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# Influence of employee fraud on asset misappropriation analysed by fraud diamond dimension

Pupung Purnamasari*, Magnaz Lestira Oktaroza

*Faculty of Economics and Business, Bandung Islamic University, Indonesia*

**Abstract**

This study provides a general overview of asset misappropriation fraud committed by employees of state-owned Enterprises in Bandung, Indonesia. In this case, the employees committed fraud by taking or utilizing the assets of SOE for their benefit. This research examines the behavior of employee fraud on asset misappropriations through fraud diamond dimension. Survey method is used for this study with 130 respondents in study samples. The results show that pressure (PRESS), opportunity (OPPR), rationalization (RATIO), and capability (CAPA) give significantly positive influences on asset misappropriation (ASSMIS).

**Keywords:** Employee fraud, fraud diamond, pressure, opportunity, rationalization, capability

## 1. INTRODUCTION

State-owned Enterprises (SOE) is a legal entity that is (50% to 100%) owned by the government and taken from separated state wealth. The primary function of an SOE is to provide additional revenue to the state treasury or state budget, but in practice, there are not many SOEs that give their revenue contribution to the state, meanwhile some SEOs suffered from loss. In 2013, there were 27 SOEs suffering from the loss with total losses at about IDR 34.58 trillion (katadata.2015). One of the SOEs that suffered losses was PT Barata Indonesia (Limited Company). Where there was a misuse of assets carried out by its employees selling the company‘s assets, such as some land, to a private party resulting in a loss of more than 49 billion rupiahs (www.merdeka.com).A misuse of assets also occurred in PT Kereta Api Indonesia (Indonesian Train company) which was carried out by the company’s public division by selling a company asset, an old carriage, and the money did not go to the company but, into the staff’s pocket. The other cases are land owned by SOE turned into someone’s private property, and in Lampung land belonging to one SOE turned into shopping center (Ayu, 2012)

As reported by Association of Certified Fraud Examiners (ACFE) (2014), *asset misappropriation fraud* is the most dominant *fraud* that occurred in 100 countries (85.4%) followed by corruption (36.8%) and *fraudulent statements* is the least fraud (9%). The same thing happened in Indonesia, *asset misappropriation* is on the first rank by 43% (jurnalakuntansikeuangan.com, 2011). Meanwhile, based on the data from The Eighth United Nations Survey on Crime Trends and Operations of Criminal Justice Systems (2002), Indonesia ranks eighth among countries with the highest level of asset misappropriation in the world and, is in the second position after Thailand in Southeast Asia. A survey conducted by Pricewaterhouse Cooper (2005) stated that 46% of the 75 companies sampled in Indonesia are indicated to have been victims of asset misappropriation.

*Corresponding author. Tel.: +6281-2238-1608-; Fax: +62-22-4264064
E-mail: pupung@unisba.ac.id

Asset fraud is closely related to employee fraud. Employee fraud is done to obtain additional income for employees. As stated by Alison (2004), asset embezzlements are generally done by employees who have financial problems and who see an opportunity in a company's weak internal control and they have a justification for their actions. Most of the cases are carried out by employees at the lower level of the organizational hierarchy, where they have free access to company assets such as merchandise, equipment, and others. The initial impact of asset misappropriation may not be significant but, if there is no counterpart, the symptoms of asset misappropriation will be an incurable disease. Cheating that was once considered trivial will create a tremendous impact because it can potentially cause a great loss to the country because of expenses that should not exist.

A previous study that was conducted by Strand et al. (2002) stated that when external auditors are investigating a fraud, they focus on financial statement fraud, while internal auditors focus more on a broader fraud including asset misappropriation frauds. (Chadwick 2000). Albrecht et al (2011) showed that asset misappropriation is the most vulnerable area for the occurrence of fraud action, and a company's proactive monitoring and efficient organization, are able to prevent and detect misappropriation fraud. Meanwhile, The studies of Ayu (2012) and Herawati (2013) show that professionalism and independence of internal auditors are needed in detecting asset misappropriation.

This current research focuses on the fraud of asset misappropriations by employees using a fraud diamond dimension. Fraud Diamond Dimension is used to detect indications of fraud. In its development, *fraud triangle* experiences enormous development in which emerge many new theories that support the theory of *fraud triangle*, one of which is *fraud diamond.* To improve the prevention and detection of fraud, other than to consider the element *of pressure, opportunity and rationalization*, the element of *capability* is also considered. Capability element includes personal traits and abilities that play a major role in a fraud that might actually happen with the three other elements. These four elements are called the Fraud Diamond (Wolfe & Hermanson, 2004).

This study is conducted to contribute to government agencies creating appropriate procedures and controls that can reduce or eliminate asset misappropriation fraud by employees. This study provides useful information for academia to determine the effectiveness of forensic accounting courses and investigative auditing which specifically address the issue of asset misappropriation fraud, whether students have an understanding of the factors that influence fraud, losses and impacts that arise from fraud action both for themselves and for society, so that they have an early awareness of the negative effects of fraud actions.

## 2. LITERATURE REVIEW

### 2.1 Fraud Diamond

In this study, fraud Diamond model is developed. Wolfe and Hermanson (2004) introduced "Fraud Diamond Model" which adds one additional factor to the *fraud triangle* that has been stated by Cressey - "the fraudster's capabilities." The capability element is an individual's ability to override *internal control* and change *control* for personal gain. The nature and capabilities of individuals have an important role in the emergence of fraud also to the three other elements stated by Cressey.

Wolfe and Hermanson (2004) also described the related natures of capability element that is critical in the character of fraudsters; they are:

1. *Positioning*
   One's position or function within the organization can provide the ability to create or take advantage of the opportunity for fraud. Someone who has authority has a greater influence on a particular situation or environment.
2. *Intelligence and creativity*
   Fraudsters have sufficient understanding and exploit a weak internal control and use their position, function, or authority to gain the greatest advantage.
3. *Confidence / Ego*
   Individuals must have a strong ego and great confidence that they will not be detected. General personality types include someone who is driven to succeed at all costs, egoist, confident, and often narcissi. According to the *Diagnostic and Statistical Manual of Mental Disorders*, narcissism personality disorder includes the need for admiration and lack of empathy for others. Individuals with this disorder believe that they are superior and tend to demonstrate their achievements and abilities.

4. *Coercion*
   Fraudsters can force other individuals to commit or conceal the fraud. An individual with a persuasive personality may be able to convince others to go along with fraud or look the other way.
5. *Deceit*
   Successful fraud requires effective and consistent lying. In order to avoid detection, individuals must be able to lie convincingly, and should track the overall story.
6. *Stress*
   Individuals should be able to control their stress because committing acts of fraud and keeping it hidden can cause stress.

## 2.2 Hypothesis development

### 2.2.1 The influence of pressure on asset misappropriation

Cressey (1953) stated that *pressure* is the incentive / pressure / the need to commit fraud. Pressure can include almost anything, including lifestyle, economic demands, and others, financial and non-financial terms. Then Albrecht (2003) also confirmed that the pressure to commit *fraud* in the form of financial need, greedy individuals are challenged to fool the system, do *window dressing* on financial statements, even fear / threat of layoffs can motivate a person to commit fraud.The research by Tjakrawala and Saputra (2011) showed that pressure significantly influences fraud. This shows that employees who experience pressure tend to commit more assets misuses compared to other employees who do not experience any pressure.

*H1 :Pressure positively influences asset misappropriation.*

### 2.2.2 The influence of opportunity on asset misappropriation

*Opportunity* is a situation that gives an opportunity for management or employees to commit fraud (Arens *et al*., 2010). McCabe and Trevino (1997) stated that people think they have a benefit from other source, and that is called Opportunity. While Cressey (1953) stated that the opportunities to commit *fraud* occurred because of company's weak internal control. The research by Tjakrawala and Saputra (2011) showed that opportunity significantly influences the chance of fraud. This shows that employees who have an opportunity tend to commit misuse of assets more than other employees who do not have a chance.

*H2:Opportunity positively influences asset misappropriation.*

### 2.2.3 The influence of rationalization on asset misappropriation

Rationalization is a self-justification or wrong excuses for wrong behavior (Albrecht, 2003). Meanwhile, according to Cherepanov, Feddersen, Sandroni (2010), rationalization always exists as a cornerstone of a person in performing a particular action, including fraud. The research by Tjakrawala and Saputra (2011) showed that rationalization significantly influences fraud. This suggests that rationalization implies that an employee fraud tends to be regarded as an acceptable behavior.

*H3:Rationalization positively influences asset misappropriation.*

### 2.2.4 The influence of capability on asset misappropriation

Capability or ability is defined as personal traits and abilities that play a major role in fraud (Wolfe & Hermanson, 2004). Capability means the degree of power a person has to commit *fraud* in a corporate environment (Sihombing & Rahardjo, 2014).Much fraudulent misuse of assets by employees, will never occur if the employees do not have an appropriate capability. Wolfe and Hermanson (2004) stated that Fraud,which amounts to a great deal of money, will not occur if there are no individuals with certain capability in the company to do so. Furthermore, Wolfe and Hermanson (2004) stated that the opportunity to commit fraud, pressure and opportunity will motivate someone to commit fraud. Besides that, one must have the ability to realize that the open door is a golden opportunity and can take the benefits of it not only once but many times. The above shows that employees who have the ability to commit fraud, tend to perform fraud more often than other employees who do not have the ability to commit fraud.

*H4:Capability positively influences asset misappropriation.*

## 3. RESEARCH METHOD

Population in this research is the employees of SOE in Bandung, West Java. Data collection method used is survey method that is the primary method of data collection by providing questions to individual respondents (Jogiyanto, 2010). The measurement uses a five-point Likert scale. Answer scores begin from 1 to 5 in which 1 states Strong disagreement (STS) and 5 states Strong Agreement (SS). 172 questionnaires were spread and 136 questionnaires were returned. Six questionnaires cannot be used because they were not completed. Therefore, only 130 respondent answers can be used.

The data analysis for this research uses structural equation modeling with Partial Least Square (PLS) approach. Smart PLS 2.0 software is used for assessment. The assessment is conducted in two stages; *inner model* and *outer model*. The evaluation of the inner model is done through the PLS-SEM bootstrapping technique, which estimates the path relationships. Meanwhile Outer model assesses the internal consistency reliability (indicator reliability, composite reliability, cronbach alpha, and AVE), convergent validity and discriminant validity. Cronbach alpha is no longer relevant in the measurement model assessment because of its limitation (Hair *et al*., 2014)

## 4. DATA ANALYSIS AND HYPOTHESES TESTING

Table 1. Range, mean and standard deviation of respondents

| | N | Minimum | Maximum | Sum | Mean | Std. Deviation |
|---|---|---|---|---|---|---|
| PRESS | 130 | 1.11 | 5.00 | 331.51 | 2.5501 | 0.74418 |
| OPPR | 130 | 1.00 | 5.00 | 306.40 | 2.3569 | 0.74542 |
| RATIO | 130 | 1.00 | 4.33 | 290.00 | 2.2308 | 0.77548 |
| CAPA | 130 | 1.00 | 5.00 | 302.67 | 2.3282 | 0.74563 |
| ASS MISS | 130 | 1.00 | 4.83 | 298.89 | 2.2991 | 0.70454 |

Descriptive scores of Pressure, Opportunity, *rationalization* and *Capability* on asset misappropriation are shown by Table 1. PRESS has the highest average value (M = 2.55; SD = 0.74), and the lowest average value is RATIO (M = 2.23; SD = 0.77).

### Result and evaluation

SEM-PLS modeling that was used has a reflexive measurement model. The assessment of reflexive measurement model used *internal consistency (composite reliability), indicator reliability, convergent validity (average variance extracted)* and *discriminant validity.* Structural model is assessed based on *coefficients of determination* ($R^2$), *predictive relevance* ($Q^2$), s*ize and significance of the path coefficients* and $f^2$ *effect sizes* (Hair *et al*., 2014).

Table 2. Key Factor Loadings and Cross Loadings.

| Latent variable | Indicators | PRESS | OPPR | RATIO | CAPA | ASSMIS |
|---|---|---|---|---|---|---|
| Pressure | PRESS1 | **0.879** | 0.637 | 0.477 | 0.373 | 0.679 |
| | PRESS2 | **0.901** | 0.661 | 0.537 | 0.454 | 0.751 |
| | PRESS3 | **0.898** | 0.668 | 0.465 | 0.459 | 0.663 |
| Opportunity | OPPR1 | 0.480 | **0.781** | 0.304 | 0.587 | 0.588 |
| | OPPR2 | 0.597 | **0.776** | 0.284 | 0.554 | 0.553 |
| | OPPR3 | 0.661 | **0.840** | 0.483 | 0.679 | 0.705 |
| | OPPR4 | 0.461 | **0.708** | 0.347 | 0.443 | 0.523 |
| | OPPR5 | 0.668 | **0.830** | 0.369 | 0.592 | 0.666 |
| Rationalization | RATIO1 | 0.511 | 0.374 | **0.887** | 0.206 | 0.584 |
| | RATIO2 | 0.396 | 0.430 | **0.803** | 0.258 | 0.511 |
| | RATIO3 | 0.474 | 0.346 | **0.806** | 0.173 | 0.490 |
| Capability | CAPA1 | 0.307 | 0.582 | 0.146 | **0.835** | 0.435 |
| | CAPA2 | 0.363 | 0.539 | 0.108 | **0.748** | 0.401 |
| | CAPA3 | 0.352 | 0.461 | 0.120 | **0.707** | 0.421 |
| | CAPA4 | 0.306 | 0.579 | 0.227 | **0.715** | 0.417 |
| | CAPA5 | 0.326 | 0.529 | 0.284 | **0.724** | 0.403 |
| | CAPA6 | 0.506 | 0.626 | 0.263 | **0.819** | 0.523 |
| Asset Misappropriation | ASSMIS1 | 0.684 | 0.707 | 0.530 | 0.560 | **0.901** |
| | ASSMIS2 | 0.678 | 0.684 | 0.552 | 0.480 | **0.893** |
| | ASSMIS3 | 0.784 | 0.741 | 0.660 | 0.538 | **0.953** |

The result in Table 2 shows that Factor loadings of each construct are bigger than cross loadings with other constructs. Value *composite reliability* (CR) for PRESS (0.922), OPPR (0.891), RATIO (0.872), CAPA (0.891) and ASSMIS (0.940) and all are above 0.70 so that we can conclude that all constructs have a high internal *consistency reliability.*

AVE result for PRESS (0.797), OPPR (0.622), RATIO (0.694), CAPA (0.577) and ASSMIS (0.839) shown in table 3 shows that all constructs meet convergent validity whereas AVE is above recommended criteria minimum at 0.50 (Hair *et al*., 2014)

Table 3. Model quality, criteria: convergent validity and reliability analysis.

| Latent variable | Indicators | Loadings | Indicator reliability | Composite reliability | AVE | Discriminant validity |
|---|---|---|---|---|---|---|
| Pressure | PRESS1 | 0.879 | 0.773 | 0.922 | 0.797 | Yes |
| | PRESS2 | 0.901 | 0.812 | | | |
| | PRESS3 | 0.898 | 0.806 | | | |
| Opportunity | OPPR1 | 0.781 | 0.610 | 0.891 | 0.622 | Yes |
| | OPPR2 | 0.776 | 0.602 | | | |
| | OPPR3 | 0.840 | 0.706 | | | |
| | OPPR4 | 0.708 | 0.501 | | | |
| | OPPR5 | 0.830 | 0.689 | | | |
| Rationalization | RATIO1 | 0.887 | 0.787 | 0.872 | 0.694 | Yes |
| | RATIO2 | 0.803 | 0.645 | | | |
| | RATIO3 | 0.806 | 0.650 | | | |
| Capability | CAPA1 | 0.835 | 0.697 | 0.891 | 0.577 | Yes |
| | CAPA2 | 0.748 | 0.560 | | | |
| | CAPA3 | 0.707 | 0.500 | | | |
| | CAPA4 | 0.715 | 0.511 | | | |
| | CAPA5 | 0.724 | 0.524 | | | |
| | CAPA6 | 0.819 | 0.671 | | | |
| Asset Misappropriation | ASSMIS1 | 0.901 | 0.812 | 0.940 | 0.839 | Yes |
| | ASSMIS2 | 0.893 | 0.797 | | | |
| | ASSMIS3 | 0.953 | 0.908 | | | |

The correlation results between constructs and root value of AVE in Table 4 show that the root value of AVE for PRESS, OPPR, RATIO,CAPA and ASSMIS variables is bigger than correlation coefficient between constructs. In general, this result indicates the high *discriminant validity* of latent variables.

Table 4. Correlation coefficient of latent variable and discriminant validity

| Construct | PRESS | OPPR | RATIO | CAPA | ASSMIS |
|---|---|---|---|---|---|
| Pressure | **0.8928** | | | | |
| Opportunity | 0.7342 | **0.7885** | | | |
| Rationalization | 0.5539 | 0.4589 | **0.8330** | | |
| Capability | 0.4805 | 0.7304 | 0.2547 | **0.7597** | |
| Asset Misappropriation | 0.7834 | 0.7762 | 0.6365 | 0.5745 | **0.9160** |

Description: Coefficient in diagonal table is root square of AVE

## Assessment of $R^2$ model

Figure 1 shows $R^2$ value for PRESS, OPPR, RATIO and CAPA models of ASSMIS acquired is at 0.753. $R^2$ value is equal to 0:25 which means it has a weak effect, 0.5 has moderate effect and 0.75 has a substantial effect (Chin, 2010). $R^2$ value shows the prediction accuracy of the models. (Hair, 2014). Therefore, the research models of accuracy PRESS, OPPR, RATIO and CAPA in predicting ASSMIS is at 0.753 (substantial).

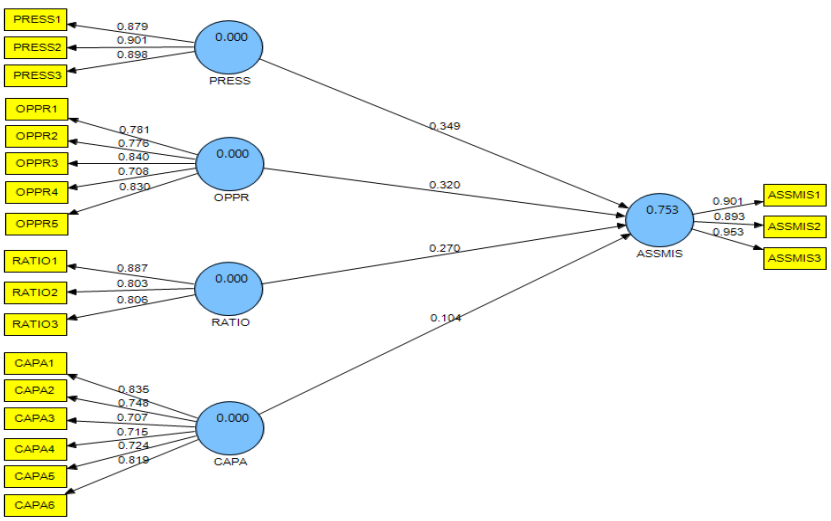


Figure 1. SEM-PLS result of direct influence of PRESS, OPPR, RATIO and CAPA on ASSMIS

### The $f^2$ effect size measurement for structural model

*Effect size* $f^2$ shows the contribution of each construct on asset misappropriation. The result of the calculation of e*ffect size* $f^2$ is shown in Table 5. The value $f^2$ is equal to 0.02, 0.15, 0.35 and it can be interpreted that the predictor of latent variables has a small, medium or large influence (Hair, 2014). The value of the $f^2$effect size of PRESS is 0.1942 and it is under medium category, The $f^2$Effect size of OPPR is 0.1093 and is under low category, the $f^2$effect size of RATIO is 0.1984 and is under medium category, and he $f^2$effect size of CAPA is 0.0202 and is under low category.

Table 5. The $f^2$ effect size measurement for structural model.

| Endogenous construct | $R^2_{included}$ | $R^2_{excluded}$ | $R^2_{included} - R^2_{excluded}$ | $1-R^2_{included}$ | Effect Size |
|---|---|---|---|---|---|
| PRESS | 0.753 | 0.705 | 0.048 | 0.247 | 0.1942 |
| OPPR | 0.753 | 0.726 | 0.027 | 0.247 | 0.1093 |
| RATIO | 0.753 | 0.704 | 0.049 | 0.247 | 0.1984 |
| CAPA | 0.753 | 0.748 | 0.005 | 0.247 | 0.0202 |

### Structural model measurement using $Q^2$

Geisser (1974) and Stone (1974) examined the $Q^2$ predictive relevance value. According to Hair (2014), $Q^2$ *values estimated by the blindfolding procedure represent a measure of how well the path models can predict the originally observed values.*

$Q^2$ calculation result is shown in Table 3. The $Q^2$ value which is equal to 0.02, 0.15, 0.35 can be interpreted that the predictor of latent variables has a small, medium or large influence (Hair, 2014).

Table 6. Structural model measurement using *predictive relevance* ($Q^2$)

| Endogenous construct | $Q^2_{included}$ | $Q^2_{excluded}$ | $Q^2_{included} - Q^2_{excluded}$ | $1-Q^2_{included}$ | Effect Size |
|---|---|---|---|---|---|
| PRESS | 0.6203 | 0.5776 | 0.0427 | 0.3797 | 0.1125 |
| OPPR | 0.6203 | 0.5994 | 0.0209 | 0.3797 | 0.0550 |
| RATIO | 0.6203 | 0.5820 | 0.0383 | 0.3797 | 0.1009 |
| CAPA | 0.6203 | 0.6163 | 0.0040 | 0.3797 | 0.0105 |

The coefficient of Q2 effect size of PRESS (0.1125), OPPR (0.0550), RATIO (0, 1009), CAPA (0.0105) is under small category and it shows that model has a relatively small value of predictive relevance.

### Hypothesis testing

The results in Table 7 and Figure 2 show a significant direct influence of PRESS, OPPR, RATIO and CAPA on ASSMIS. PRESS on ASSMIS ($\rho = 0.349$; t-value = 4.405, p-value = 0.0000), OPPR on ASSMIS ($\rho = 0.320$; t-value = 3.320, p-value = 0.00001), RATIO on ASSMIS ($\rho = 0.270$; t-value = 3.976, p-value = 0.00006), CAPA on ASSMIS ($\rho = 0.104$; t-value = 2.103, p-value = 0.01873). This result indicates that ASSMIS is influenced by PRESS, OPPR, RATIO and CAPA, so the hypothesis 1, 2, 3, and 4 are received based on this study.

Table 7. Direct influence of PRESS, OPPR, RATIO and CAPA on ASSMIS.

| No. | Hypothesis | Path coefficient | Standard error | t-value | p-value | Decision |
|---|---|---|---|---|---|---|
| 1 | PRESS -> ASSMIS | 0.349 | 0.079 | 4.405 | 0.00001** | Support |
| 2 | OPPR -> ASSMIS | 0.320 | 0.096 | 3.320 | 0.00059** | Support |
| 3 | RATIO -> ASSMIS | 0.270 | 0.068 | 3.976 | 0.00006** | Support |
| 4 | CAPA -> ASSMIS | 0.104 | 0.050 | 2.103 | 0.01873** | Support |

Description: ** shows the item is significant at the $p < 0.01$ (1% level)

The results above indicate that ASSMIS is supported by PRESS, OPPR, RATIO and CAPA, therefore hypothesis 1, 2, 3 and 4 are accepted based on this study. The results of Structural Model bootstrapping are as follows;

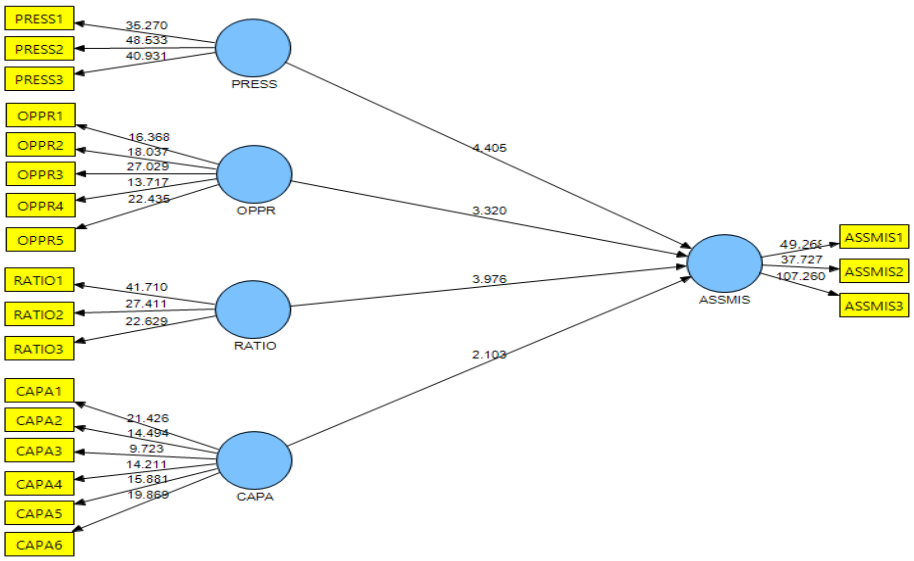


Figure 2. Results of structural model bootstrapping

## 5. CONCLUSION

This study shows that PRESS is perceived by the respondents and has motivated them to perform ASSMIS fraud. This study result is supported by the studies of Tjakrawala and Saputra (2011), Albrecht (2003) and Sihombing and Rahardjo (2014)) which stated that employees who have PRESS will be more motivated to commit fraud than other employees who do not have any PRESS.

This study explains that respondents tend to have and utilize OPPR to commit fraud. Meanwhile, according to Cressey (1953), the OPPR to commit fraud is available because of the weak internal control of the company. This result is consistent with Aren's theory (2010) that states that an OPPR is a situation that allows an employee to commit fraud. This is supported by the study of Tjakrawala and Saputra (2011) which shows that OPPR significantly influences the chance to commit fraud.

Empirical evidence supports the third hypothesis which indicates that RATIO positively influences ASSMIS fraud. This result is supported by the study of Tjakrawala and Saputra (2011), Albrecht (2003) and Sihombing and Rahardjo (2014)) which stated that RATIO significantly influences fraud.

CAPA gives a positive influence on ASSMIS. The results of this study are consistent with the theory that is addressed by Wolfe and Hermanson (2004) which stated that Fraud, which generally amounts to a great deal of money, will not occur if there are no individuals with certain CAPA in the company to commit fraud. Furthermore, Wolfe and Hermanson (2004) stated that the OPPR to commit fraud, PRESS and RATIO will motivate someone to commit fraud. Besides that, one must have the ability to realize that the open door is a golden OPPR and can take the benefits of it not only once but many times. Although in contrast with the result of Rahadjo Sihombing (2014) which stated that CAPA does not affect fraud.

This research has some potential contribution to government agencies to create the appropriate procedures and controls that can reduce or eliminate ASSMIS fraud by employees. Theoretically, the results of this study are expected to enrich the forensic accounting literature by providing empirical evidence of the influence of PRESS, OPPR, RATIO and CAPA on ASSMIS fraud.

Future research regarding ASSMIS is expected to include a comprehensive study that will help us to better understand how an organization is vulnerable to ASSMIS fraud that can be influenced by several factors such as spiritual life at the workplace, economic condition and organizational ethics culture.

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