 2016. The small number of fraudulent financial statements is presumably because many fraudulent financial statements have not been revealed, such as misuse of the information in the capital market and fraudulent tax information (Chapter, 2017).

The early detection of fraud is a very important step to take to minimize future losses. The Pentagon fraud and the F-Score model are some of the studies conducted to detect fraud financial statements. The fraud pentagon is an adjustment to the fraud triangle, namely three factors that underlie the occurrence of fraud, including pressure, opportunity, and rationalization, by adding two additional factors, namely competence and arrogance (Marks, 2011). A fraud pentagon is expected to be a means to detect and prevent fraud. In general, the factors in the pentagon fraud are red flags before the fraud occurs. The F-Score model is a method for detecting fraud in the form of a probability scale, red flag, or signal for the possibility of earning management or misstatements (Dechow et al., 2011). The F-Score model is a development of the Beneish M-Scoredetecting, which uses elements in financial statements to form a model in fraud of financial statements.

Several studies on detection fraud using the fraud pentagon in Indonesia show different results. First, Tessa & Harto (2016) conclude that only pressure and arrogance significantly affect detecting fraudulent financial reporting. Second, Novitasari & Chariri (2018) conclude that two elements of the fraud pentagon significantly affect detecting fraudulent financial statements, namely rationalization and arrogance. Then Puspitha & Yasa (2018) managed to find that all elements of the fraud pentagon have a significant effect on detecting fraudulent financial reporting.

Several previous studies on the F-Score model have shown consistent results, which are able to detect fraudulent financial reporting effectively, even better than the Beneish M-Score (Aghghaleh 2016; Hugo, 2019; Hung et al., 2017). In a previous study, Aghghaleh et al. (2016) researched companies in Malaysia, Hung et al. (2017) researched companies in Vietnam, and Hugo (2019) researched companies in the United States. Previously, Skousen & Twedt (2009) conducted research based on the initial model F-Score in 2007 on emerging market countries and compared to companies in the United States. The results of the research by Skousen & Twedt (2009) show that the F-Score model can be used as an initial screening before determining investment in a particular country and industry in order to avoid the risk of fraud.

The research results on the fraud pentagon give different results, so it is necessary to re-examine based on the conclusions and suggestions of previous studies. Research on the effect of the F-Score model in detecting fraudulent financial reporting in Indonesia has not been carried out. Each country has its company characteristics, while the F-Score model is based on the characteristics of companies in the United States. Therefore, this study will examine the effect of the F-Score model in detecting fraudulent financial reporting in Indonesia. Fraud pentagon and F-Score models are juxtaposed in this study to compare which one is better in detecting fraudulent financial statements in Indonesia. Fraud pentagon is a research model which emphasizes the factors causing fraud, while the F-Score model emphasizes more on detecting the possibility that financial statement fraud has occurred.

The theory fraud triangle states that pressure is a condition that encourages the occurrence of fraud. Pressure comes from inside or outside the company. The pressure from within the company can be represented by financial stability and financial targets set by management (AICPA, 2002). Financial stability is influenced by economic conditions, industry, or operational conditions (AICPA, 2002). The growth of company assets can mark the company's operational growth. Management will be under pressure if the company's total assets decrease and can encourage management to commit fraudulent financial reporting. Unrealistic financial targets from the principal can pressure agents/management (Clinard & Cressey, 1954). Management will be under excessive pressure to meet predetermined targets, including sales incentives or profitability targets (AICPA, 2002). Management always strives to provide the best performance for the company so that it is considered capable of running the company. Therefore, financial targets can pressure management, thus encouraging management to carry out fraudulent financial reporting. Tessa & Harto (2016), Novitasari & Chariri (2018), and Puspitha & Yasa (2018) use Return on Assets (ROA) as a measurement of financial targets, but the results of the three studies state that ROA does not affect fraudulent financial reporting, so the author uses Return on Equity (ROE) as a measurement of financial targets based on the recommendations of research Puspitha & Yasa (2018).

The pressure from the outside can come from the company's need to meet third-party expectations when the company needs debt financing to remain competitive (AICPA, 2002). In the fraud triangle, excessive pressure from external parties to management can increase the risk of fraudulent financial reporting. The external pressure can come from high-risk debt and credit, which are creditors' concerns in providing loans. Based on the research results of Tessa & Harto (2016) and Puspitha & Yasa (2018), the calculation of external pressure proxied by the leverage ratio proved to have a significant effect on fraudulent financial reporting. Based on this description, pressure the proxied from financial stability, financial target, and external pressure can affect fraudulent financial reporting. Therefore, the first research hypothesis is built are:

H_1: Pressure proxied by financial stability, financial targets, and external pressure affects detecting fraudulent financial reporting in Indonesia.

Fraud triangle theory states that opportunities can arise due to weak control and supervision. Ineffective monitoring is measured by the ratio of independent commissioners to the board of commissioners. The higher the ratio of independent commissioners, the risk of possible fraud is negligible. Puspitha & Yasa (2018) prove through their research that ineffective monitoring proxied by the ratio of independent commissioners significantly affects fraudulent financial reporting.

Opportunity occurrence of fraud can come from the nature of the industry in terms of accounting complexity and estimates that involve subjective considerations (AICPA, 2002). The fraud triangle also explains that the opportunity for fraudulent financial reporting can be caused by the complexity of accounting and unreliable information systems. The research results by Puspitha & Yasa (2018) and Novitasari & Chariri (2018), which use the nature of the industry by calculating the account receivable change ratio, state that there is no significant effect. Then Puspitha & Yasa (2018) recommend using the inventory turnover ratio to calculate the nature of the industry. This recommendation is in line with the research results of Summers & Sweeney (1998), which show that management can use inventory which is a subjective judgment, as a tool to

manipulate financial statements. Thus, ineffective monitoring and the nature of the industry can be factors that provide an opportunity for management to carry out actions fraudulent financial reporting. Therefore, this study builds the second hypothesis, namely:

H₂: Opportunity proxied by ineffective monitoring and the nature of the industry affects detecting fraudulent financial reporting in Indonesia.

Clinard & Cressey (1954) explain in the fraud triangle theory that rationalization can arise because the perpetrator seeks justification for his actions. The rationalization for those responsible for firm management, management team, and employees, allows them to engage in or justify fraudulent financial reporting that cannot be observed by auditors (AICPA, 2002). The factor of fraudulent financial reporting from rationalization is related to the unfavourable relationship between management and auditors, management's failure to manage finances, and earnings management habits in the company. One of the proxies that can be used in showing the existence of rationalization by management is the change in auditor or auditor change. Change in auditors can be done as an effort to reduce the possibility of detecting fraud conducted by management (Nurbaiti & Hanafi, 2017; Summers & Sweeney, 1998). Therefore, companies tend to change auditors to cover up fraud in the company. With the change of auditors, it is possible for fraud committed by management to be invisible and produce good audit results, so that management can justify the actions that have been carried out. The results of research by Puspitha & Yasa (2018) and Novitasari & Chariri (2018) prove that change in auditors has a significant effect on fraudulent financial reporting. For this reason, rationalization is a part that affects fraudulent financial reporting, so the third research hypothesis is:

H₃: Rationalization proxied by the change in auditors affects detecting fraudulent financial reporting in Indonesia.

Competence is often associated with one of the things that lead to fraudulent financial reporting. Competence has six components: position, intelligence, confidence, coercion, fraud, and stress management. These six components can be represented by the ability of the director so that the element of competence can be proxied through change in the director. Change in director or change of directors is indicated to describe the ability to perform stress management (Novitasari & Chariri, 2018; Tessa & Harto, 2016). Change in director can be done to improve the performance of previous management, or it can also indicate a specific political interest. A change in director can cause a stress period which will have an impact on encouraging fraud behaviour. Research from Puspitha & Yasa (2018) produces a significant effect between changes in directors and fraudulent financial reporting. Therefore, to prove that competence affects fraudulent financial reporting, the fourth research hypothesis is formed as follows:

H₄: Competence proxied by a change in director affects detecting fraudulent financial reporting in Indonesia.

A frequent number of CEO's photo in a financial report is chosen to proxy arrogance. The number of photos in the annual report is a form of CEO narcissism; namely, the CEO tends to show his status and position to be recognized in the company to maintain his position (Wales et al., 2013). Therefore, the number of CEO photos in the financial statements can represent the level of arrogance and superiority that the CEO has. This arrogance and superiority can make the CEO feel that the company's internal controls do not apply to him. Marks (2012) states that a COSO study results prove that

70% of fraud perpetrators have a profile that combines pressure with arrogance or greed. In addition, 89% of fraud cases involve the CEO. Research by Tessa & Harto (2016), Puspitha & Yasa (2018), and Novitasari & Chariri (2018) states that the frequent number of CEO's Picture has a significant effect on fraudulent financial reporting. To prove that arrogance affects detecting fraud in financial statements, the research hypotheses used are:

H_5: Arrogance proxied by the frequent number of CEO's Photo affects detecting fraudulent financial reporting in Indonesia.

The F-Score model is a probability scale for fraudulent financial reporting based on the research results of Dechow et al. (2011). The F-Score model consists of 7 variables: RSST-Accrual, change in receivable, change in inventory, percentage of soft assets, change in cash sales, change in ROA, and stock/bond issuance. Basically, the F-Score model is a development of the Beneish M-score. Therefore, investors, auditors, and regulators can use the F-score model as an early detection tool in investigating foreign investment against fraud accounting (Skousen & Twedt, 2009).

The results of research by Aghghaleh et al. (2016) revealed that the F-Score is an effective model in predicting fraudulent or non-fraudulent financial reporting in Malaysia. Likewise, the research of Hung et al. (2017) gives the same results for predicting fraud and error in Vietnam. In line with these results, Hugo (2019) conducted a study on companies in the United States, resulting in the same conclusion. In addition, the F-Score is also proven to be more effective in detecting fraudulent and non-fraudulent financial reporting than the Beneish M-Score Model for issuers in Malaysia, Vietnam, and the United States (Aghghaleh et al., 2016; Hugo, 2019; Hung et al., 2017). Therefore, it is necessary to research the effect of the F-Score model in detecting fraudulent financial reporting in Indonesia. In order to prove the usefulness of the F-Score Model, the sixth research hypothesis was built as follows:

H_6: The F-Score model is influential in detecting fraudulent financial reporting in Indonesia.

Two research models will be used to prove the hypothesis above, namely the fraud pentagon model and the model F-Score. Both models use data sourced from the company's annual report, so it is hoped that all interested parties can use it. In addition, the results of this study are expected to be used by investors in terms of measuring the investment risk that will be carried out, by auditors, in terms of measuring audit risk related to the possibility of fraud, and by regulators, in terms of increasing the efficiency and effectiveness of the supervision carried out as well as for determining regulations needed to prevent fraudulent financial reporting.

Research Method

The annual reports of companies listed on the Indonesia Stock Exchange (IDX) in the 2012-2018 period are the research objects. The sample consists of annual reports that have been declared to have violated and have been subject to sanctions based on OJK regulation number VIII.G.7 concerning Presentation and Disclosure of Financial Statements of Issuers or Public Companies and comparative year reports that are not declared to have violated these regulations. First, the sample was selected based on the list of sanctions for issuers and OJK public companies from 2013 to 2018 related to violations of regulation VIII.G.7. Then a comparison sample is selected, namely, an annual

report that is not subject to sanctions until the research is carried out and selected based on the same reporting year, sector and industry by considering the number of net assets in the annual report.

The research sample was selected by the purposive sampling method, namely the selection of samples based on predetermined criteria in order to obtain the information needed and not owned by other objects. The research sample to be tested using logistic regression was selected based on four criteria, namely: annual reports of companies listed on the IDX with complete publications for the 2012-2018 period and can be accessed by the public, annual reports of companies that have been proven to have violated and are subject to sanctions by the OJK for the period 2012-2018, the comparison company's annual report two times with the criteria that it has never been declared in violation and has been sanctioned by the OJK within the research period, the same reporting year, the same industry taking into account the closest net asset value, and data related to research variables available in full (as a whole available in the publication of the annual report for the period 2012-2018).

In testing the research hypothesis, there are two research models used. The equation of the first research model, namely the model fraud pentagon, is as follows.

$$FFR_{it}=\alpha_0+\beta_1 FS_{it}+\beta_2 FT_{it}+\beta_3 EP_{it}-\beta_4 IeM_{it}+\beta_5 NoI_{it}+\beta_6 CiA_{it}+\beta_7 CoD_{it}+\beta_8 FNP_{it}+\varepsilon_{it} \dots\dots\dots (1)$$

Information:

i	=	Samples.
t	=	Year 2012-2018.
FFR	=	Fraudulent Financial Reporting, worth 1 if it is a company that includes fraud perpetrators, comparison company 0.
FS	=	Financial Stability, percentage change in assets.
FT	=	Financial Target, net profit after tax divided by equity.
EP	=	External Pressure, total liabilities divided by total assets.
IeM	=	Inefficient Monitoring, the number of independent commissioners divided by the number of commissioners.
NoI	=	Nature of Industry, sales divided by average inventory value.
CiA	=	Change of auditors, worth 1 if there is a change of auditors in the year reporting, worth 0 if there is no change.
CoD	=	Change of Director, worth 1 if there is a change of directors in the year reporting, worth 0 if there is no change.
FNP	=	Frequent Number of CEO's Picture, the number of photos the company's CEO in the company's annual report
α	=	The constant.
β	=	Coefficient.
ε	=	Error.

The second research model, namely the F-Score model, is as follows.

$$FFR = -\alpha_0+\beta_1 RsstAcc+\beta_2 ChRec+\beta_3 ChInv+\beta_4 SoftAsset+\beta_5 ChCS-\beta_6 ChROA+\beta_7 Issue+\varepsilon_{it} \dots (2)$$

Information:

FFR	=	Fraudulent Financial Reporting, worth 1 if it is a company that includes fraud perpetrators, comparison company 0.
RsstAcc	=	accrual quality (RSST Accrual).

ChRec   =   Change in accounts receivable.

ChInv   =   Changes to inventory.

SoftAsset =   Total assets excluding cash, salvage value of long-term tangible assets and land use rights.

ChCS   =   Change in sales with cash.

ChROA   =   Change in the rate of return on investment.

Issue   =   Worth 1 if there is a stock issuance or oblikasi, if not then worth 0.

α =   The constant.

β =   Coefficient.

ε =   Error.

This study uses one dependent variable, namely Fraudulent Financial Reporting (FFR). FFR is an intentional misstatement of financial statements or an omission of numbers or disclosures in financial statements to deceive financial statement users (Jan, 2018; Minnich, 2017). FFR is measured based on data obtained from the OJK, namely the list of annual reports of companies that have been proven to have violated and have been sanctioned by the OJK, in accordance with the second criteria for selecting the sample. Assessment of FFR as the dependent variable was carried out using available dummy. The sample of the company's annual report included in the OJK list will get a value of 1, namely the company's annual report, which is fraudulent financial reporting. The annual report of the comparison company used in this study is assessed with a number 0, which is the company's annual report that is not declared to have violated OJK's VIII.G.7 regulations.

The independent variable in the model fraud pentagon uses variables that have been proven to affect previous research and the recommendations proposed by Puspitha & Yasa (2018). These variables are Financial Stability (FS), Financial Target (FT), and External Pressure (EP), which is a proxy for pressure in the fraud pentagon; Ineffective Monitoring (IeM), and Nature of Industry (NoI) which proxy opportunities in the fraud pentagon; Change in Auditor (CiA) which proxies rationalization in the fraud pentagon; Change of Director (CoD) who proxies competence in the fraud pentagon; and Frequent Number of CEO's Picture (FNP) which proxies arrogance in the fraud pentagon. The formula for the above variables is:

$$FS = \frac{\text{Total Assets}_{(t)} - \text{Total Assets}_{(t-1)}}{\text{Total Assets}_{(t-1)}} \quad\dots\dots\dots\dots\dots\dots\dots (3)$$

$$FT = \frac{\text{Net profit after tax}}{\text{Company equities}} \quad\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (4)$$

$$EP = \frac{\text{Total liabilities}}{\text{Total assets}} \quad\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (5)$$

$$IeM = \frac{\text{Number of Independent Commissioners}}{\text{Total Number of Board of Commissioners}} \quad\dots\dots\dots\dots\dots (6)$$

$$NoI = \frac{\text{Cost of Good Sold}}{(\text{Beginning inventory} + \text{Ending inventory})/2} \quad\dots\dots\dots\dots (7)$$

CiA = dummy; 1 if there is a change of auditors; 0 if there is no change of auditor;

CoD = dummy; 1 if there is a change of president director within 2 years; 0 if not present;

FNP = Number of CEO photos included in the annual report.

While the variable F-Score model uses the variables in the model I research by Dechow et al. (2011), among others accrual quality, namely RsstAcc (RSST-Accrual); and financial performance, namely ChRec (Change in receivable), ChInv (Change in inventory), SoftAsset, ChCS (change in cash sales), ChROA (change in ROA), and Issue. The operational definition of each variable is determined by the formula:

$$RSSTAcc= \frac{\Delta WC+\Delta NCO+\Delta FIN}{\text{Average total assets}} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(8)$$

$$ChRec= \frac{\Delta \text{Account Receivable}}{\text{Average total assets}} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (9)$$

$$ChINV= \frac{\Delta \text{Inventory}}{\text{Average total assets}} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (10)$$

$$SoftAsset= \frac{\text{Total assets-PP\&E-Cash and Cash Equivalent}}{\text{Total Assets}} \dots\dots\dots\dots\dots\dots\dots (11)$$

$$ChCS= \frac{\text{sales}_t - \Delta \text{account receivable}_t}{\text{sales}_{t-1} - \Delta \text{account receivable}_{s-1}} \dots\dots\dots\dots\dots\dots\dots (12)$$

$$ChROA= \frac{\text{earnings}_t / \text{ average total asset}_t}{\text{earnings}_{t-1} / \text{ average total asset}_{t-1}} \dots\dots\dots\dots\dots\dots\dots (13)$$

Issue = 0 or 1; 1 if shares/bonds are issued

Description for the variable RSSTAcc, WC = [Current assets - Cash and short-term investments] - [Current liabilities – Debt in Current liabilities]; NCO = [Total Assets - Current Assets - Investments and Advances] - [Total Liabilities – Current liabilities–Long term debt]; FIN = [Short term investments + Long term investments] - [Long term debt + Debt in current liabilities + preferred shares].

Testing is done by providing a descriptive analysis first for each model to make it easier to understand and observe. Furthermore, logistic regression testing was carried out on each model. According to Widarjono (2010), there are three stages in evaluating logistic regression: the overall model fit, test the goodness of fit model test, and the individual parameter significance test.

Result and Discussion

The research sample was selected through the purposive sampling method because the research object requires specific conditions (Sekaran & Bougie, 2016). The object population is all annual reports for the 2012-2018 period published by companies listed on the IDX. The primary sample was selected based on the list of sanctions for issuers and OJK public companies from 2013 to 2018 related to violations of regulation VIII.G.7. There were 30 annual reports for the 2012-2018 period from 27 companies sanctioned, but three annual reports were eliminated because they did not meet the fourth criteria in the sample selection. One report was eliminated because the publication of the annual report was not available, while two reports were eliminated because the required variables could not be obtained. Then a comparison sample is selected, namely an annual report that is

Table 1. Distribution of Company Samples and Company Observation Data

Company Sector	Number of Company	Annual Report	Number of Report
Trade, Services and Investment	18	2012	27
Property, Real Estate and Building Construction	15	2013	21
Mining	15	2014	9
Various Industries	9	2015	7
Infrastructure, Utilities and Transportation	9	2016	11
	9	2017	3
Consumer Goods Industry	6	2018	3
TOTAL	81	TOTAL	81

Source: Processed Data, 2020

Table 2. Descriptive Statistics of Pentagon Fraud

Variable	N	Mean	Std. Dev.	Min	Max
FFR	81	0.333	0.474	0.000	1.000
FS	81	0.447	1.948	-0.216	17.267
FT	81	0.104	0.170	-0.228	1.131
EP	81	0.465	0.437	-0.207	2.876
IeM	81	0.400	0.115	0.166	0.750
NoI	81	60.390	273.190	0.098	2.241.580
CiA	81	0.246	0.433	0.000	1.000
CoD	81	0.444	0.500	0.000	1.000
FNP	81	3.321	2.489	0.000	13.000

Source: Processed Data, 2020

not subject to sanctions until the research is carried out and selected based on the same reporting year, sector, and industry by considering the number of net assets in the annual report. The comparison sample was selected as much as two times the primary sample so that 54 annual reports were obtained for 48 companies. Thus, there is a total sample consisting of 81 annual reports originating from 72 issuers and public companies listed on the IDX. The distribution of sample data is presented in Table 1.

Table 2. shows descriptive statistics of the overall sample data on the variable fraud pentagon. It can be seen that the FS and NOI variables have a standard deviation that is much higher than the average value. This condition can result in a bias in the observational data. The mean and standard deviation values are very high in the NOI variable because the data comes from all industrial sectors of companies listed on the IDX.

Table 3. shows descriptive statistics that have been grouped into fraudulent financial reporting and not. Variables IeM, CoD and FNP did not show any significant difference in the two groups. The absence of differences can make the measurement results have no impact because the two groups do not show significant differences. The FS and NOI variables showed a very large standard deviation difference, while in the other variables, the two groups showed quite an observable difference.

The test results overall model fit for the fraud pentagon is declared fit. The omnibus test of the model coefficients produces a Chi-Square of 26,410 with a significance

Table 3. Descriptive Statistics of Group Company

Var.	Fraudulent Financial Report					Nonfraudulent Financial Report				
	N	Mean	Std. Dev.	Min	Max	N	Mean	Std. Dev.	Min	Max
FS	27	0.975	3.329	-0.216	17.267	54	0.183	0.284	-0.080	1.408
FT	27	0.054	0.144	-0.228	0.561	54	0.129	0.177	-0.100	1.130
EP	27	0.606	0.667	0.044	2.876	54	0.395	0.234	-0.207	1.282
IeM	27	0.417	0.145	0.250	0.750	54	0.391	0.097	0.167	0.750
NOI	27	8.661	14.171	0.241	70.493	54	86.259	332.430	0.098	2,241.580
CiA	27	0.481	0.509	0.000	1.000	54	0.129	0.339	0.000	1.000
CoD	27	0.481	0.509	0.000	1.000	54	0.425	0.499	0.000	1.000
FNP	27	3.074	2.600	0.000	12.000	54	3.444	2.446	0.000	13.000

Source: Processed Data, 2020

Table 4. Logistic Regression Variables of the Pentagon Fraud Model

Variabel	Prediction	Normal			Robust Regression		
		B	Sig.	Exp (B)	B	Sig.	Exp (B)
FS	+	0.678	0.319	1.970	0.678	0.215	1.970
FT	+	-4.178	0.115	0.015	-4.178	*0.052	0.015
EP	+	2.105	0.112	8.208	2.105	*0.058	8.208
IeM	-	0.221	0.938	1.247	0.221	0.938	1.247
NoI	+	-0.130	0.302	0.987	-0.130	*0.067	0.986
CiA	+	1.850	***0.008	6.361	1.850	***0.007	6.361
CoD	+	0.213	0.731	1.237	0.213	0.736	1.237
FNP	+	-0.860	0.498	0.917	-0.860	0.455	0.917
Constant	+	-1.650	0.228	0.192	-1.650	0.221	0.192
-2LL Initial		103.115			103.115		
-2LL End		76.706			76.706		
p-value		0.001			0.012		
Pseudo R^2		38.60%			25.61%		

Source: Processed Data, 2020

value degree of freedom 8 of 0.1%. The results of the testing goodness of fit model state that the model can be accepted, and hypothesis testing can be carried out. Hosmer and Lemeshow test on the fraud pentagon yielded a Chi-Square of 5.734 with a significance of the degree of freedom 8 for 38.6%. Furthermore, the pseudo r square value for the model fraud pentagon, namely Nagelkerke R Square, is 38.6%, meaning that the independent variable explains the dependent variable by 38.6% and the rest by other factors. The classification accuracy of the prediction of the model fraud pentagon as a whole is 77.8%, with the accuracy of predicting fraudulent financial reporting at 48.1% and non-fraudulent financial reporting at 92.6%. Based on the variable feasibility test, there is 2 data outlier in the casewise list, but 2 data comes from the primary sample, so it is impossible to discard them. Therefore, more individual significance testing is carried out with robust standard errors with the STATA 14.1 application so that the resulting model is relatively unaffected by large changes in a small part of the data or small changes in large part of the data. For the non-multicollinearity test, it is done by observing the value of the variance inflation factor (VIF), the result is the highest value of 4.35 on the IeM variable. The results of logistic regression and individual parameter significance testing can be seen in Table 4.

Thus, based on the results of the logistic regression test, the simultaneous regression equation obtained with the model fraud pentagon is as follows.
FFR=-1,65+0,678FS-4,178FT+2,105EP+0,221IeM-0,130NoI+1,85CiA+0,213CoD-0,960FNP+ε
Table 5. shows the descriptive statistics of the variable model's F-Score overall. The mean overall and standard deviation looks better when compared to the fraud pentagon. However, figures in descriptive statistics are not used to conclude.
Table 6. shows the descriptive statistics of the F-Score model after being grouped into fraudulent financial reporting and not. It can be seen that ChINV, SoftAsset, and ChROA have a mean almost the same standard deviation, so that there is no significant difference

Table 5. Descriptive Statistics of F-Score Model

Variable	N	Mean	Std. Dev.	Min	Max
FOR	81	0.333	0.474	0.000	1.000
RsstAcc	81	0.055	0.268	-0.698	1.730
ChRec	81	0.015	0.054	-0.193	0.227
ChInv	81	0.022	0.069	-0.199	0.393
SoftAsset	81	0.559	0.244	0.028	0.996
ChCS	81	1.315	1.071	0.584	9.706
ChROA	81	-0.007	0.071	-0.266	0.304
Issue	81	0.284	0.453	0.000	1.000

Source: Processed Data, 2020

between the two groups, while the other variables, namely RsstAcc, ChCS, and Issue, show observable differences.

Statistical testing was carried out using the SPSS 16 application. Overall, the test results were not significant; namely, the significance of the results omnibus test was 12.9% or more than 5%. Thus, the model as a whole not accepted, and hypothesis testing not continued. So that the test can be continued, the variables are eliminated using the method backwards stepwise with the approach likelihood ratio using the SPSS 16 application. As a result, the RsstAcc, ChINV and CHCS variables are eliminated, leaving the model with ChRec, SoftAsset, ChROA and Issue variables. The model after elimination resulted in an omnibus test with a significance of 3.3% at the degree of freedom 4.0.

Furthermore, the results of the goodness of fit model with the test Hosmer and Lemeshow test yielded a significance of 44.1%, so that the model after elimination was accepted and hypothesis testing could be continued. The test results for pseudo r square using Nagelkerke R Square on the F-Score model after elimination is 16.9% with an overall predictive accuracy of 71.6%. This model can accurately predict the existence of fraudulent financial reporting by 29.6% and non-fraudulent financial reporting by 92.6%. Based on the data feasibility test, there is 1 data outlier, so that further testing is also carried out with a robust standard error using the STATA 14.1 application. The non-multicollinearity test was carried out by observing the value of the variance inflation factor (VIF), the result was the highest value of 1.55 on the ChRec variable. The results of logistic regression and individual parameter significance testing can be seen in Table 7.

Table 6. Descriptive Statistics F-Score Model with Grouping

Variable	Fraudulent Financial Report					Nonfraudulent Financial Report				
	N	Mean	Std. Dev.	Min	Max	N	Mean	Std. Dev.	Min	Max
RsstAcc	27	0.116	0.396	-0.636	1.731	54	0.025	0.171	-0.699	0.480
ChRec	27	-0.002	0.053	-0.193	0.104	54	0.024	0.054	-0.069	0.228
ChInv	27	0.021	0.062	-0.126	0.193	54	0.022	0.073	-0.199	0.393
SoftAsset	27	0.615	0.241	0.029	0.989	54	0.533	0.244	0.094	0.996
ChCS	27	1.509	1.730	0.629	9.706	54	1.218	0.484	0.585	3.865
ChROA	27	-0.005	0.069	-0.175	0.237	54	-0.009	0.073	-0.267	0.304
Issue	27	0.407	0.501	0.000	1.000	54	0.222	0.419	0.000	1.000

Source: Processed Data, 2020

Table 7. Results of Variable Logistic Regression F-Score Model

		Normal			Robust Regression		
Variable	Pred.	B	Sig.	Exp (B)	B	Sig.	Exp (B)
ChRec	+	-12.862	**0.030	2,59E-06	-12.862	**0.013	2,59E-06
SoftAsset	+	1.272	0.241	3.567	1.272	0.244	3.567
ChROA	-	2.887	0.423	17.945	2.887	0.420	17.945
Issue	+	0.962	***0.085	2.617	0.962	***0.094	2.617
Constant	-	-1.534	**0.020	0.216	-1.534	**0.018	0.216
-2LL Initial		103.115			103.115		
-2LL End		92.614			92.614		
p-value		0.033			0.039		
Pseudo R^2		16.90%			10.18%		

Source: Processed Data, 2020

Thus, the equation F-Score model that can be generated from the logistic regression carried out is as follows.

$$FFR= -1,534-12,862ChRec+1,272SoftAsset+2,887ChROA+0,692Issue+\varepsilon$$

In the test fraud pentagon, pressure is proxied by variables FS, FT and EP. The test results stated that FS had no significant effect, while FT had a significant negative effect at the 10% level and EP had a significant positive effect at the 10% level. These results align with the results of research by Tessa & Harto (2016) and Puspitha & Yasa (2018). Based on the analysis results, a lower ROE ratio can be considered that management does not provide exemplary performance in achieving the financial targets desired by the owners of capital. This is supported by the research of Artiach et al. (2010), which indicates a persistent and positive significant relationship between ROE and Corporate Sustainability Performance. In addition, annual reports containing fraud have higher average ratio leverage than the annual reports of companies that do not contain fraud with a more extensive range of lowest to highest values. These results are in line with the research of Dechow et al. (1996), which states that high ratio leverage can explain the existence of earnings manipulation even in the absence of a binding debt agreement. In addition, the ratio leverage is an external financing motivation. Thus, the test results show that the pressure in The fraud pentagon indicated by the financial target the informs of ROE and external pressure in the form of ratio leverage significantly affects detecting fraudulent financial reporting in Indonesia, so the first hypothesis is accepted.

In the test fraud pentagon, the opportunity is proxied by IeM and NoI variables. The test results show that the IeM variable has no significant effect, while the NoI variable has a significant negative effect at the 10% level (sig. < 10%). Based on the analysis results, financial statements that contain fraud have an inventory turnover ratio that is much lower than those that do not contain fraud. The nature of the industry is intended as inherent risk, namely the risk inherent in a particular industry. SAS 99 states that the opportunity for fraud can be caused by the complexity of accounting and estimates that require management's subjective judgment (AICPA, 2002). According to Feng et al. (2015), the low inventory turnover ratio indicates a material weakness in the internal control companies. This shows that a low inventory turnover ratio indicates a more significant occurrence of fraudulent financial reporting. Thus, the test results show that the opportunity in the fraud pentagon, which is indicated by the nature of the industry in the

form of an inventory turnover ratio, has a significant effect on detecting fraudulent financial statements in Indonesia, so the second hypothesis is accepted.

In the test fraud pentagon, rationalization is proxied by the CIA variable. The results of the test fraud pentagon show that the CIA variable has a positive and significant effect. These results are in line with the research results by Novitasari & Chariri (2018) and Puspitha & Yasa (2018). However, they differ from research by Tessa & Harto (2016), which states that auditor turnover has no significant effect on the occurrence of fraud. The analysis results show that there is part of the negative consequences of auditor turnover; namely, there is a potential loss of knowledge and expertise of auditors towards the audited company (Ewelt-Knauer, 2013). Thus rationalization on fraud in the pentagon proxied by the change of auditors has an effect on detecting fraudulent financial reporting in Indonesia, so the third hypothesis is accepted.

In the test fraud pentagon, competence is measured by the CoD variable, namely the occurrence of a change in CEO or president director in the two years before the annual report is published. The test results show that CoD does not affect fraudulent financial reporting. The test results are in line with the results of research by Tessa & Harto (2016) and Novitasari & Chariri (2018) but differ from Puspitha & Yasa (2018), which states that the change of directors has a significant effect in predicting fraudulent financial reporting and research by Wells (2002) which shows that when there is a change in directors, the new CEO tends to do earnings management and engage in earning baths. However, according to Wells (2002), changes in directors can be routine or incidental, which can have different effects. The test results state that competence in the fraud pentagon has no effect in detecting fraudulent financial reporting in Indonesia, so the fourth hypothesis is rejected. This evidence is in line with the theory of cost and benefits approach (Dess & Shaw, 2001), which states that CEO turnover is intended to obtain more significant benefits than the cost of replacement. When the company is in poor performance, and the CEO is unable to fulfil the objectives set by the owner (agency theory, Jensen & Meckling, 1976), it is only natural that the owner will replace it for benefits. This explanation is also in accordance with the theory of rationality (Schein, 2004), which states that CEO turnover is intended to change for the better.

In the test fraud pentagon, arrogance is measured by the FNP variable, namely the number of photos of the CEO or CEO in the company's annual report. The number of CEO photos in the company's annual report can represent the level of arrogance or superiority that the CEO has (Novitasari & Chariri, 2018; Puspitha & Yasa, 2018; Tessa & Harto, 2016). The number of CEO photos in the annual report shows the presence of CEO narcissism, which can be associated with the manifestation of a strong orientation towards increasing organizational innovation, risk-taking and proactivity (Wales et al., 2013). Olsen et al. (2014) also stated that narcissistic CEOs are more likely to increase earnings per share reported through actual and operational activities rather than accrual-based manipulation. However, in the test fraud pentagon, the FNP variable does not show a significant effect. These results are still in line with the results of research by Capalbo et al. (2018) regarding CEO narcissism which shows a positive correlation between CEO narcissism and corporate earnings management. Another study on CEO narcissism shows that the number of CEO photos in the annual report does not always aim to manipulate earnings because narcissistic CEOs can get higher compensation than less narcissistic CEOs even though it results in lower company performance (Ham, 2018). Therefore,

arrogance in the fraud pentagon as measured by the frequent number of CEOs does not affect detecting fraudulent financial reporting in Indonesia, so the fifth hypothesis is rejected.

Overall, the fraud pentagon has a significant effect on detecting fraudulent financial reporting in Indonesia. Simultaneously, the test fraud pentagon variables can explain 38.6% of the factors in the occurrence of fraudulent financial reporting in Indonesia. The percentage of accuracy of the model pentagon fraud in detecting fraudulent financial reporting is 77.8%. If the error rate is divided into 2, namely type I for prediction errors in detecting fraudulent financial reporting and type II for errors in detecting non-fraudulent financial reporting, then the type I error rate for fraud pentagon is 51.9%, and type II error is 7.4%. Thus, the pentagon fraud is considered influential in detecting fraudulent financial reporting in Indonesia.

In testing the F-Score Model, the model that includes all variables cannot be carried out because it does not meet the overall model fit test and goodness of fit test model. These results indicate that empirically its use is limited in Indonesia; these results are in line with the research results by Hung et al. (2017), which states that the F-Score model has limited empirical use in Vietnam. Limitations can be caused by different characteristics, especially in terms of reporting. The F-Score model was created by researching companies in the United States in 1982. The accounting standards at that time applied Generally Accepted Accounting Principles (GAAP), while in Indonesia, since 2012 has begun to fully adopt IFRS in the accounting standards used. In addition, the amount of data and the criteria for determining the dependent variable by Dechow et al. (2011) is different from this study. Thus, the overall F-Score model cannot be used to detect fraudulent financial reporting in Indonesia, so hypothesis 6 is rejected.

Through the variable elimination process, the F-Score model maximum feasible consists of 4 variables, namely ChRec, SoftAsset, ChROA and Issue. Individually, the measurement results of the ChRec variable have a negative and significant effect. These results support the statement of Stubben (2010) that abnormally higher or lower receivables indicate the existence of earnings management. Based on the analysis results, it can be concluded that companies in Indonesia with a lower ratio of receivables to assets have a greater tendency to commit fraudulent financial reporting. The results of testing the SoftAsset variable do not show a significant influence from SoftAsset. However, according to Barton & Simko (2002) and Dechow et al. (2011), Soft assets give management accounting flexibility to report surprisingly positive earnings. Statistically, the average value and range of values on the SoftAsset variable do not differ much between financial statements that contain fraud and those that do not contain fraud. It shows that both companies that perform fraudulent financial reporting or not conduct fraudulent financial reporting have the same ability to change and adjust assumptions that could affect the company's short-term earnings. The same condition is seen in the statistics of the ChROA variable. Tests on the ChROA variable, namely changes in ROA, did not show any significant effect. While the test results for the Issue variable show a significant positive effect with an error tolerance level of 10%. These results prove that there is a tendency to issue shares or bonds when occurs fraudulent financial reporting. This tendency is possible because, through fraudulent financial reporting, management shows the company's performance is better than it should be, so it has good investment opportunities. This is supported by the conclusion of Jung et al. (1996), which states that

the hallmark of a company that will issue equity is the existence of good investment opportunities.

The results of simultaneous testing of the F-Score model with four variables can only explain 16.90% of the factors that influence the occurrence of fraudulent financial reporting in Indonesia. After going through the process robust standard error, the ability to explain the four variables simultaneously dropped to 10.18%, so many other factors influence the four variables. The effect of the F-Score with these four variables is low in detecting the possibility of fraudulent financial reporting. While the prediction accuracy of this model is 71.6%. If the error rate is divided into 2, namely type I for prediction errors in detecting fraudulent financial reporting and type II for errors in detecting non-fraudulent financial reporting, then the type I error rate from the F-Score model is 71.4%, and type II error is 7.4%. With these results, the F-Score model only has little effect in detecting fraudulent financial reporting in Indonesia.

Conclusion

Based on the results of the previous analysis and discussion, it can be concluded that in the fraud pentagon, pressure and opportunity have a significant effect (sig. <10%), rationalization has a very significant effect, while competence and arrogance have no significant effect in detecting fraudulent financial reporting in Indonesia. In pressure, only financial targets and external targets have a significant effect, while financial stability has no significant effect individually. In opportunity, the nature of industry has a significant effect, while ineffective monitoring does not have a significant effect individually. In rationalization, change in auditor has a very significant effect individually. Meanwhile, change in director incompetence, and a frequent number of CEO's photos in arrogance has no significant effect individually. The individual test results show that only factors in the fraud triangle have an effect on detecting fraudulent financial reporting in Indonesia. The test results on the F-Score model show that the overall model does not fit the data for hypothesis testing. Because this study is only limited to the years 2012-2018, additional research to extend the study period is highly recommended. To form a suitable model, the model must be refined. Further research could include the creation of proxies for each of the relevant fraud items, because this study relied solely on previous research.

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