Detection of Fraud Diamond Theory On M-Score With Profit and Loss Sharing As A Moderating Variable In Islamic Banking

Aldrin Manaf[1*], Ries Wulandari[2]

[1,2]Master of Islamic Economics, Faculty of Islamic Economics and Business, Tazkia Islamic University Bogor, Indonesia
[*]Corresponding author:
Email: manafaldrin1@gmail.com

Abstract.
This study aims to determine the effect of detecting fraud using the Fraud Diamond Theory on the M-Score, with Profit and Loss Sharing as a Moderating Variable in Islamic banking in Indonesia during the period 2020–2022. This research is a quantitative study using secondary data from quarterly annual reports of companies for the period 2020–2022. The sampling method used is purposive sampling, resulting in a research sample of 5 companies or a total of 60 sample data points. The study results show that External Pressure, Change of Auditor, and Change of Board of Director have an impact on the M-Score. Additionally, the Change of Board of Director, moderated by Profit and Loss Sharing, weakens its relationship with the M-Score. Meanwhile, Financial Stability, Ineffective Monitoring, and Profit and Loss Sharing do not affect the M-Score. Furthermore, Financial Stability, External Pressure, Ineffective Monitoring, and Change of Auditor, when moderated by Profit and Loss Sharing, neither strengthen nor weaken their relationship with the M-Score.
Keywords: *Banks, CAMEL (Capital, Assets, Management, Earnings and Liquidity.*

I. INTRODUCTION

Financial statements serve as a fundamental instrument in the business world, presenting a company's financial position and performance transparently to support accurate decision-making for internal and external parties (Febrianto & Fitriana, 2020). Nevertheless, the practice of fraudulent financial reporting remains a global phenomenon that harms various industrial sectors, including in Indonesia (Budiandru, 2022). According to data from the Association of Certified Fraud Examiners, Indonesia accounts for 11% of the total 194 fraud cases in the Asia-Pacific region, placing the country in a relatively high position compared with neighboring countries (ACFE, 2022). Company management often becomes trapped in efforts to maintain image, resulting in the presentation of misleading financial statements with the largest financial loss impact compared with other categories of fraud (Mintara & Hapsari, 2021; Rusmana & Tanjung, 2020).

The banking sector is recorded as the industry with the highest frequency of fraud cases, where transaction complexity opens loopholes for corporate criminals (Cahyani & Annisa, 2021). Although Islamic banking is based on compliance with Sharia principles and strict supervision by the Sharia Supervisory Board, this sector is not immune to fraud threats, such as fictitious financing cases and misuse of operational cash (Sastiana et al., 2022). The distinctive characteristics of Islamic banking, which emphasize the prohibition of speculation and the obligation to provide liquidity based on the real sector, demand far more reliable risk governance (Wulandari, 2013). Therefore, the stability of Islamic banking performance depends heavily on the effectiveness of profit-sharing instruments such as Profit and Loss Sharing, which is a competitive advantage amid economic fluctuations (Primasari, 2019).

Various previous studies have tested the detection of fraudulent financial reporting using the Fraud Diamond Theory framework, which represents the interaction of the elements of pressure, opportunity, rationalization, and capability (Rudianti & Maesaroh, 2022). The Beneish M-Score analysis model is also widely used as a quantitative tool to identify the probability of earnings manipulation and corporate accounting fraud (Beneish, 1999; Albrecht et al., 2015). Nevertheless, the literature on the effectiveness of fraud detection in Islamic banking still shows inconsistent empirical findings, especially in integrating aspects of Sharia compliance (Rahman et al., 2021).

The involvement of Profit and Loss Sharing in previous literature is generally positioned only as an independent variable measuring financial performance, without testing its interaction role on the potential for

management fraud (Khairul Katsirin, 2023). This creates a research gap in the form of a limited number of studies that position Profit and Loss Sharing as a moderating variable that strengthens or weakens the influence of Fraud Diamond Theory on the probability of M-Score-based financial statement manipulation in Islamic banking entities (Ilyas, 2021). The novelty of this research lies in combining a conventional management fraud detection approach with the operational system of Islamic banking on the Indonesia Stock Exchange. Based on the urgency of the problem and this theoretical gap, this study aims to comprehensively examine the influence of Fraud Diamond on the M-Score by positioning Profit and Loss Sharing as a moderating variable in Islamic banking companies for the period 2020 to 2022.

II. METHODS

This study applies an explanatory quantitative approach with a causal associative design to examine the influence of Fraud Diamond Theory on the Beneish M-Score and to position Profit and Loss Sharing as a moderating variable in Islamic banking on the Indonesia Stock Exchange for the period 2020 to 2022 (Febrianto & Fitriana, 2020; Rudianti & Maesaroh, 2022). Sample selection uses the purposive sampling method based on the criterion of complete financial statement data availability during the observation period (Zahwa & Erwin, 2022). The dependent variable is measured using the eight-ratio index model of the Beneish M-Score, while the independent variables include the proxies financial stability, leverage, BDOUT, change in auditor, and change of board of director (Indriani & Rohman, 2022; Prastyo et al., 2022). The moderating variable Profit and Loss Sharing is proxied by Net Profit Margin to assess the interaction of profit-sharing efficiency with the probability of financial statement manipulation (Budiandru & Nur, 2024; Usmani, 1999). All data are analyzed using panel data regression based on Moderated Regression Analysis with EViews 10 to test the strength of relationships among variables (Basuki & Prawoto, 2017; Solimun, 2011).

Main Analysis Formula (Moderated Regression Analysis)

The mathematical equation that best reflects the results of the moderation interaction test in this study is:

$$M_{it} = \alpha + \sum_{k=1}^{5} \beta_k X_{k,it} + \beta_6 \text{PLS}_{it} + \sum_{k=1}^{5} \beta_{k+6} \left(X_{k,it} \times \text{PLS}_{it} \right) + e_{it}$$

Description:

M_{it}: Probability of fraudulent financial reporting (Beneish M-Score)

$X_{k,it}$: Five independent proxies of Fraud Diamond ()$ACHANGE, LEVERAGE, BDOUT, AUDCHANGE, DCHANGE$

PLS_{it}: Moderating variable Profit and Loss Sharing (proxied by Net Profit Margin)

$X_{k,it} \times \text{PLS}_{it}$: Moderating interaction coefficient (Moderated Regression Analysis)

$\beta_1 \ldots \beta_{11}$: Regression coefficient of each variable

e_{it}: Standard error of the estimation error of the panel data model

III. RESULT AND DISCUSSION

This study aims to analyze the influence of Fraud Diamond—proxied by Financial Stability (), External Pressure (), Ineffective Monitoring (), Change in Auditor (), and Change of Board of Director ()—on fraudulent financial reporting measured using the M-Score (), and to examine the role of Profit and Loss Sharing () as a moderating variable in the Islamic Banking sector in Indonesia.$X_1X_2X_3X_4X_5YZ$

Sample selection uses the purposive sampling method based on three main criteria:

1. Islamic banks listed on the Indonesia Stock Exchange (IDX) and the Financial Services Authority (OJK) for the period 2020–2022.
2. Present complete quarterly financial statements from Q1 to Q4.
3. Have complete data for all research variables.

Based on these criteria, 5 Islamic banks met the requirements, namely PT Bank Mega Syariah, PT Bank Syariah Bukopin, PT Bank Syariah Indonesia, PT Bank Victoria Syariah, and PT Bank Aladin Syariah.

Observations were conducted quarterly over 3 years, resulting in a total of 60 data observations (). Descriptive Statistical Analysis$N = 60$

A summary of the mean, median, minimum, maximum, and standard deviation values of all variables is presented in Table 1 below:

Table 1. Descriptive Statistical Analysis Results

Variable	Mean	Median	Minimum	Maximum	Std. Dev.
Financial Stability (X_1)	480,6333	0,001000	0,000000	7323,000	1639,468
External Pressure (X_2)	0,387500	0,249962	0,000874	0,952857	2,105186
Ineffective Monitoring (X_3)	0,133333	0,000000	0,000000	1,000000	0,342803
Change in Auditor (X_4)	0,390800	0,500000	0,000000	0,750000	0,267726
Change of Board of Director (X_5)	0,200000	0,000000	0,000000	1,000000	0,403376
M-Score (Y)	2,218500	-2,775000	-30,19000	51,25000	13,40175
Profit and Loss Sharing (Z)	0,040167	0,175000	-3,460000	4,430000	1,214283

Source: Processed Secondary Data (2025)

Selection of Panel Data Regression Estimation Model

To determine the most appropriate panel data regression estimation method among the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM), the Chow Test and Hausman Test were conducted.

Table 2. Results of Panel Data Regression Model Selection Test

Test	Test Statistic	Probability Value	Decision
Chow Test	Cross-section F Statistic = 15,513902	0,0000	Fixed Effect Model (FEM)
Hausman Test	Chi-Square Statistic = 5,491498	0,0482	Fixed Effect Model (FEM)

Source: Processed Secondary Data (2025)

Based on Table 2, the Chow Test produces a p-value of , indicating that FEM is superior to CEM. Furthermore, the Hausman Test produces a p-value of , so it is concluded that the Fixed Effect Model (FEM) is the best estimation model for panel data regression analysis and hypothesis testing.$p0,0000 < 0,05 p0,0482 < 0,05$

Classical Assumption Testing

1. Normality Test

The Jarque-Bera value is with a probability of , meaning the residuals are normally distributed.$4,2332250,120439 > 0,05$

2. Multicollinearity Test

All variables have Centered VIF values (within the range of 1,239 to 2,740), so the model is free from multicollinearity.< 10

3. Heteroscedasticity Test

The Breusch-Pagan-Godfrey test produces a value of (p-value), indicating no symptoms of heteroscedasticity.$Obs * R$-squared$11,26653 p0,4212 > 0,05$

4. Autocorrelation Test

The Durbin-Watson value is recorded as . For , , and , the bounds of and are obtained. Since , the regression model is declared free from autocorrelation problems.$1,838122 \alpha = 5\% N = 60 k = 5 dU = 1,76714 - dU = 2,2329 1,7671 < 1,838122 < 2,2329$

Panel Data Regression Results and Hypothesis Testing

Regression estimation testing using the Fixed Effect Model (FEM) at a significance level of yields the following equation:$\alpha = 0,05$

$$Y = 13{,}02754 - 0{,}001768X_1 - 1{,}376693X_2 - 18{,}03795X_3 - 35{,}45761X_4 + 44{,}45366X_5 - 0{,}744561Z + 0{,}015781(X_1 \cdot Z) + 0{,}409678(X_2 \cdot Z) + 208{,}3931(X_3 \cdot Z) + 1{,}379048(X_4 \cdot Z) - 206{,}7654(X_5 \cdot Z) + e$$

Table 3. Results of Simultaneous Test () and Coefficient of Determination () FR^2

Statistical Indicator	Value	Description
R-squared	0,814871	Contribution of all variables in the model is 81,48%
Adjusted R-squared	0,751759	Independent & moderating variables explain 75,18% of the variation in Y
F-statistic	12,91149	The model is proven fit and jointly significant
Prob(F-statistic)	0,000000	$p < 0{,}05$ (Significant Simultaneous Test)

Source: Processed Secondary Data (2025)

Table 4. Partial Test (t) Results and Moderated Regression Analysis (MRA)

Variable / Interaction	***Coefficient***	***Std. Error***	***t-Statistic***	***Prob. (p-value)***	***Conclusion / Hypothesis***
Constant (C)	*13,02754*	*4,249317*	*3,065796*	*0,0037*	*Significant*
FS (X_1)	*-0,001768*	*0,001081*	*-1,636118*	*0,1089*	*No Effect (H_1 Rejected)*
EP (X_2)	*-1,376693*	*0,610549*	*-2,254844*	*0,0292*	*Negative Effect (H_2 Accepted)*
IM (X_3)	*18,03795*	*15,67034*	*-1,151088*	*0,2559*	*No Effect (H_3 Rejected)*
CA (X_4)	*35,45761*	*11,77479*	*-3,011316*	*0,0043*	*Negative Effect (H_4 Accepted)*
CBD (X_5)	*44,45366*	*5,272691*	*8,430926*	*0,0000*	*Positive Effect (H_5 Accepted)*
PS (Z)	*-0,744561*	*1,318557*	*-0,564679*	*0,5752*	*No Direct Effect (H_6 Rejected)*
FS × PS ($X_1 \times Z$)	*0,015781*	*0,010348*	*1,524949*	*0,1344*	*Does Not Moderate (H_7 Rejected)*
EP × PS ($X_2 \times Z$)	*0,409678*	*0,224225*	*1,827083*	*0,0745*	*Does Not Moderate (H_8 Rejected)*
IM × PS ($X_3 \times Z$)	*208,3931*	*24,72536*	*8,428315*	*0,0700*	*Does Not Moderate (H_9 Rejected)*
CA × PS ($X_4 \times Z$)	*1,379048*	*3,450918*	*0,399618*	*0,6914*	*Does Not Moderate (H_{10} Rejected)*
CBD × PS ($X_5 \times Z$)	*-206,7654*	*24,31590*	*-8,503299*	*0,0000*	*Moderating / Weakening (H_{11} Accepted)*

Source: Processed Secondary Data (2025)

The Effect of Financial Stability on M-Score

The Financial Stability variable yields a coefficient value and p-value, which proves that Financial Stability has no significant effect on the level of financial statement fraud (M-Score). Asset growth or financial stability in Islamic banking does not encourage management to engage in manipulation practices. Islamic bank management tends to focus on operational efficiency and asset risk management to maintain reputation and stakeholder trust.$-0{,}001768p0{,}1089 > 0{,}05M$

The Effect of External Pressure on M-Score

External Pressure is proven to have a negative and significant effect on M-Score with a coefficient value and p-value. These results indicate that the higher the pressure from external parties (such as

liabilities/leverage), the lower the risk of financial statement manipulation. The burden of external liabilities encourages Islamic banks to increase transparency and choose safer funding strategies (such as issuing new shares or increasing capital) rather than manipulating figures, which risks damaging their image in the eyes of creditors.$M - 1{,}376693p0{,}0292 < 0{,}05$

The Effect of Ineffective Monitoring on M-Score

The Ineffective Monitoring variable has a coefficient value and p-value, indicating that Ineffective Monitoring has no significant effect on M-Score. The number or proportion of independent commissioners in the governance structure does not automatically guarantee supervisory effectiveness if, in practice, it is still marked by objectivity constraints or managerial intervention.$-18{,}03795p0{,}2559 > 0{,}05M$

The Effect of Change in Auditor on M-Score

Change in Auditor produced a coefficient value and p-value, meaning it has a significant negative effect on M-Score. The change of independent auditors in Islamic banking is proven to reduce the probability of financial statement fraud. The presence of a new auditor brings a fresher and stricter independent oversight perspective, thereby narrowing management's room to conceal traces of fraud (rationalization). In addition, auditor rotation in Islamic banking is generally carried out to comply with OJK regulations (POJK No. 13/2017) to maintain audit objectivity.$-35{,}45761p0{,}0043 < 0{,}05M$

The Effect of Change of Board of Director on M-Score

Change of Board of Director has a positive and significant effect on M-Score with a coefficient value and p-value. The change of the board of directors creates a transition period and internal policy adjustments that trigger gaps in control. The new directors need an adaptation period to fully master the bank's operational system, and this adaptation situation is vulnerable to exploitation by internal parties to commit financial statement fraud.$M44{,}45366p0{,}0000 < 0{,}05$

The Effect of Profit and Loss Sharing on M-Score

Directly (direct effect), Profit and Loss Sharing () has no significant effect on M-Score (p-value). The profit-sharing scheme (mudharabah and musyarakah) is a fundamental operational principle bound to sharia compliance rules. The inherent characteristics of this profit-sharing principle mean that a high ratio does not independently trigger or suppress the incentive for financial statement fraud.$ZMp0{,}5752 > 0{,}05$

The Moderating Role of Profit and Loss Sharing (MRA)

The Moderated Regression Analysis (MRA) test shows that Profit and Loss Sharing () is unable to moderate the relationship of Financial Stability, External Pressure, Ineffective Monitoring, and Change in Auditor with M-Score (p-value).$ZMp > 0{,}05$

However, Profit and Loss Sharing is proven able to moderate and weaken the positive effect of Change of Board of Director on M-Score significantly, with an interaction coefficient and a p-value. The Profit and Loss Sharing scheme is a crucial indicator of Islamic banking that directly affects customers' nisbah rights and institutional reputation. Strict supervision of the profit-sharing portion limits the room for the new directors to make adjustment policies that could trigger fraud, thereby mitigating fraud risk during the management transition period.$M - 206{,}7654p0{,}0000 < 0{,}05$

IV. CONCLUSION

Based on the results of the data analysis and discussion as well as hypothesis testing, it can be concluded that, partially, the External Pressure and Change in Auditor variables have a negative and significant effect on M-Score, while Change of Board of Director has a positive and significant effect on M-Score. Meanwhile, the Financial Stability and Ineffective Monitoring variables have no effect on M-Score. The Profit and Loss Sharing variable also has no effect on M-Score. Simultaneously, the Fraud Diamond and Profit and Loss Sharing variables have a significant effect on M-Score, as shown by an F-statistic of 12,91149 and a probability of 0,000000. In the moderation test, Profit and Loss Sharing is proven able to moderate the relationship of Change of Board of Director with M-Score with a moderating direction that weakens the relationship, as shown by a coefficient value of -206,7654 and a probability of 0,0000. However, Profit and Loss Sharing is unable to moderate the relationship of the Financial Stability, External Pressure, Ineffective Monitoring, and Change in Auditor variables with M-Score.

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