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Fraud Detection in Government in the Last Ten Years

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Abstract. Over the past three years, Indonesian government state losses have exhibited a noticeable upward trend. The fraud triangle theory offers valuable insights into the relationship between fraud (as manifested in state losses) and three key factors: pressure, opportunity, and rationalization. These elements are reflected in instances of revenue shortfalls, potential losses, and non-compliance with regulations. Our study analyzed data from various government entities, including the central government, local governments, state-owned enterprises (SOEs), regional-owned enterprises (ROEs), public service agencies, regional public service institutions, and other government-related agencies over the past decade (2013 to 2023). This study used multiple linear regression by fulfilling the classical assumptions in its regression model. Our findings reveal that pressure stemming from revenue shortfalls, opportunities associated with potential losses, and rationalization arising from non-compliance with regulations significantly contribute to fraudulent activities within the government sector. Based on our research, the fraud triangle theory, with its focus on revenue shortfalls, potential losses, and non-compliance with regulations, provides a robust framework for identifying fraudulent practices within the government sector.

Keywords: Fraud triangle theory, fraud, opportunity, rationalization, pressure

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Introduction

In the last four years, local governments have experienced an upward trend in state losses. According to IHPS (Overview of Semester Audit Results) data from BPK in 2020, 2021, 2022, and 2023 shows that local governments experienced an increase in state losses each year. This state loss occurs due to violations of laws and regulations that cause state losses. Every state loss must be resolved by the party who committed the violation. On average in the last six years, state losses in local governments reached more than 1 trillion, and even in 2023 reached more than 2 trillion

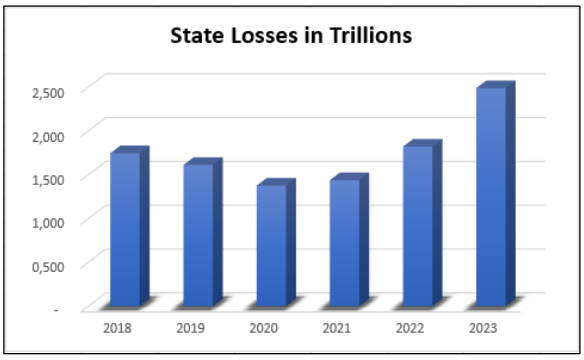

Fig. 1. Loss Trends in Local Government in 2018 – 2023
Source: IHPS 2028-2023

State losses have a variety of actions, one of which is corruption. KPK's *Anti-Corruption Learning Center* (2016) explains that state losses stemming from acts of corruption can lead to several problems, such as: slowing down a country's economic growth, decreasing investment, increasing poverty, increasing income inequality, and even corruption can also reduce the level of happiness of the people in a country. In Indonesia, corruption is significantly negatively correlated with economic growth, investment, the level of public health spending, and per capita income. In addition, corruption is also significantly positively correlated with poverty and income inequality *(Anti-Corruption Learning Center* KPK, 2016). Therefore, it is important to be able to detect fraud as a preventive measure in dealing with problems that cause state losses.

State losses stem from fraudulent acts that occur in the use of state funds. This fraud is part of the offense of the perpetrators who violate state regulations. Cressey (1953), a sociologist and criminologist revealed that there are three main factors that underlie a person committing fraud, namely: *opportunity*, *rationalization*, and pressure. The three main factors are known as FTT or *fraud triangle* theory. FTT has been widely used by researchers as a *grand theory* in researching fraud.

Owusu et al. (2022) examines the application of FTT with the results showing that opportunity, rationalization, and pressure can explain why employees commit fraud in state-owned companies. Research Owusu et al. (2022) measures its variables with the perceptions of employees in revealing the occurrence of fraudulent acts. Another thing is revealed by Maria et al. (2019) regarding the measurement of opportunities using secondary data which has a significant influence in determining the occurrence of fraud. These measurements are in the form of: total sub-districts, total assets, population, and total capital expenditures. Meanwhile, research Nuruddinia & Rahmawati (2021) uses opportunity variables with total assets and capital expenditure proxies, pressure with independence proxies, and rationalization with auditee response proxies. However, the results of the research Nuruddinia & Rahmawati (2021) only show that total assets as an opportunity variable have an influence on fraud.

Based on several previous studies, research related to FTT was designed using secondary data that can be used as fraud detection. This research design produces unique variables that are different from previous research. Maria et al. (2019) determined fraud by proxy of findings of financial violations in local governments, while in the study, fraud was proxied by findings of state losses in the central government sector, local governments, and government-owned enterprises and other institutions originating from the government. Then, the pressure variable in previous studies was proxied using the regional financial independence ratio, solvency ratio, and financial performance ratio (Maria et al., 2018). The three proxies are considered less representative in showing the pressure side within the organization, so in this study the pressure variable is proxied by the lack of income in the government sector. Furthermore, the opportunity variable in previous studies was proxied by the number of government organizations, the number of sub-districts, total assets, population, area, total capital expenditure, and the number of SPI weakness findings (Maria et al., 2019). Some of the proxies mentioned are less relevant to the meaning of opportunity, so this study uses the proxy for potential losses (fraud) that occur in the government sector. And finally, the rationalization variable in previous studies was proxied using audit responses to findings, audit

opinions, and changes in directors (Ibrani et al., 2019), (Nuruddinia & Rahmawati, 2021). The three proxies showed an understanding that was considered less representative of the rationalization variable, so in this study, rationalization was proxied using non-compliance with regulations in the government sector. It is hoped that this research can provide scientific benefits in adding to the literature in fraud theory, especially in the government sector.

Literature Review

Fraud Triangle Theory

Fraud triangle theory (FTT) emerged based on research from Cressey (1953) who interviewed 250 *white collar crime* prisoners who produced three main factors that cause someone to commit *fraud*. The three factors are *opportunity*, *rationalization*, and pressure. Pressure is the initial part for someone to have the intention to commit fraud. This pressure is generally financial pressure which can be: greed, family financial problems, drug addicts, spending more than income. While non-financial pressure can be: no promotion, delayed or no retirement, pressure to receive definite tasks, and others. If someone has the pressure that he experiences and the person concerned has the opportunity to commit fraud. Then this opportunity is what makes someone able to commit fraud. This opportunity can be: weak internal control and audit, weak organizational governance, and no rotation of tasks, and others. And finally, when someone can cheat because of the opportunity, then that person will rationalize themselves in the fraudulent act that is carried out. Someone must have various perceptions to justify their actions in committing fraud. If in their self-rationalization they oppose the fraudulent act, then this can be a fortress for someone in preventing the fraud from happening. While for someone whose self-rationalization considers the fraudulent act reasonable, then the fraud can occur. These three factors are the main factors for a party in committing fraud. A brief explanation of the stages of fraud according to FTT can be seen in the following figure.

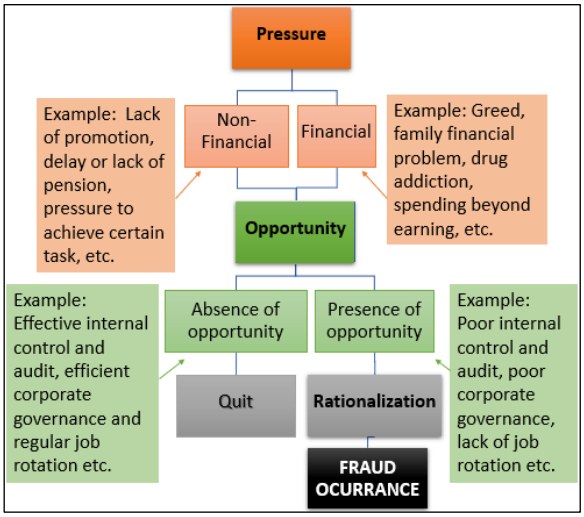

Fig. 2. Stages of Fraud Occurrence
Source: Abdullahi & Mansor (2018)

Hypothesis Development

The Effect of Pressure on Cheating

Pressure is the first factor that motivates someone to commit fraud. Every fraudster has some burden to commit fraud in a certain way. Some reasons may not be a real pressure, but for some perpetrators it can lead to pressure that can lead to fraud. Some reasons that become pressure are reasons related to financial needs. Usually, financial pressure is the main factor for someone to commit fraud. Financial pressure can be in the form of family financial problems, spending more than receiving, not achieving expected income, and the like. In more detail, about 95% of all fraud that occurs is caused by financial pressure (Albrecht et al., 2024). This can be likened to an organization that has financial problems in the form of the organization's failure to achieve its expected income. So in this study, the pressure proxied by financial pressure in the form of a lack of organizational income in revealing fraud.
H1: Pressure has a significant effect on fraud

The Effect of Opportunity on Fraud

The second factor is opportunity. The opportunity in question is the weakness and condition of the victim that allows fraud to occur. The potential for fraud in the workplace can lead to fraud. The potential for fraud can be in the form of: less than optimal control, a weak ethical culture, and sanctions that are not in

accordance with the perpetrators of fraud. These conditions are the potential for fraud (Albrecht et al., 2024) . In public sector organizations, fraud can be identified with state losses which are both forms of financial violations that occur in an organization. So that the potential that can cause state losses can be the basis for an organization in carrying out fraud. Based on the theory put forward, the potential for state losses is determined as a proxy for the opportunity variable in revealing the influence of fraud.
H2: Opportunity has a significant effect on fraud

The Effect of Rationalization on Cheating

The last factor is rationalization. The rationalization in question is the justification for the fraud committed. Many fraudsters consider themselves to be ordinary honest people and not criminals, they have to find reasons to make fraud more acceptable to them (Vousinas, 2019). The act of justifying the fraud committed is certainly inseparable from the mindset based on the perpetrator's environment. Fraud perpetrators can follow the actions that occur around them. Such as non-compliance with the rules carried out by the majority of people who are in the environment of the perpetrator of fraud. This condition can motivate the perpetrator to justify his actions in committing fraud (Kakati & Goswami, 2019) . In accordance with the previous explanation, the rationalization variable is proxied by non-compliance with the rules used to test the effect on fraud.
H3: Rationalization has a significant effect on fraud

Research Methods

This study uses a quantitative approach to test the Fraud Triangle Theory in the government sector. While newer fraud theories such as the Fraud Diamond, Fraud Hexagon, or Fraud Heptagon offer a more comprehensive perspective by adding other factors, the Fraud Triangle Theory remains relevant and often more effective as a starting point for uncovering fraud in public sector organizations for several reasons:

1. Simplicity and Strong Foundation
   The Fraud Triangle is the simplest and most fundamental model. Its three core elements (pressure, opportunity, and rationalization) are easy to understand and identify. This simplicity makes it a very useful tool for initial fraud risk analysis and identification. Newer theories actually build on the foundation of the Fraud Triangle. They add other factors, but without pressure, opportunity, or rationalization, fraud is unlikely to occur. So understanding these three basic elements remains crucial.
2. Wide Application and Time Testing
   The Fraud Triangle has been used and tested extensively in a variety of contexts, including the public sector, for decades. This means that there is a wealth of research and case studies supporting its relevance to understanding fraud. Newer theories may not have the same level of empirical validation, especially in the public sector context. Research specifically testing the effectiveness of additional factors in these theories in the public sector may be limited.
3. Focus on the Key Drivers of Fraud
   The Fraud Triangle directly highlights the key drivers that enable fraud to occur. Pressure provides motivation, opportunity enables the act, and rationalization justifies the behavior. Understanding these three drivers is often enough to uncover the root causes of fraud.
4. Ease of Implementation in Audits and Initial Investigations
   The simplicity of the Fraud Triangle makes it easy to implement in audits and initial investigations. Auditors and investigators can use this framework to identify areas where pressure, opportunity, and rationalization may be high, and then focus their efforts in those areas.
5. Relevance to Public Sector Characteristics
   Pressure, opportunity, and rationalization come in many forms in the public sector. Pressures can include unrealistic performance targets, political pressure, or personal financial concerns. Opportunities can arise from weak oversight or bureaucratic complexity. Rationalizations can include the belief that the act is in the “public interest” or the justification of low wages. The Fraud Triangle captures these dynamics. Although additional factors in other theories may also be relevant, an initial focus on the three basic elements of the Fraud Triangle often provides a fairly clear picture of the potential risk of fraud in the public sector.

This research takes secondary data from IHPS (Overview of Semester Audit Results) for the last ten years, namely: 2013 to 2023. The subjects of this study came from the central government, local governments, BUMN, BUMD, BLU, BLUD, other enterprises and

other institutions originating from the government. The research data obtained is a summary of three groups of organizations: central government, local government, and enterprises/institutions originating from the government in each semester. So from 2013 to 2023, 66 data were obtained (11 Years x 2 Semesters x 3 Organizational Groups). The amount obtained The data analysis used in this study is Multiple Linear Regression. The measurement of research variables is explained through the following table.

Table 1
Measurement of Research Variables

Variables	Variable Measurement
Cheating	Number of state loss cases
Pressure	Number of revenue shortfall cases
Opportunity	Number of cases that have the potential to become state losses
Rationalization	Number of cases of non-compliance with rules

Results and Discussion

The research data obtained through IHPS from 2013 to 2023 by dividing the research sample into three research subjects. The research subjects consist of the central government, local governments, and government agencies (BUMN, BUMD, BLU, BLUD, and other agencies). The three subjects were recapitulated per semester for the last ten years to become research data. Before conducting regression analysis of the research data, the classical assumption test is carried out first to fulfill the assumptions of the feasibility of the regression model. The results of classical assumption testing of research data are explained in the following table.

Table 2
Recap of Classical Assumption Test Results

Testing Results	Description
Kolmogorov Smirnov Test Sig: **0,087**	Passed Normality Test
Tolerance: **0.264** and VIF: **3.793** of Pressure Tolerance: **0.257** and VIF: **3.893** of Opportunity Tolerance: **0.122** and VIF: **8.215** of Rationalization	Passed Multicollinearity Test
Sig of Runs Test: **0.087**	Autocorrelation Test Passed
Sig Glejser Test of Pressure: **0,403** Sig Glejser Test of Chance: **0,060** Sig Glejser Test of Rationalization: **0,210**	Passed Heteroscedasticity Test

From the table Recap of Classical Assumption Test Results, it shows that the research data has met the assumptions of normality, multicollinearity, autocorrelation, and heteroscedasticity. So that data research is continued with regression analysis with the following results.

Table 3
Regression Analysis Results

Testing Results	Description
F-test Sig: **0,000**	Simultaneously influenced
Adjusted R Square: **0,907**	The independent variable can explain the dependent variable by 90.7%
Sig t-test of Pressure: **0,030**	H1 accepted→ Affected
Sig of t-test of Opportunity: **0,000**	H2 accepted→ Affected
Sig t test of Rationalization: **0,000**	H3 accepted→ Influential

Based on the Regression Analysis Results table, it shows that the variables of pressure, opportunity, and rationalization together have an effect on fraud. This can be seen from the sig value of the F test which is smaller than 0.05, namely: 0,000. It can also be understood that the regression model built is correct in predicting the fraud variable.

The coefficient of determination test through *Adjusted R Square* shows a value of 0.907. It can be concluded that the variables of pressure, opportunity, and rationalization can explain the fraud variable by 90.7% and the remaining 9.3% is explained by other variables outside the research model. This shows that the variables of pressure, opportunity, and rationalization are able to predict the value of the fraud variable with an accuracy of more than 90%.

The results of the hypothesis testing conducted show that the three hypotheses are accepted, so it can be said that the variables of pressure, opportunity, and rationalization partially affect fraud. This can be seen from the sig value of the t test shows that the pressure variable is 0.030, the opportunity variable is 0.000, and the rationalization variable is 0.000. The sig value of the three independent variables is less than 0.05, so that the three hypotheses set are accepted and the three independent variables partially affect the fraud variable.

H_1 which states "Pressure has a significant effect on fraud" is proven in the study. This is in line with research Abdullahi & Mansor (2018); Ibrani et al. (2019) ; Gottschalk (2021) ; Owusu et al. (2022) ; and Umar et al. (2024) which shows that pressure is one of

the underlying factors in fraudulent practices. Pressure is the initial motive for fraudsters in committing fraudulent practices (Albrecht et al., 2024) . The pressure in question can be in the form of personal pressure or business pressure. Personal pressure can be in the form of personal gain; financial difficulties; gambling, drugs, or alcohol; dishonesty; personal reputation; pressure from others; and job dissatisfaction. While business pressures can be financial pressures from investors and analysts; high market competition; integrity of job responsibilities; funding, revenue, production, and other financial targets (Kakati & Goswami, 2019) . Both pressures described Kakati & Goswami (2019) predominantly come from the element of financial pressure. Financial pressure can occur from family financial problems, expenses exceeding receipts, non-achievement of expected income, and other financial problems that come from personal and organizational sources. Albrecht et al. (2024) explains that 95% of all fraud that occurs is caused by financial pressure. So that the explanation of the theory described earlier is in accordance with the results of research which shows that financial pressure through lack of acceptance is the basis for the perpetrator to commit fraud.

H_2 which states "Opportunity has a significant effect on fraud" is proven in the study. This is supported by research Abdullahi & Mansor (2018); Gottschalk (2021) ; Owusu et al. (2022) ; and Umar et al. (2024) which explains that opportunity is one of the important factors for perpetrators in committing fraud. Opportunity is a way for fraudsters to commit fraud. This opportunity occurs from various conditions that have the potential for the perpetrator to be able or make it easier to commit fraud. Albrecht et al. (2024) explains that conditions that have the potential for fraud can come from neglected controls, a weak ethical culture, and sanctions that are not in accordance with the perpetrators of fraud. In accordance with the explanation of the theory presented, this study has proven that potential losses as a proxy for the opportunity variable can be a cause of fraudulent practices.

H_3 which states "Rationalization has a significant effect on fraud" is proven in the study. This is in accordance with the research of Abdullahi & Mansor (2018); Gottschalk (2021) ; Owusu et al. (2022) ; and Umar et al. (2024) which proves that rationalization is a factor in the occurrence of fraudulent practices. Rationalization is a factor in the final stage for fraudsters in convincing themselves that it is normal or normal to commit *fraud*. The rationalization in question is a mindset for a person in aligning or justifying the fraudulent actions taken. The perpetrator may undo the *fraud* committed if he does not justify his fraud or does not justify the practice of *fraud*. So it is widely found that fraudsters believe themselves to be ordinary honest people and not criminals. They are just always looking for reasons so that their fraudulent actions can be accepted by other parties (Vousinas, 2019) . Justifying or aligning fraudulent acts, of course, there are many underlying reasons, one of which comes from the perpetrator's environment. A culture of disobedience or ignorance of the rules is one of the factors that triggers the perpetrator in justifying or aligning the *fraud* practices committed (Kakati & Goswami, 2019) . Based on the theory previously stated, the results of the study have proven that the rationalization variable through non-compliance with rules can cause fraud.

Conclusions

This research has proven that the *fraud triangle* theory in the government sector can be detected through secondary data over the past ten years in Indonesia. Fraud that occurs in government is proxied using state loss data. Detection of the three main factors underlying the occurrence of fraud (state losses) can be done through revenue shortfalls, potential losses, and non-compliance with regulations. Revenue shortfall is a proxy for the pressure variable. Then the potential loss is a proxy for the pressure variable. And finally non-compliance with the rules is a proxy for the rationalization variable. These three components have a significant influence in detecting the occurrence of state losses. So it is recommended that the government can reduce cases of revenue shortages, reduce cases that have the potential to bring losses, and reduce cases of non-compliance with the rules. According to the research results, these three suggestions are expected to prevent fraud.

Although this research is able to reveal detection through *fraud triangle theory* (FTT) in the government sector, FTT is an old theory. Nowadays, the FTT has evolved into a *fraud diamond* which explains that fraud is based on four factors. Even this theory has developed by mentioning several additional factors that underlie fraudulent practices. So that in the future, this research can be developed using a newer fraud theory.

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