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|  | Trigger Factors of Fraud Triangle Toward Fraud On Financial Reporting Moderated by Integration of Technology Industry 4.0 Agoestina Mappadang1**\***, Yuliansyah2  **Abstract**  This study examines triggers factors of the fraud triangle, core of all fraud auditing standards, for assessing the likelihood of fraudulent financial reporting. Our research uses the integration of technology 4.0 as a moderating variable on fraudulent financial reporting. This study also aims to determine fraud with the Beneish M-Score as a financial forensic tool to gage potential fraud in firms' financial statements. The population of this study was drawn from five priority sectors of the Making Indonesia 4.0 program, namely industries in five manufacturing subsectors listed on the Indonesia Stock Exchange. Results indicate that pressure does not have significant effect on fraudulent financial reporting. On the other hand, the opportunity with effective monitoring variable has a negative significant effect on fraudulent financial reporting, whereas rationalization has a positive significant effect on fraudulent financial reporting. The integration of Industry 4.0 variable moderates the effect of fraud on fraudulent financial reporting.  **Keywords:**  fraud triangle, technology industry, pressure, opportunity, rationalization Introduction Fraudulent financial statements are presenting company assets or company revenues greater than they should or presenting company assets or company revenues smaller than they should ([Tuanakotta, 2010](#_References_1)). The report presenting should be in line with financial characteristics: reliable, comparable, understanding, relevant and the report must be normal and neutral. Normal financial report can be reflected on its presentation and information provision accurately so it is free from any fraud. Fraudulent financial statement detection is vital because of the devastating consequences of financial statement frauds ([Ngai et al., 2011](#_References_1)). Fraud triangle, fraud diamond and fraud pentagon are framework to explain why such fraud occurs. Fraud behavior are often subtle in the beginning of the transaction ([Chivers et al., 2013](#_References_1)). Therefore it is difficult to detect them because regulations play an important role to emphasize the responsibility of auditors to assess the risk of fraudulent financial statement ([Srivastava et al., 2009](#_References_1)). According to author in this study, fraudulent financial |
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statement is the disclosure of intentional misstatements of financial reporting that aim to deceive stakeholders.

In the fraud triangle model proposed by ([Cressey, 1953](#_References_1)) pressure is one of the three predictor components of a fraud. The other two elements, namely opportunity and rationalization, are inseparable factors in fraud. These three elements become red lags which affect one's commitment to finally decide to commit or not commit fraud ([MacCarthy, 2017](#_References_1)). This is related to the theory of planned behavior. Theory of planned behavior is a psychological theory that explains the relationship between intention towards doing behavior. Intention of behavior is influenced by three factors, namely behavioral attitude, subjective norms and perceived behavior control. Information technology in computer networks also increases the attractiveness of fraud because it provides ample opportunities for perpetrators. [Lynch. A & Gomaa, (2003)](#_References_1) explain that in relation to computer fraud, behavioral attitudes towards will consider the consequences of fraud and the benefits that are obtained. In line with agency theory where agents have certain motives to do something based on their interests, on the other hand, principals are not directly involved and weak in supervision. So that the basic assumption in this theory that humans tend to avoid risk is fulfilled because of the weak internal control system. Management tries to keep the company experiencing growth so that one of the easiest growth indicators is assessed by looking at the total assets of the company. So that management often commits fraud by presenting an overstatement of asset conditions ([Zimbelman & Albrect, 2012](#_References_1)). This allows management to convince itself to commit fraudulent acts without risk of being detected by the principal. Different from the fraud triangle which focus on the perpetrator, the crime theory proposed by [Cohen & Felson, (1979)](#_References_1) explains the environmental conditions in which fraud occurs plays a role in determining human behavior.

The Association of Certified Fraud Examiners ([ACFE, 2018](#_References_1)) mapped fraud that occurred in the work environment within the Fraud Tree. ACFE's study states that the majority of fraud cases that occur in the Asia Pacific region are asset misuse (80%), followed by corruption cases (51%) and fraudulent financial statement (13%). In inverse proportion to the number of cases, fraudulent financial statements have the greatest impact of losses with a median of USD 700,000. The majority of companies that are victims of fraud are private companies (39%) and public companies (38%) but publicly listed companies have more intentions in building their image in the minds of the public. The manufacturing industry is the region with the most fraud cases at 17%. One of the causes of this industry is exposed to many cases of fraud because it involves a long and complex production value chain. The longer the process and the more people involved, the process is vulnerable to fraud ([ACFE, 2018](#_References_1)). According to ACFE the majority of fraud cases occur in midlevel management such as managers (41%) while among ordinary employees (30%) and among owners / executives (26%). But fraud with the biggest loss is based on the owner / executive profile. According to the Standard on Auditing (SA) 240, fraud is an intentional act by any person within the entity while an error represents unintentional act resulting into misstatements of the financial statements.

This study also explains the effect of the Fraud Triangle in detecting financial statement fraud using the Beneish M-score model because the mathematical model can accurately identify the events of manipulation of corporate financial statements compared to other models, namely the Jones or modified Jones models ([Dechow, 1994](#_References_1)). There are some studies to investigate whether Beneish M score is a robust tool to predict fraud. For example, a study from [Kamal et al. (2016)](#_References_1) find that using Beneish M score in Malaysian context is proven to be 82% accurate to detect fraud. Beneish model M-score takes into account several financial ratios so that it can provide more reliable and conclusive results than the previous model in detecting the manipulation of financial statements ([MacCarthy, 2017](#_References_1)). [Kashmiri (2014)](#_References_1) using modified Jones detects GAAP violators while the modified jones model is criticized by researchers such as [Goel (2014)](#_References_1) because modified Jones more bent the emphasis on earnings management compared to the element of fraud while [Skousen & Twedt (2009)](#_References_1) serves as a benchmark for subsequent studies to test the effectiveness of the Fraud Triangle by [Cressey (1953)](#_References_1) with 5 pressure variables that can significantly detect fraud.

The main reference of this study refers to the International Standard on Auditing 240 (ISA 240), namely the Fraud Triangle theory by [Cressey (1953)](#_References_1) with using element pressure, opportunity and rationalization. Many other research such as [Hernandez and Groot (2007)](#_References_1) find that pressure and opportunities for generating a fraudulent behavior are in fact associated with the higher fraud risk assessment by various audit partners and the most important factors are senior management ethical attitudes and dishonest. [Rezaee (2005)](#_References_1) in his result justifies the existence of three element fraud triangle conditions in the fraud firms.

In the next section, to observe the pressure perspective in fraud triangle will be used namely financial stability, external pressure and financial targets.

Financial stability get direct rapid changes in economic condition. According to SA 240 financial stability can be threatened by circumstances or industries that are indicated by high industry vulnerability due to rapid changes due to technological factors, product obsolescence or interest rates as in industry 4.0. In SA 240 states that management faces severe pressure due to these conditions and triggers them to commit fraud in the financial statements. Research from [Zahro & Yulia (2018)](#_References_1) and [Tiffani & Marfuah (2015)](#_References_1) shows that there is a positive influence of financial stability which is proxied by the growth of assets on financial statements and this result is in line with research from [Skousen & Twedt (2009)](#_References_1). In contrast, [Zahro & Yulia, (2018)](#_References_1) stated that there was no influence between financial stability proxied by asset growth and fraudulent on financial reporting. Based on this explanation, the hypothesis is formulated as follows:

H1: Financial stability has a negative significant on fraudulent on financial reporting  
 External pressure is caused by excessive pressure for management to meet the requirements or expectations of third parties such as creditors, institutional shareholders or investment analysts on the company's performance. This pressure can also come because of public pressure that can make management through excessive optimism in the annual report statement. In the industrial era 4.0, companies have the desire to be able to use new technologies that are more productive so that they can save resources and produce innovative products **(**[Oktarigusta & Lutfiana, 2017](#_References_1)). Leverage can be used as a proxy for external pressure because it shows how much the company's assets are funded by creditors which if the value is greater indicates the pressure is getting bigger too. ([Dorminey et al, 2012](#_References_1)) that pressure such as divorce, illness or difficulties children or various private problems can provoke high pressure situation which may lead people to feel that they need to take money in an authorized way to meet their expectations. Consistent with previous findings ([Crutchley et al, 2007](#_References_1)) found that a positive correlation between pressure and fraudulent financial statement. [Schuchter & Levi (2015)](#_References_1) results also conclude that the perceived pressure is salient to most white-collar criminal offences. Based on this review above, the hypothesis is formulated as follows:

H2: External pressure has a positive significant on fraudulent on financial reporting

Financial targets such as sales targets set by management cause pressure for operational personnel or for management itself. Companies that have a low return on assets for the current year tend to have greater pressure to improve performance, thereby triggering fraud. Based on research [Summers & Sweeney (1998)](#_References_1) found that there are significant differences in return on assets between companies that commit fraud and companies that do not commit fraud. Previous research from [Nugraheni & Trihatmoko (2018)](#_References_1) shows that there are positive financial targets that are proxied by ROA and are in line with research by [Oktaviani & Karyawati (2014)](#_References_1). Consistent with previous study [Noble (2019)](#_References_1) found that financial target proxied by change in auditors have a significant on financial statement fraud. However, [Rahayu & Sopian (2017)](#_References_1) stated that financial targets proxied by ROA did not significant on fraudulent on financial reporting. Based on this review, the hypothesis is formulated as follows:

H3: Financial targets have a positive significant on fraudulent on financial reporting

To observe the opportunity perspective as the second element of the Fraud Triangle using an effective monitoring variable. Ineffective monitoring is a signal of the weakness in the surveillance system owned by the company [COSO, (2013)](#_References_1). Companies that commit fraud tend to have a composition of directors from outside the company less than companies that do not commit fraud ([Skousen & Twedt, 2009](#_References_1)). [Skousen & Twedt (2009)](#_References_1) states that companies with an independent board of commissioner composition will be more effective in preventing fraud than companies that do not have this function. Board of commissioner as one of the internal governance structure who has the main function to supervise and monitor the management action. The more ineffectiveness of the board of commissioners than will higher fraudulent financial statement. Besided, the Financial Services Authority (OJK) in POJK no. 10/POJK.04/2018 also emphasizes the importance of supervision by requiring public companies to have an independent commissioner with a composition of at least 30%. Research results from [Aprilia & Sergius, (2015)](#_References_1); [Tiffani & Marfuah, (2015)](#_References_1); [Oktarigusta & Lutfiana, (2017)](#_References_1) said effective monitoring influences fraudulent on financial reporting whereas ([Zahro & Yulia, 2018](#_References_1)) in his research resulted in effective monitoring not affecting fraudulent on financial reporting. Based on the explanation, the hypothesis is formulated as follows:

H4: Effective monitoring has a negative significant on fraudulent on financial reporting

The rationalization perspective as an element of the third Fraud Triangle using accrual ([Beneish, 1997](#_References_1)). It argues that the value of the accruals is representative of the decisions made by management. The three elements of Triangle fraud appear in the process of preparing financial statements and the greater potential fraud can occur. This is due to the pressure triggering companies to look for profitable and feasible ways to display good performance conditions in financial statements and when they realize that there are opportunities, the company will use rationalization or convince themselves that the company is experiencing a similar situation. Therefore, the three elements of the fraud triangle are the main actors in the occurrence of fraudulent financial statements. Previous research that discusses the rationalization of fraud from [Oktarigusta & Lutfiana, (2017)](#_References_1); [Darise, (2019)](#_References_1) uses total accruals to total assets (TATA) as a rationalization proxy resulting in total accruals to total assets affecting financial statements fraud but the results of [Aprilia & Sergius, (2015)](#_References_1) and [Rahayu & Sopian, (2017)](#_References_1) did not find the effect of total accruals to total assets against fraudulent on financial reporting. Based on the review above, the hypothesis is formulated as follows:

H5: Accruals have a positive significant on fraudulent on financial reporting

The author using moderation integration of technology industrial 4.0 because represents a new industrial stage of the manufacturing system by integrating a set of emerging and convergent technologies that add value to the whole product lifestyle ([Dalenogare et al., 2018](#_References_1)). Technology disruption is an evolution of technology that replaces all or the basis of technology that is commonly applied, technology that is really new or in the form of technology applications that were originally only applied in other fields ([Zhong & Zheng, 2017](#_References_1)).The concept of disruptive technology was first coined by  [Christensen (1997)](#_References_1) with the term Disruptive Innovation. A comprehensive model framework in integration of industrial technology is needed recommends a model of technology that can be applied in the manufacturing industry ([Kagermann et al., 2013](#_References_1)). This has implications for the creation of values, business models, production cycles and a new organizational work culture ([Kagermann et al., 2013](#_References_1)).

The industrial revolution 4.0 brings changes related to the implementation of the latest technology in various industrial processes. Technology appears as an innovation. The theory of innovation related to technology is the Diffusion of Innovations by [Rogers (1995)](#_References_1). The moderating variable in this study is used to see the impact arising from the implementation of technology integration 4.0 whether it can strengthen or weaken the occurrence of fraud in financial statements. The integration of technology in the industry is radical and fundamental and requires the development of a new system through several phases of trial and error which is prone to the risk of fraud and abuse. Therefore, information technology in the Fraud Triangle concept can be seen as a new opportunity and can trigger pressure so that fraud is occur.

On the other hand, industrial technology is a company advancement in being able to carry out supervision through the development of a more transparent and efficient system. The success of implementing technology integration is the key point whether fraud will occur or not as preventive action. This success requires time and evaluation of improvements over time and research samples taken related to the Making Indonesia 4.0 program which was just initiated by the Government of the Republic of Indonesia in early 2018.

Integration of industry 4.0 technologies can be separated, at least into two different layers according to their main objective in the conceptual framework what we call as “front-end technologies which considers transformation of smart supply chain, smart working, smart manufacturing and smart product ([Germán & Dalenogare, 2019](#_References_1)). The front layer relies “base technologies” consist of internet of things (IoT), cloud, big data and analytic which comprises technologies that provide connectivity and intelligence for front-end technologies. This base-technologies is the one which enables the industry 4.0 concept, differentiating this concept from previous industrial stage because base-technologies allow front-end technologies to be connected in a complete integrated manufacturing system ([Tao & Cheng, 2018](#_References_1); [Thoben & Wiesner, 2017](#_References_1)). Base-technologies such as artificial intelligence (AI), big data and IoT can be obtained quickly, including in obtaining data because data is an important thing needed by humans to become information in taking future steps ([Handoko et al., 2020](#_References_1)). By using big data Intelligence analytics technology to combat fraud than business can identify fraud risk earlier or preventive fraud and easily uncover trends and patterns. (KPMG, 2013). A lot of obstacles when integrating data driven and analysis into audit, in spite of the fact that this is difficult to overcome. First, auditor need time to adjust to the new system and the level of user-friendly. Second, information sometimes over load and get impact on auditor’s judgment skill in term of restrict the process of information. Whereas effective application of big data can reduce negative impact by providing more accurate and relevant information. Third, suitable of software that can handle analysis efficiently will be very expensive ([Kim, Kotb, & Eldaly, 2016](#_References_1)).

Previous studies of [Zanaria (2017)](#_References_1) that information technology is systematic and integrated can narrow the gap of fraud while technology integration impacts on the performance of companies and the country because it raises concerns among workers about changes in work trends. Another study found that the threat of job loss among workers who are less adaptive to change can cause stress and life stress ([Flemming & Baum, 1984](#_References_1)). According to [Donald et al., (2005)](#_References_1) in his research that in addition psychological stress is the strongest predictor causing productivity to decrease and pressure can trigger certain parties to finally commit fraud ([Rawson et al., 2016](#_References_1)).

The successful implementation of industrial technology 4.0 in a company is a key point whether fraud will occur or vice versa or even not affect at all ([Hipgrave, 2013](#_References_1)). Refer to the discussion above, the hypothesis is formulated as follows:

H6: Industrial technology 4.0 can moderate the fraud triangle against fraudulent financial statements.

This research is different from previous studies ([Singleton, 2010](#_References_1)); ([Beneish, et al 2012](#_References_1)); ([Noble, 2019](#_References_1)) because first, using the phenomenon of Industrial Revolution 4.0 as a moderating variable where with the integration of technology 4.0 can strengthen or weaken the occurrence of fraud against financial statements. Modern technology in industrial revolution 4.0 with using of big data will make the system more transparent but the presence of new gaps due to the transformation of the system and changes in the business environment invites the Fraud Triangle element so that it triggers fraudulent on financial reporting. Second, using the Beneish M-Score model in this model as a financial forensic tool to gauge potential fraudulent financial reporting.

This study is important because the application of industrial technology can trigger the elements of the fraud triangle both partially and simultaneously so that it can have negative and positive impacts that can influence fraudulent financial reporting. Companies that have implemented industrial technology must review the new system, upgrade and evaluate the existing system, assessing the effectiveness and strength of existing systems to prevent loopholes for new fraud through the application of technology based on the use of big data and IoT.

**Research Method**

This research used secondary data and quantitative data. The population in this study are manufacturing companies listed on the Indonesia Stock Exchange in the 2015-2018 period. The samples taken from five manufacturing subsectors in Making Indonesia 4.0 program consist of food & beverages, textile & garments, automotive & components, electronic and chemical industries. Making Indonesia 4.0 program is used to implement strategies as well as guidelines for the roadmap developing of industrial revolution 4.0 in Indonesia, especially providing opportunities to revitalize Indonesia's manufacturing sector. This study used purposive sampling method. Sampling criteria is a manufacturing company incorporated in the five sectors Making Indonesia 4.0 in Indonesia Stock Exchange, which regularly publish financial reports on the company's website and the Indonesia Stock Exchange and using IDR (rupiah) as the currency in their reporting. Total samples are 29 companies from 56 populations and the total unit observations are 116.

The research model for analyzing the influence of independent variables is a logistic regression model. Logistic regression analysis in this study is used because the normal multivariate assumption cannot be fulfilled because the independent variable is a mixture of metric and non-metric variables. In addition, the dependent variable in this study is categorical data or dummy ([Ghozali, 2016](#_References_1)). To test the moderating variable and answer the 6th hypothesis, subgroup analysis tests will be used ([Sugiyono, 2004](#_References_1)). To test the hypothesis, it uses logistic regression because it is related to the form of the dependent variable which is dichotomous without using moderation. Meanwhile, to test the moderating variables used subgroup analysis.

There are 2 logistic regression models that are used to test hypotheses related to the factors that influence fraudulent on financial reporting

Ln = α + β1X1 + β2X2 + β3X3 + β4X4 + β5X5 +ε (1)

Ln = βo + β1X1 + β2X2 + β3X3 + β4X4 + β5X5 + β6Z (2)

+ β7X1 \*X2 \*X3 \*X4 \* X5 \*Z+ε (3)

Information:

Ln = dummy fraudulent of financial statement variable. Category 1 for fraud indication and 0 for no fraud indication

α = Constanta

β1, β2 ,β3,β4,β5,β6,β7 = Coefficient regression

X1 = Financial Stability

X2 = External Pressure

X3 = Financial targets

X4 = Effective Monitoring

X5 = Accruals

Z = Technology Industry 4.0

ε = Error

(1), (2) = Model logistic regression for hypoteses 1-5

(3) = Model logistic regression for hypotesis 6

Fraudulent financial reporting in this reasearch was measured using the Beneish M-Score model. Beneish M-score is a mathematical model that consists of 8 indices that are used to find an anomaly or deviation in the financial statements as a result of profit manipulation and fraud manipulation [Repousis (2016)](#_References). Eight indexes used are days’ sales in receivable index (DSRI), gross margin index (GMI), asset quality index (AQI), sales growth index (SGI), depreciation index (DEPI), general sales and administrative expenses index (SGAI), leverage index (LVGI) and total accruals to total assets (SYSTEM). Beneish M-Score model with eight indexes is integrated in the model ([Ugochukwu et al., 2013](#_References)) as follows:

Beneish M-Score = -4.84 + 0.92DSRI + 0.528GMI + 0.404AQI + 0.892 SGI + 0.115DEPI – 0.172SGAI – 0.327LVGI + 4.679TATA (4)

If the M-score is greater than -2.22, the company is identified as having committed fraudulent on financial reporting. Therefore, in this study the dependent variable is financial statement cheating using a dummy, i.e. category 1 (one) for companies that are indicated to have cheated financial statements and category 0 (zero) for those not indicated. Financial stability in this study uses growth in assets (FINST). According to [Skousen & Twedt, (2009)](#_References), companies that experience growth rates below the industry average, increase management's potential to use financial statements that are manipulated so that the company's image looks good in the public eye.

(5)

External pressure or company external pressure in this research uses leverage. Leverage is a ratio that measures the proportion of assets financed by liabilities ([Acharya](#_References) [et al., 2011](#_References)). According to [Skousen & Twedt (2009)](#_References).

(6)

Financial targets or corporate financial targets are used return on assets. According to [Skousen & Twedt, (2009)](#_References) return on assets is used to assess management performance and in determining bonuses and increasing compensation for management.

(7)

Effective monitoring indicates that companies that commit fraud have fewer members of independent commissioners than companies that do not commit fraud.

(8)

Accruals in this study use total accruals to total assets (TATA). According to [Beneish, Lee, & Nichols, (2012)](#_References) this ratio indicates the portion of accounting profit that is not supported by cash profit. This means that management adheres to an accrual policy that makes profit or income can be recognized more quickly than is reasonable. Income before extraordinary items are taken from earnings after tax.

(9)

The technology integration variable as moderation in this study uses the Industry 4.0 model by [Kagermann et al (2013)](#_References). The model used uses 3 aspects of Industry 4.0 application, namely first, technology integration in various stages of the manufacturing process or business planning process (horizontal integration through systems); second, vertical integration and networked manufacturing systems; third, end to end digital integration of engineering across the entire value chain. The application of technology integration in this study was measured by dummy variables. Companies that apply one of the three aspects of industry 4.0 are coded 1 (one) while those who do not apply are coded 0 (zero). The moderation test uses a subgroup analysis test. According to [Ghozali, (2016)](#_References), subgroup analysis is used to identify the presence or absence of homologizer moderator types.

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**Result and Discussion**

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| Table 1. Descriptive Statistics | | | | | |
| Variables  Sub categorized | | Min | Max | Mean | Std |
| FINST | Fraud | -0438 | 0.620 | 0.125 | 0.213 |
| Non fraud | -0.148 | 0.282 | 0.055 | 0.104 |
|  | Total | -0.338 | 0.620 | 0.067 | 0.147 |
| LEV | Fraud | 0.098 | 0.704 | 0.443 | 0.184 |
| Non Fraud | 0.091 | 0.994 | 0.443 | 0.199 |
|  | Total | 0.091 | 0.994 | 0.443 | 0.194 |
| ROA | Fraud | -0.022 | 0.716 | 0.084 | 0.166 |
| Non Fraud | -0.097 | 0.212 | 0.049 | 0.067 |
|  | Total | -0.097 | 0.716 | 0.060 | 0.109 |
| KIND | Fraud | 0.167 | 0.500 | 0.371 | 0.086 |
| Non Fraud | 0.200 | 0.500 | 0.375 | 0.071 |
|  | Total | 0.167 | 0.500 | 0.374 | 0.076 |
| ACCRUALS | Fraud | -0.127 | 0.729 | 0.043 | 0.147 |
| Non Fraud  Total | -0.169  -0.169 | 0.044  0.729 | 0.051  -0.021 | 0.046  0.100 |
| *Source:* Processed data, 2020 | |  |  |  |  |

The descriptive analysis in this research details the average score of min, max and standard deviation of independent and dependent variables. [Table 1.](#_Table_1._Descriptive) shows indications of fraudulent on financial reporting of 31.4% and not indicated fraud of 68.6%. The average company sampled for the first variable has an average value of 0.067 and a standard deviation of 0.147. This means that the average company experienced an increase in the value of total assets of 7.7% and seen from the standard deviation is greater than the average value, which means variable variations of financial stability fluctuations. Variable leverage has an average value of 0.443 and a standard deviation of 0.194, meaning that the company is financing its assets by 44.3% with liabilities as a source of funding and a standard deviation value smaller than the average value, it can be concluded that variations in external pressure variables are less variable. The ROA variable with an average value of 0.060 means that the company is able to manage its assets to produce a profit of 6.01%, the average value for the effective monitoring variable is 0.374, meaning that in the entire sample, the average company has an independent commissioner composition of 37.4% and the Accruals variable has The mean of 0.021 indicates that more and more parts of accounting income are not supported by cash earnings, according to [Beneish et al., (2012)](#_References_1) associated with discretional accrual policy that is not reasonable applied by management.

To test the hypothesis, it uses logistic regression because it is related to the form of the dependent variable which is dichotomous without using moderation. Meanwhile, to test the moderating variables used subgroup analysis. The results of the model feasibility test are using the Hosmer and Lemeshow test and the results of the Omnibus Test of Model Coefficients.

[Table 3.](#_Table._3._Hosmer) shows the Chi-square of 12,415, while the critical value of Chi-square with a degree of freedom (df) 8 is 15,507. Chi-square value is smaller than the critical value of Chi-square so it can be concluded that the model is acceptable because the criteria are in accordance with the observational data.

[Table 4.](#_Table._4._Omnibus) shows the Chi-square value in the logistic regression model 36.91, while the critical value of chi-square with degree of freedom (df) 5 is 11.0705. These results can be concluded that all independent variables jointly influence the dependent variable.

The level of accuracy of this logistic regression model in predicting fraudulent on financial reporting variables indicated by the results of classification table on [Table 5.](#_Table._3._Hosmer) is 80.1%. [Table 6.](#_Table_6._Regression) shows the regression model that was formed. [Table 6](#_Table_6._Regression). presents a logistic regression test using the moderation variable.

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| Table 2. Descriptive Statistics (dummy variable) | | |
| Variabel | Frequency 1 | Frequency 0 |
| INTI | 0.279 | 0.729 |
| Source: Processed data, 2020 | | |

Model 1 without moderation as follows:

Ln = -2.887 + 3.710 FINST + 1.351 LEV -1.959ROA – 25.176KIND + 31.876 Accruals + ε

Model 2 with moderation

Subgroup analysis for moderation variable test is formed as follows:

Ln = -2.906 + 3.670 Finst + 1.215 LEV - 0.930 ROA -23.217 KIND + 29.300 Accruals + 0.067 INTI + 13855.46 Interaction + ε

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| Table. 3. Hosmer and Lemeshow’s Test | | | |
| Step | Chi-square | df | sig |
| 1 | 12.415 | 8 | 0.147 |
| Source:Processed data, 2020 | | | |

The results of regression logistic test of these two model is presented in [Table 6.](#_Table_6._Regression) In model 1, the value of nagelkerke R2 is0.573 indicates that 57.3% of the fraudulent financial report can be explained by the fraud triangle as independent variable. In model 2, a higher value of nagelkerke R2 is0.691 shows that it is a slightly better model. It means that 69.1% of the fraudulent financial report can be explained by the variable tested including the interaction variable.

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| Table. 4. Omnibus Tests of Model Coefficients | | | |
| Step | Chi-square | df | sig |
|  | 37.125 | 5 | 0.000 |
| 1 | 37.125 | 5 | 0.000 |
|  | 37.125 | 5 | 0.000 |
| Source*:* Processed data, 2020 | | | |

[Table 6.](#_Table_6._Regression) shows that hypothesis 1 the the financial stability has not significant on fraudulent financial report. Based on the analysis result the financial stability variable has wald value or t table of 1.529< t table or sig α of 0.317 greater than 0.05 level of significant, thus, it can be concluded that hypothesis 1 is rejected. Financial stability is not significant for fraudulent financial statements, this can be explain from the financial stability which is proxied by the ratio of changes in assets. The high increase in assets and asset growth indicates that the company has good financial stability so that pressure on management is low. If the pressure is low, it will not encourage fraud. In addition, the growth rate of asset value has no effect on fraudulent financial statements, if the company has an internal control system that is able to eliminate opportunities that arise. Because an effective internal control system can prevent fraud. In addition, the company culture also supports where a strong corporate culture with upheld norms and values ​​will create consistency in continuing to strive to achieve goals in a way that is in accordance with company values ​​even in unstable conditions. The facts and explanations above are supported by the essence of the fraud triangle theory which states that one element cannot stand alone. This study is consistent and agrees with the research [Zahro et al. (2018)](#_References_1) but contrasts with research from ([Tiffani & Marfuah,](#_References_1) [2015](#_References_1)).

Hypothesis 2 states that the external pressure has not significant on fraudulent on financial report. Analysis results on [Table 6.](#_Table_6._Regression) show Wald value of 0.543 should be greater than 1.96, sig. value 0.508> 0.05, thus hypothesis 2 is rejected. This hypothesis is rejected and it can be explained that the composition of funding with liabilities creates pressure for management, but according to the results of this study, this pressure has no effect on the occurrence of fraudulent financial statements. Company has good liquidity reserves therefore the company has a confidence that the entity can fulfill its obligations so that pressure can be relieved. The results of the data sample show that 87.5% of the data sample has positive cash flow which can indicate company get confidence. Another reason that external pressure has no effect cause of the company has an effective liquidity and projection cash flow management since it considers appropriate funding alternatives and the ability to manage leverage well. Productive debt will provide benefits so that the existing pressure can be reduced and fraud does not occur. The facts and explanations above are supported by the essence of the fraud triangle theory which states that one element cannot stand alone. The results of this study support the research of [Safig & Seles, (2018)](#_References_1) and do not support research [Tiffani & Marfuah,](#_References_1) ([2015](#_References_1)).

Hypothesis 3 states that the financial targets have not significant on fraudulent financial reporting. [Table 6.](#_Table_6._Regression) show that sig value 0.683 > 0.05 and Wald value 0.302 smaller than 1.96 so, it means hypothesis 3 is rejected. These result consist and supported by the fraud triangle theory which states that one element cannot separate with another two elements. This can be identified because management awareness of the target setup is beyond the ability of the company. Besides that, the internal control system which is already well in line with the Crime Triangle theory and the high level of ROA in the sample can put pressure and force management to look for strategies so that performance is getting higher too. This result is consistent with previous studies from [Zahro et al (2018)](#_References_1), [Tiffani & Marfuah (2015)](#_References_1) but not consistent with studies from [Safig & Seles, (2018)](#_References_1).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Table 5. Classification Table | | | | | |
| Observed | | | Predicted | |  |
| Fraud on Financial Reporting | | Percentage  correct |
| Non Fraud | Fraud |  |
| Step 1 | Fraud  On Financial Reporting | Non Fraud | 66 | 8 | 89.1 |
| Fraud | 23 21 | | 52.3 |
| Overall Percentage | |  | | 80.1 |
| Source*:* Processed data, 2020 | | | | | |

Hypothesis 4 show that the effective monitoring has a negative significant on fraudulent financial reporting. The sig value for effective monitoring is 0.000< α 0.05 and Wald value 11.917 <1.96 it means hypothesis 4 is accepted. The effectiveness of the board of commissioner will prevent management from opportunistic behavior and this is in line with agency theory. Board effectiveness is affect by several characteristics, such as board independence, board activity, board size and board competence. Higher characteristic of board of commissioner thus higher effective monitoring ([Huang et al. 2017](#_References_1)). Effective internal monitoring can maintain reliability of fraudulent on financial statement. The higher and more effective level of supervision from both the board of commissioners and the audit committee will reduce the occurrence of fraudulent financial report ([Beasley et al, 2000](#_References_1)). When a company implements a new information system such as using big data analysis technology or the Internet of Things, the IT Security function must be improved besides the audit committee must play a role in carrying out the oversight and control functions. The results of this study support research conducted by [Zahro et al (2018)](#_References_1) and [Inayanti & Sukirman, (2016)](#_References_1) but contrary to [Aprilia & Sergius, (2015)](#_References_1).

Hypothesis 5 show that the accruals have a positive significant effect on fraudulent financial reporting. The accruals variable has Wald value of 12.968 > 1.96 and sig. value of 0,000 <0.05, thus hypothesis 5 is accepted. Accrual itself is one of the benchmarks for fraud in financial statements ([Beneish, 1997](#_References_1)). These results override Fraud Triangle theory which states rationality can only lead to fraud if there are elements of pressure and opportunity. From the perspective of agency theory, it can be explained that basically humans have limited rationality or bounded rationality. The concept of limited rationality can be defined as a situation in which decision makers do not have the

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Table 6. Logistic Regression Test | | | | | | |
|  | B | S.E. | Wald | df | Sig. | Exp(B) |
| Model 1 | | | | | | |
| Fin.Stability | 3.710 | 3.065 | 1.529 | 1 | 0.317 | 43.077 |
| Ext.Pressure | 1.351 | 1.701 | 0.543 | 1 | 0.560 | 3.548 |
| Fin.Target | -1.959 | 3.611 | 0.302 | 1 | 0.683 | 0.137 |
| Effective Monitoring | -25.176 | 4.315 | 11.917 | 1 | 0.000 | 145.015 |
| Accruals | 31.876 | 8.535 | 12.968 | 1 | 0.000 | 7036E+13 |
| Constant | -2.887 | 1.781 | 2.352 | 1 | 0.212 | 0.065 |
| Sig. <0.05  Nagelkerke R2 = 0.573 |  |  |  |  |  |  |
| Model 2 | | | | | | |
| Fin.Stability | 3.670 | 3.037 | 1.721 | 1 | 0.191 | 51.969 |
| Ext.Pressure | 1.215 | 1.714 | 0.338 | 1 | 0.508 | 3.106 |
| Fin.Target | -0.930 | 4.047 | 0.053 | 1 | 0.818 | 0.395 |
| Effective Monitoring | -23.217 | 4.687 | 10.174 | 1 | 0.001 | 146.324 |
| Accruals | 29.300 | 8.679 | 11.397 | 1 | 0.001 | 5.209E+12 |
| Integration Technology Industry | 0.067 | 0.706 | 2.012 | 1 | 0.013 | 0.936 |
| Interaction | 13855.46 | 18217.10 | 10.675 | 1 | 0.003 |  |
| Constant | -2.906 | 1.829 | 2.352 | 1 | 0.212 | 0.055 |
| Sig. <0.05  Nagelkerke R2 = 69.1% |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Source*:* Processed data, 2020 | | |  |  |  |  |

ability or resources to understand and process all available information and alternatives to make optimal decisions. Lack of rationality makes it easy for offenders to convince themselves to act fraudulently. According to agency theory, the agent tries only provide good information to the principal, but for management's purpose it can manipulate financial statements using unreasonable accrual discretion. These results also support the theory of planned behavior, namely attitudes toward behavior and subjective norms. This subjective norm is also supported by the core theory of the Crime Triangle from the perspective of agency theory, it can be explained that basically humans have limited rationality. The agent tries to only provide good information to the principal, but for management's purpose it can manipulate financial statements using unreasonable accrual discretion. These results also support the theory of planned behavior, namely attitudes toward behavior and subjective norms. This subjective norm is also supported by the core theory of the Crime Triangle. Accruals have a positive effect on the occurrence of financial statement fraud because there is limited rationality around the perpetrators, the social aspects expressed in the theory of planned behavior influence the rationalization of the perpetrators to create trust in the perpetrators to commit fraud such as fraudulenst financial reporting. This study supports the research of [Skousen & Twedt (2009)](#_References_1) and [Coram et al., (2008)](#_References_1) but does not support research to [Aprilia & Sergius, (2015)](#_References_1) which states there is no effect of total accruals to assets that proxies rationalization on fraudulent financial reports.

Identification of moderation variables is done by subgroup analysis with two stages ([Sugiyono, 2004](#_References_1)), first stage that the moderating variable is significant with the independent variable. Result show on table 10 that the interaction has a significance with level of 0.003 smaller than 0.05 (sig. <0.05). The second stages can be identification is indicated by the relationship between the moderating variables with the independent and dependent variables and result show on [Table 6.](#_Table_6._) that sig. values. 0.013 <sig.0.05, thus, hypothesis 6 is accepted. It means the integration of technology industry 4.0 can moderate with strong moderation between fraud triangle simultaneously on fraudulent financial reporting.

Based on the analysis results, the integration of industrial technology 4.0 can strengthen the fraud triangle element simultaneously on fraudulent financial statements. This can be explained from several perspectives. First, the implementation of the industrial revolution 4.0 depends on the level of company’s innovation. Laggards is the group of workers that has the highest pressure. The pressure faced is a rejection of culture change which can be fraud occurs. Each implementation of a new technology increases the pressure on workers ([Korunka et al. 1995](#_References_1)). Second, referring to the planned behavior theory that a person's behavior is influenced by intention. Regarding technology, a person's intention to commit technology-based fraud is highly dependent on his attitude towards fraudulent behavior, subjective norms and control over behavior. The trigger factors for intention are opportunity and rationalization. Third, referring to the crime triangle theory, which states that criminal events occur due to environmental conditions. The environmental conditions in the 4.0 industrial revolution were transformative, which in some ways had vulnerabilities or potentials that could be abused. So that fraud will be more prone to occur if the perpetrator has a certain motive, the desired target and there is no party or system that is able to prevent it. So, in the case of a transformative environment, namely technology industry, it is necessary to identify fraud channels or gaps that are still vulnerable to being exploited by actors so that fraud can be anticipated and reduced. This study supports the research of [Handoko et al. (2020)](#_References_1) and [KPMG (2013)](#_References_1).

**Conclusion**

Based on results on this study, it can be concluded that financial stability has not significant on fraudulent financial statements. There are other causes that become a counter factor for pressure, consist of corporate culture, commitment to survive and the ability to manage pressure. External pressure is not significant on fraudulent financial statement due to sufficient liquidity, good forecast management and productive debt. Financial targets have no significant on fraudulent financial statements due to the existence of an adequate internal control system and a positive culture so that high targets do not trigger fraud. Effective monitoring has a negative significant on fraudulent financial statements because the more effective supervision of the board of commissioners, fraud can be minimized. Accruals have a positive significant on fraudulent financial statements, which means that when the company has a high accrual value, the probability of fraud is also high. The application of industrial technology integration is able to simultaneously moderate the effect of the fraud triangle variable on fraudulent financial statements. This is because the process of integration industrial technology 4.0 will increase the pressure on the work environment, open up the potential for cheating in the new system and reduce social relations that affect rationalization, which can fraud occurs.

Suggestion for further research of this study for sample research was expanded not only making Indonesia 4.0 with 5 priority sectors but 10 sectors which are industrialized development sectors. Independent variables should be added such as personal financial need for pressure elements, nature of industry for opportunity elements and auditor switching for elements of rationalization so as to produce a model with better predictions than this research.

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