Integrating Religiosity into the Fraud Pentagon Model: An Empirical Analysis of Asset Misappropriation Risk in Governmental Organizations

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ABSTRACT

This study aims to integrate religiosity into the fraud pentagon or S.C.O.R.E model regarding asset misappropriation risk among government organization employees. Data were collected using a questionnaire survey involving 210 employees from a government organization in Indonesia who are tasked with managing assets. Data analysis was carried out using the partial least squares-structural equation modeling (PLS-SEM) method. This study found that stimulus, capability, opportunity, rationalization, and ego are positively related to asset misappropriation. In other words, the higher the five elements of fraud model, the higher the asset misappropriation risk. Conversely, religiosity is negatively related to asset misappropriation risk. The higher the religiosity of employees, the lower the tendency to commit asset misappropriation such as misusing office assets, creating fictitious documents, petty cash corruption, financial fraud, and others. This study recommends the development of an anti-fraud strategy for government organizations to mitigate the risk of asset misappropriation in the context of the fraud pentagon model. Furthermore, this study emphasizes the importance of religiosity as a factor that deters employees from committing asset misappropriation.

Keywords: Stimulus, Capability, Opportunity, Rationalization, Ego, Religiosity, Asset Misappropriation
JEL Classifications: M41, M10, M42

1. INTRODUCTION

As of 2022, occupational fraud risks remained the most prevalent and financially impactful form of financial crime globally (Association of Certified Fraud Examiners, 2022). Occupational fraud refers to fraudulent activities committed by individuals against the organizations that employ them (ACFE, 2022). This misconduct, also known as employee fraud, entails intentional actions by employees that result in financial losses for their organizations (Wells, 2001). These fraudulent actions involve the deliberate misuse or misapplication of a business's assets or resources for personal gain.

A study conducted by the ACFE in 2020 revealed losses totaling USD 3.6 billion originating from 2,504 fraud cases in

125 countries. Asset misappropriation schemes were the most frequent, accounting for 86% of fraud cases and an average loss of USD 100,000. Asset misappropriation is considered the most widespread form of fraud; it is an act committed by employees when they steal or misuse organizational resources, such as theft of company cash, false billing statements, or inflated expense reports (ACFE Indonesia, 2020; Deloitte, 2020; Ernst and Young, 2020; PricewaterhouseCoopers, 2020).

Asset misappropriation is a serious problem for government organizations, especially in developing countries. For example, a survey by ACFE Indonesia (2020) revealed a large number of frauds in government organizations, namely 48.5% of all cases. Previous studies on employee fraud primarily focused on

developed countries, leaving a dearth of investigation into fraud elements in developing nations (Said et al., 2018a). Analyzing asset misappropriation within governmental organizations in Indonesia, a country where such entities account for 48.5% of fraud cases according to an ACFE Indonesia Chapter survey in 2019, presents an important perspective (Owusu et al., 2022; Said et al., 2018b).

In addition to focusing on asset misappropriation in developing countries—which has still been subjected to only limited research—this study also contributes by testing the latest fraud theory, namely the fraud pentagon or S.C.O.R.E model (Vousinas, 2019). Most previous studies have tested the fraud triangle theory and fraud diamond theory in analyzing the occurrence of fraud. Vousinas (2019) has recently put forward the S.C.O.R.E. model which is based on the idea that, in addition to the fraud triangle theory and fraud diamond theory factors, the ego of individuals is also a basis for determining why they engage in fraudulent activities such as asset misappropriation (Vousinas, 2019). The S.C.O.R.E. model provides a more comprehensive approach to investigating the determinants of fraud (Koomson et al., 2020). One of the main motivations in committing white-collar crimes, according to Stotland (1977), is a sense of superiority, mastery, and being admired or recognized by others which are related to the trait of ego.

Ego has also been proven to have been the cause of major frauds in history, such as Russell Wasendorf, the founder of Peregrine Financial Group, who admitted that his ego was too big to admit failure, so he committed fraud. An oversized ego is also behind one of the biggest financial frauds of all time, the USD 7 billion global Ponzi scheme created by Robert Allen Stanford, involving the Stanford Financial Group. And Bernie Madoff's USD 65 billion fraud also used a Ponzi scheme; in these cases their inflated egos led to their fraudulent schemes.

Vousinas (2019) argues that, apart from the four known fraud predictors based on the fraud triangle theory and the fraud diamond theory, an individual's ego should also be considered when investigating the determinants of fraud. The ego is something that makes a person decide what is considered moral and what is not. People care about what others think of their actions because of their egos (Koomson et al., 2020). Therefore, the individual's ego can be a factor that causes a person to engage in fraudulent acts such as asset misappropriation (Koomson et al., 2020). However, until now, the application of the S.C.O.R.E. model remains an open question because only the study by Koomson et al. (2020) has tested the effect of the model on asset misappropriation.

This study develops the fraud pentagon or S.C.O.R.E model by integrating the religiosity variable into the model. Religiosity gained significance during the pandemic and crisis, with empirical evidence suggesting its rise around the globe and the potential for long-term socio-economic consequences (Bentzen, 2021). Religious individuals tend to exhibit ethical behavior and aversion to risk, which could curtail unethical conduct (Cai et al., 2019; Abdul Rahman et al., 2018; Nahar, 2019; Baatwah et al., 2020). However, accounting research that explores religiosity remains limited, particularly concerning Islamic religiosity's relationship

with fraud (Surya and Rahajeng, 2023; Wijayanti et al., 2023; Baatwah et al., 2020; Awang et al., 2019; Said et al., 2018a; Ismail et al., 2015; McGuire et al., 2012; Dyreng et al., 2012). Limited empirical evidence on the influence of Islamic religiosity on fraud necessitates further research, especially investigating its role in mitigating asset misappropriation in governmental organizations. To the best of the author's knowledge, this study is the first to integrate religiosity into the fraud pentagon theory and test it in the context of government employees' tendency to commit asset misappropriation.

An understanding of religiosity is also integrated to examine whether the causes of fraud can be reduced by an individual having a high understanding of religiosity. In this study, the researcher has chosen to focus on religiosity according to Islamic teachings sourced from the Qur'an and Sunnah which regulate all aspects of life including carrying out *muamalah* or transactions (Yurmaini, 2017). In Islam, an attitude that is always dissatisfied is bad behavior. According to the stipulations of Islam, an avaricious attitude is a condition where someone loves worldly assets too much or shows off too much to the people around them. Such avarice is very contrary to Islamic law which teaches adherents to be grateful at all times and also to maintain the trust given to them (Q.S Al-Anfal: 27). The study by Yurmaini (2017) states that religion can be a solution that minimizes fraud and a person's understanding of religiosity is expected to reduce the tendency to commit fraud when he or she faces pressure or has opportunities, rationalizations, abilities, and personal ethics that lead to fraud.

Asset misuse behavior can result in organizations experiencing losses every year. Asset misuse is usually carried out by individuals who work in companies and have various factors that give rise to them committing fraud in the form of asset misuse. Studies conducted by Istifadah and Senjani, (2020); Kazemian et al. (2019); Koomson et al. (2020); Said et al. (2017); and Said et al. (2018a) show that pressure or stimulus, capability, opportunity, and rationalization have a significant effect on asset misuse. The theory underpinning the S.C.O.R.E. model states that ego is a new factor that has a significant effect on asset misuse (Koomson et al., 2020). Other studies have yielded contradictory results, where opportunity and rationalization do not have a significant effect on asset misuse (Said et al., 2018b) and pressure also has no effect on asset misuse (Said et al., 2017). Likewise, religiosity is able to moderate the relationship between pressure or stimulus, capability, opportunity, and rationalization on asset misuse (Istifadah and Senjani, 2020; Said et al., 2018a). Previous studies have found that religiosity is unable to moderate the relationship between capability and asset misuse (Hariyanto et al., 2018).

The majority of previous research exploring asset misappropriation has applied theories such as the fraud triangle and fraud diamond theory (Said et al., 2017; Kazemian et al., 2019; Vousinas, 2019; Koomson et al., 2020; Saluja et al., 2022; Ratmono and Frendy, 2022; Mandal and Amilan, 2023). However, there are still very few studies that test the latest fraud theories such as the Fraud Pentagon or the S.C.O.R.E model by integrating the aspect of religiosity. This research contributes by surprisingly examining asset misappropriation in the context of the largest Muslim-populated

country globally—Indonesia. Islamic religiosity significantly influences individual beliefs, values, and behaviors, and research suggests its potential role in mitigating fraud (Said et al., 2018a; Awang et al., 2019; Baatwah et al., 2020; Samad et al., 2022; Surya and Rahajeng, 2023; Wijayanti et al., 2023; Mursid, 2023). Given its prominence in deterring fraud, this study incorporates Islamic religiosity as a determinant of asset misappropriation, expanding the Fraud Pentagon or S.C.O.R.E model.

2. LITERATURE REVIEW

2.1. Fraud Pentagon Theory

The fraud pentagon/S.C.O.R.E. model is a theoretical development of theories that discuss the causes of fraud in the past. S.C.O.R.E is an acronym for the words: Stimulus, capability, opportunity, rationalization, and ego. The first four elements of the model (stimulus, capability, opportunity and rationalization) are derived from the fraud diamond theory (which is itself an extension of the fraud triangle theory), while the fifth element was introduced to improve fraud detection and prevention and to broaden the understanding of the main determinants of fraudulent activity (Vousinas, 2019).

Crowe (2011) introduced the fraud pentagon model by adding an element of arrogance or ego to the fraud diamond theory. Fraudsters must be arrogant enough to believe that they can commit fraud and go unnoticed, or they feel that company policies do not apply to them because of their arrogance. In addition, Vousinas (2019) added ego because it maintains individuals' self-esteem meaning they can do various things to commit fraud.

Asset misappropriation is a fraud scheme in which employees steal or misuse the resources of the organization that employs them; for example, theft of company cash, false billing schemes, or inflated expense reports (ACFE, 2020). The perpetrators of fraud in these cases use deceitful methods to steal or misuse the assets of an organization (Koomson et al., 2020; Wolfe and Hermanson, 2004). Misappropriation of assets is measured using several indicators, namely taking some organizational resources, using office time for personal work, not complying with asset use policies, borrowing cash for personal use, borrowing company assets for personal use, using the office internet for personal use, taking company assets for personal use, using office computers and printers for personal use, and submitting medical expenses that may not be entirely correct.

2.2. Islamic Religiosity

From an Islamic viewpoint, religiosity denotes an awareness and inclination toward harmonizing worldly needs with adherence to God's commands (Istifadah and Senjani, 2020). It is characterized as a "strong belief in the existence of God." This belief is intertwined with an individual's religious devotion and fervor (Salleh, 2012). Past studies have portrayed religiosity as significantly linked to ethical conduct or fraudulent behavior, suggesting that stronger ethical and religious convictions correlate with decreased fraudulent activities (Said et al., 2018a; Awang et al., 2019; Nahar, 2019; Ismail et al., 2015; Hilary and Hui, 2009; Kanagaretnam et al., 2015; Murshid, 2023).

Religion serves as a significant societal mechanism shaping individual beliefs and actions (Baatwah et al., 2020; Ismail et al., 2015; Surya and Rahajeng, 2023; Stulz and Williamson, 2003). Consequently, individuals are expected to abide by religious teachings, avoiding the adverse repercussions of transgressing these teachings.

2.3. Hypothesis Development

Stimulus is the pressure to commit fraud and can be both financial and non-financial in nature (Vousinas, 2019). According to Koomson et al. (2020), pressure or stimulus is defined as a problem that cannot be shared—a problem originating from either work or from home—that motivates someone to engage in fraudulent acts. Pressure can come from several sources, namely work pressure to achieve key performance indicators set by the company, different tasks that must be carried out simultaneously, failure to meet targets set by the company, tension and frustration due to continuous pressure at work, sometimes needing to cut spending on daily needs to ensure that salaries will be sufficient until the end of the month, inability to pay very expensive family expenses, becoming the head of a family to meet family needs, and the rising cost of living.

Individuals can have very high expectations and targets at work can cause a lot of pressure on them (Lokanan, 2015). Some pressures may arise from conditions outside the workplace such as meeting the needs of family members or friends, this is in accordance with the S.C.O.R.E. model theory that pressure to commit fraud can be caused by financial or non-financial factors (Vousinas, 2019). In cases of asset misappropriation, pressure can occur in situations such as lifestyle costs beyond the individual's means (Kazemian et al., 2019; Halabi et al., 2019; Hidajat, 2020). As a way to reduce or manage such pressure, some individuals may end up misusing organizational assets (Association of Certified Fraud Examiners (ACFE), 2020; Cressey, 1953).

Researchers have found that people usually engage in fraudulent activities because they are faced with some form of pressure and clearly state that every fraud perpetrator must have experienced pressure to commit fraud (Ruankaew, 2016; Said et al., 2017; Cheliatsidou, 2023; Triantoro, 2020). In accordance with the S.C.O.R.E. model, pressure has been found to be a major factor in the occurrence of fraudulent acts. The results of research by Abayomi and Abayomi (2016), Said et al. (2018), Kazemian et al. (2019), Istifadah and Senjani (2020), and Koomson et al. (2020) show that pressure on employees can increase asset misuse, meaning that the greater the pressure, the stronger the intensity of the deviant behavior that a person might carry out: in this case, asset misuse behavior. The hypotheses that can be formulated is as follows:

H_1: There is a positive relationship between stimulus and asset misuse

Capability is a personal trait that determines whether fraud will actually occur due to pressure, opportunity, and rationalization (Vousinas, 2019). The misappropriation of assets is often easier to do when the perpetrator is in a position that gives him or her access to company resources (Koomson et al., 2020). Thus, Koomson et al. (2020) propose indicators to measure capability,

namely someone who has the right position, who has access to take advantage of fraud opportunities, who is trusted because they can solve problems, who has good communication skills, and who can influence the situation in the company. Individuals will misuse assets when they have the authority and responsibility of the internal control system so that they are not detected (Albrecht et al., 2015)

According to the S.C.O.R.E. model theory, in addition to pressure, opportunity, and rationalization, capability also influences fraud. Vousinas (2019) explains that in the absence of the right ability to implement the details of fraud, fraud will not occur. Kazemian et al. (2019), Istifadah and Senjani (2020), Koomson et al. (2020) explain that ability has a significant positive effect on the tendency to cheat. Abayomi and Abayomi (2016) explain that ability has a positive effect on the tendency to cheat. Therefore, the higher the perpetrator's ability to commit fraud, the higher the likelihood of fraud. The hypothesis that can be formulated is as follows:

H_2: There is a positive relationship between capability and asset misappropriation

Opportunity is the chance to commit fraud (Vousinas, 2019). Opportunities arise when employees recognize a chance to commit fraud without being detected (Said et al., 2018). Further opportunities can be measured using several indicators; namely, there is a separation of duties between those responsible for recording and processing transactions; there is authorization of claims related to travel, accommodation, and meal allowances; there is supervision, monitoring, and review of employee work; there is proper physical supervision of organizational assets and facilities; there are proper records of claims from employees; there are records for all assets in the company; there is proper supervision to prevent employees from misusing medical certificates; and there is proper supervision of the organization's petty cash flow.

Said et al. (2018) explain that opportunities can arise from several sources, including poor internal audits, inadequate training, poor supervision, lack of prosecution, inefficient anti-fraud programs, policies, and weak ethical cultures. Weak controls can provide opportunities to commit fraud. The lack of good controls causes perpetrators to believe that their actions are not being monitored, so they do things that trigger fraud (Hamdani dan Albar, 2016).

The theory that underpins the S.C.O.R.E. model states that opportunities are provided by the position and authority of individuals within the company to commit fraud (Vousinas, 2019). Therefore, the higher a person's position in the company, the greater the contribution that power and ability make to the committing of fraud (Vousinas, 2019). The results of research by Said et al. (2017), Kazemian et al. (2019), Istifadah and Senjani (2020), Koomson et al. (2020) explain that opportunities have an influence on asset misuse. The more opportunities available, the greater the possibility of the perpetrator committing fraud (Istifadah and Senjani, 2020). The hypothesis that can be formulated is as follows:

H_3: There is a positive relationship between opportunity and asset misappropriation.

According to the S.C.O.R.E. model, rationalization is related to justifying fraud by reframing their definition of wrongdoing to exclude their own actions (Vousinas, 2019). Most people who engage in fraudulent activities often rationalize by holding the belief that their actions do not harm others (Ruankaew, 2016; Vousinas, 2019). Several empirical studies (Ruankaew, 2016; Vousinas, 2019) have concluded that rationalization has important implications for the occurrence of fraud and that individuals who are unable to justify their mistakes are unlikely to engage in it.

Koomson et al. (2020) explain that rationalization is when an individual's actions are wrong but they consider them right and can be measured by the indicators such as employee salaries that are not commensurate with the workload and tasks, helping family members who are having financial difficulties, considering a difficult financial situation even though the company makes so much money, employees feel that the company owes them, employees borrow company assets on the grounds that they will be returned, using company assets is a reward for what employees do, employees' use of company assets will not harm anyone, and the use of office assets for personal purposes even though for good purposes.

Koomson et al. (2020) state that rationalization and asset misuse have a positive and significant relationship, meaning that individuals who hold the belief that their wrong actions are actually necessary; this statement is in accordance with the S.C.O.R.E. model which posits that they must find some reasons to make the act of committing fraud more acceptable to them. The study is also supported by Said et al. (2017), Kazemian et al. (2019), and Istifadah and Senjani (2020) who state that rationalization is related to asset misuse. The hypotheses that can be formulated is as follows:

H_4: There is a positive relationship between rationalization and asset misappropriation.

Vousinas (2019) argues that, apart from the four known predictors of fraud based on fraud triangle theory and fraud diamond theory, individual ego must also be considered when investigating the determinants of fraud. Koomson et al. (2020) explain that ego is something that makes a person decide what is considered moral and what is not. People care about what other people think of their actions because of their ego. According to Koomson et al. (2020), ego is measured through the following indicators: caring about other people's opinions about oneself, caring about whether other people have negative opinions, prioritizing self-esteem in every behavior, self-esteem in line with the principles of morality, and losing self-esteem when making mistakes.

To maintain their ego, some individuals can carry out all kinds of activities, even fraudulent acts. Individuals with a strong sense of attachment to status in life tend to involve themselves in fraudulent acts such as misappropriating their organization's assets. The reason is that these people want to maintain their status and may

be willing to engage in actions that are fraudulent (Koomson et al., 2020). Therefore, individual ego is a factor affecting whether someone will be involved in fraudulent acts such as misuse of assets. Koomson et al. (2020) explain that ego has a positive and significant influence on asset misuse. The S.C.O.R.E. model states that individuals with high egos can commit fraud to maintain their status. These findings establish that individuals can misuse assets in the workplace due to their strong ego and efforts to maintain that ego. The hypothesis can be formulated as follows:

H_5: There is a positive relationship between ego and asset misappropriation.

Religiosity from an Islamic perspective is defined as the consciousness of God and the aspiration to strike a balance between worldly needs and adherence to God's commands (Fariza and Salahuddin, 2015). In this context, Islam serves as a framework or pillar shaping the behavior of its followers (Jamal, 2003; Ismail, 2015; Mursid, 2023). Religiosity, as highlighted by Said et al. (2018b), is a belief system that serves as a mechanism preventing individuals from engaging in reprehensible acts.

Istifadah and Senjani (2020) explain religiosity from an Islamic perspective as the awareness and tendency to achieve balance between worldly needs and willingness to obey God's commands. Said et al. (2018) state that religiosity is a belief in behavior that can be used as a mechanism to prevent individuals from committing reprehensible acts, and can be measured by indicators, namely, believing in the existence of God, behaving according to the Sunnah of the Prophet Muhammad, reading the Quran, feeling restless if not performing prayers, believing in the last day, fasting Sunnah and always doing charity.

Islam teaches its adherents to believe wholeheartedly in religious teachings as a guide in this world and the hereafter. According to al-Attas (2001), religiosity is the result of Islamic morality (akhlaq) which is based on the teachings of monotheism (tauhid), the oneness of God in all actions and as the goal of life in the world and the hereafter. Muslims are guided by beliefs, practices, experiences, identities, and attitudes in their religious activities (Smith et al., 2003). Religiosity can be associated with a person's belief in God, which is correlated with their religious obedience and enthusiasm (Salleh, 2012).

The results of Said et al. (2018a) study showed that pressure, opportunity, and rationalization had a significant positive relationship with asset misappropriation. This study also explains that religiosity is statistically negatively and significantly correlated with asset misappropriation (Said et al., 2018). Therefore, the higher a person's religiosity, the lower the likelihood of misusing assets. The results of studies by Hariyanto et al. (2018), and Istifadah and Senjani (2020) show that religiosity moderates the influence of pressure, opportunity, rationalization, and ability on fraud, meaning that the higher the fraud factor accepted through a high level of religious understanding, the less fraudulent behavior there will be.

The hypothesis can be formulated as follows:

H_6: There is a negative relationship between Islamic religiosity and asset misappropriation.

3. METHODOLOGY

3.1. Research Context and Sample Characteristics

This research focuses on asset misappropriation in government organizations in Indonesia. The choice of government organizations stems from the ACFE Indonesia survey, which revealed that these institutions suffered the most damage from fraud, accounting for 48.5% of cases (ACFE 2020). The study population includes management personnel responsible for regional assets and property within the Central Java Provincial Government. Asset managers were specifically selected due to their direct authority and responsibilities in government asset management.

The sampling technique employed was purposive, targeting asset managers who are Muslim employees of the Regional Government of Central Java Province. Within these criteria, a total of 210 eligible employees were identified. Data collection occurred through online questionnaire surveys conducted during the COVID-19 pandemic. This method aligns with prior research examining occupational fraud (ACFE, 2022; Said et al., 2018b; Kazemian et al., 2019; Koomson et al., 2020; Said et al., 2020; Baatwah et al., 2020).

The research materials and questionnaire survey followed the criteria stated in the Declaration of Helsinki. The questionnaire and research procedures have received approval from the Ethics Committee of the Faculty of Economics and Business, Diponegoro University. The questionnaire survey was conducted online, informed consent was obtained verbally from respondents before sending the questionnaire. This research uses a questionnaire survey design so that it analyzes respondents' opinions more and is not ethically sensitive like experimental research with human participants.

3.2. Measurement of Variables

All variables in this study were assessed using a five-point Likert scale (1 = strongly disagree; 5 = strongly agree). The variable of asset misappropriation was measured through five indicators drawn from Koomson et al. (2020), Kazemian et al. (2019), and Said et al. (2018a). Pressure, opportunity, rationalization, and capability variables were evaluated using 5, 4, 4, and 4 indicators respectively, following the studies by Koomson et al. (2020), Kazemian et al. (2019), and Said et al. (2018b). Islamic religiosity was measured using five indicators derived from the research of Said et al. (2018b) and Said et al. (2018a).

3.3. Data Analysis

The data analysis in this study employed the partial least squares (PLS-SEM) method within the structural equation model framework. Warp PLS 8.0 was the software utilized for this analysis. PLS-SEM is a method employed for structural equation modeling, particularly suitable for examining relationships among latent variables measured by multiple indicators and handling relatively complex models involving both exogenous/independent and endogenous/dependent variables (Hair et al., 2014; Nitzl,

2016; Hair et al., 2014; Kock, 2020). PLS facilitates simultaneous hypothesis testing while minimizing measurement and structural errors (Nitzl, 2016; Hair et al., 2014).

4. EMPIRICAL RESULTS

4.1. Profile of Respondents
The results of the questionnaire survey indicated that all 210 targeted respondents meeting the criteria returned fully completed questionnaires, resulting in a 100% response rate. Therefore, non-response bias did not pose a concern in this research. Table 1 displays the demographic profile of the respondents.

4.2. Results of Hypothesis Testing
The first step in the PLS-SEM analysis involves assessing the measurement model to ensure the constructs' reliability and validity align with predefined criteria (Hair et al., 2014; Kock, 2020). During the initial evaluation, one indicator for opportunities exhibited a loading factor of 0.524, falling below the 0.70 criterion and resulting in an average variance extracted (AVE) of 0.487, below the required 0.50 threshold. As a result, the opportunity indicator (O1) was excluded. The subsequent phase involved reassessing the measurement model, the outcomes of which are detailed in Table 2.

Table 1: Profile of the respondents

Item	Category	Number	Percentage
Gender	Male	152	72
	Female	58	28
Age (years)	24-30	32	15
	31-40	79	38
	41-50	72	34
	51-60	27	13
Educational background	Junior high school	7	3
	Senior high school	70	33
	Diploma	45	21
	Undergraduate	75	36
	Master	13	6
	Doctoral	0	0
Length of tenure (years)	1-5	52	25
	6-10	42	20
	11-15	37	18
	16-20	38	18
	21-25	21	10
	26-30	9	4
	31-35	11	5

Table 2: Reliability and validity

Variables	Composite reliability	Cronbach alpha	AVE	Factor loading range
Stimulus	0.901	0.863	0.625	0.766-0.849
Capability	0.747	0.791	0.508	0.865-0.974
Opportunity	0.789	0.742	0.506	0.703-0.744
Rationalization	0.937	0.937	0.786	0.849-0.921
Ego	0.971	0.959	0.893	0.865-0.974
Islamic religiosity	0.892	0.848	0.599	0.737-0.827
Asset misappropriation	0.963	0.952	0.841	0.830-0.949

Table 2 illustrates that the constructs' reliability is affirmed, as both composite reliability and Cronbach's alpha fall within the acceptable range, typically exceeding 0.70 (Hair et al., 2014; Kock, 2020). Convergent validity is validated, supported by all AVE values exceeding 0.50, indicating acceptable convergent validity. Moreover, the factor loadings for all indicators meet the convergent validity criteria, as depicted in the factor loading range column for all constructs, each surpassing 0.70.

The assessment of discriminant validity was conducted using the Fornell-Larcker approach, which involves comparing the square root of AVE with the correlation between constructs (Nitzl, 2016; Hair et al., 2014; Kock, 2020). As depicted in Table 3, the AVE square root in the diagonal column exceeds the correlation between latent/construct variables (numbers in the same column), meeting the criteria for discriminant validity (Hair et al., 2014; Kock, 2020).

Hair et al. (2014) suggest using the heterotrait-monotrait (HTMT) ratio, which involves the ratio of the between-trait correlations to the within-trait correlations, to address the limitations of the Fornell-Larcker approach. Table 4 illustrates the outcomes of the discriminant validity test using the HTMT ratio, demonstrating that all variables are below 0.90 and significantly below a $P < 0.001$. This signifies that the criteria for discriminant validity have been fulfilled (Hair et al., 2014).

Once all the reliability and validity criteria have been met in evaluating the measurement model, the subsequent step involves testing the structural model. This includes an analysis of the goodness of fit. The results for the goodness of fit of the PLS-SEM model in Table 5 indicate that all criteria for the average path coefficient (APC), average R-square (ARS), and average adjusted R-square (AARS) have been met (Kock, 2020). Therefore, it can proceed to the analysis of causal relationships (Kock, 2020). Furthermore, the criteria for avoiding multicollinearity in the model have also been met, as proven by the average full collinearity variance inflation factor (AFVIF) and average block VIF (AVIF). Other fit indicators are within acceptable criteria, allowing for an analysis of the hypothesis testing results (Hair et al., 2014; Kock, 2020).

The assessment of structural models in PLS-SEM also incorporates Q2 predictive relevance, which measures the model's strength in predicting the studied population (Hair et al., 2014). In a structural model, if the Q2 > 0, it signifies that the model possesses predictive relevance; conversely, a Q2 < 0 indicates the model lacks predictive relevance. According to Table 5, the Q2 = 0.348, indicating that this research model holds predictive relevance.

Additionally, the outcomes derived from the PLS-SEM structural model serve as the foundation for hypothesis testing. Figure 1 exhibits the outcomes of the PLS-SEM structural model, specifically showcasing the standardized path coefficient, P-value, and the coefficient for determining R2 as per the WarpPLS 8.0 software output.

Table 6 illustrates the outcomes of the PLS-SEM structural model for the hypothesis testing.

Table 3: Discriminant validity: Fornell-Larcker

Variables	Pressure	Opportunity	Rationalization	Capability	Ego	Religiosity	Fraud
Stimulus	0.558	0.077	0.073	0.047	0.041	−0.107	0.129
Opportunity	0.077	0.485	0.081	0.022	0.048	−0.094	0.069
Rationalization	0.073	0.081	0.490	0.117	0.050	−0.078	0.097
Capability	0.047	0.022	0.117	0.616	0.052	0.098	0.160
Ego	0.041	0.048	0.050	0.052	0.656	−0.163	0.233
Religiosity	−0.107	−0.094	−0.078	0.098	−0.163	0.549	−0.134
Fraud	0.129	0.069	0.097	0.160	0.233	−0.134	0.637

Table 4: Discriminant validity: HTMT ratio

Variables	Stimulus	Opportun	Capabili	Rational	Ego	Religios	Fraud	P-value
Stimulus								<0.001
Opportunity	0.148							<0.001
Capability	0.146	0.233						<0.001
Rationality	0.090	0.059	0.183					<0.001
Ego	0.083	0.103	0.077	0.065				<0.001
Religiosity	0.096	0.104	0.116	0.090	0.124			<0.001
Fraud	0.157	0.122	0.152	0.171	0.243	0.108		<0.001

Table 5: Model fit indices

Fit indicators	Results	Criteria
Average path coefficient (APC)	0.186 (P=0.001)	P<0.05
Average R-square (ARS)	0.355 (P<0.001)	P<0.05
Average adjusted R-square (AARS)	0.336 (P<0.001)	P<0.05
Average full collinearity VIF (AFVIF)	1.102	≤5.0
Average block VIF (AVIF)	1.076	≤5.0
Simpson's paradox ratio	1.000	≥0.70
R-squared contribution ratio (RSCR)	1.000	≥0.90
Statistical suppression ratio (SSR)	1.000	≥0.70
Nonlinear bivariate causality direction ratio (NLBCDR)	0.833	≥0.70
Standardized root mean squared residual (SRMR)	0.088	≤0.1
Q-squared	0.367	≥0.00

Figure 1: The results of the structural model

Table 6: Path coefficients and P-values results

Structural/hypothesized paths	Coefficient	P-value	Conclusion
Stimulus → Asset misappropriation	0.231	<0.001	H_1 supported
Capability → Asset misappropriation	0.207	0.025	H_2 supported
Opportunity → Asset misappropriation	0.112	0.049	H_3 supported
Rationalization → Asset misappropriation	0.132	0.001	H_4 supported
Ego → Asset misappropriation	0.318	<0.001	H_5 supported
Islamic religiosity → Asset misappropriation	−0.115	0.046	H_6 supported

this study is consistent with the research findings of Abayomi and Abayomi (2016), Istifadah and Senjani (2020), Kazemian et al. (2019), Koomson et al. (2020) which show that ability has a positive effect on the tendency to engage in fraud. Therefore, the higher the ability of the perpetrator who commits fraud, the higher the possibility that fraud will be committed.

The PLS-SEM results also indicate support for hypothesis 3 which states that opportunity is positively related to asset misappropriation (coefficient = 0.112; P < 0.049). These findings align with the fraud pentagon theory and previous research (Said et al., 2017; Kazemian et al., 2019; Said et al., 2018b; Koomson et al., 2020). The rationalization variable exhibits a positive association with asset misappropriation, displaying a standardized coefficient of 0.132, and it is statistically significant (P = 0.001), corroborating H_4. The study's results support previous research findings (Said et al., 2017; Said et al., 2018a; Kazemian et al., 2019; Koomson et al., 2020).

Hypothesis 5 states that there is a positive relationship between ego and asset misuse. The test results show that the path coefficient

Hypothesis 1, which states that stimulus is positively related to asset misappropriation, is supported by a coefficient of 0.231 and is significant (P < 0.001). Likewise, hypothesis 2, which states that capability is positively related to asset misappropriation, is supported by a coefficient of 0.207 and significant (P = 0.025). These empirical results substantiate the fraud pentagon theory, particularly regarding risk factors like stimulus and capability influencing asset misappropriation within government organizations. The empirical evidence yielded by

value is 0.318 and that it is statistically significant (P ≤ 0.001). P-value results that are <0.05 indicate a significant relationship and the path coefficient value shows a positive relationship between ego and asset misappropriation, so H$_5$ is accepted. Individuals with a strong sense of attachment to status in life tend to engage in fraudulent acts such as the misappropriation of organizational assets. The reason is that these people want to maintain their status and may be willing to take actions that are fraudulent. This result is consistent with the research of Koomson et al. (2020) which shows that ego has a positive and significant influence on asset misuse.

The test results in Table 6 also show support for hypothesis 6 which states that Islamic religiosity is negatively related to the tendency to commit asset misappropriation (coefficient = −0.115 and P = 0.046). This empirical evidence supports the argument that high religiosity can reduce the tendency to commit fraud including in government organizations (Purnamasari and Amaliah 2015; Said et al., 2017; Said et al., 2018a; Baatwah et al., 2020).

5. CONCLUSION

This study aims to integrate the religiosity aspect into the pentagon or S.C.O.R.E model test to analyze the tendency to engage in asset misappropriation in government organizations. The test results support the fraud pentagon theory which states that stimulus, opportunity, rationalization, capability, and ego are determinants that can cause asset misappropriation. The empirical evidence provided by this study can expand the fraud pentagon theory which states that religiosity is a deterrent to fraud; namely, the higher the religiosity of employees, the smaller the tendency to commit asset misappropriation.

This study contributes to the literature by testing the latest theory pertaining to fraud—namely the fraud pentagon theory—in government organizations where the analysis by previous studies is still very limited. There is a high frequency of fraud in government organizations, especially in developing countries, so empirical analysis to test the determinants of fraud is currently one of the most important topics of research.

The results of this study have implications for the importance of organizations developing anti-fraud strategies by considering stimulus, capability, opportunity, rationalization, ego, and religiosity factors. The empirical evidence provided by this study shows that the stimulus comes from personal pressure in the form of insufficient salary, family burdens, unexpected expenses, targets that are too high, and excessive workload. Anti-fraud strategies must also consider capability factors because this study also provides empirical evidence of a positive relationship between capability and asset misappropriation. This finding implies that asset misappropriation in the workplace is often carried out by employees who have a position where they can influence and understand the control system, and they are able to exploit the weaknesses of the system in the face of those committing fraud.

The empirical evidence provided by this study supports the fraud pentagon theory which states that opportunities can cause asset misappropriation by employees. This finding shows that if there are weaknesses in internal control, including unclear separation of duties, weak supervision, transactions carried out without sufficient authorization and not recorded in a timely manner, and regulations and procedures are not properly documented, then fraud may occur. In addition, rationalization is positively related to the tendency to commit asset misappropriation. Employees who have a tendency to justify wrong fraudulent actions tend to commit asset misappropriation.

The ego factor must also be a concern when implementing anti-fraud strategies. Employees with a strong sense of attachment to status in life tend to engage in fraudulent actions such as asset misappropriation because they want to maintain their status. Compliance culture is an important factor in reducing ego and rationalization that can lead to fraud.

Government organizations should also strive to increase employee religiosity because this study provides empirical evidence that religiosity is negatively related to asset misappropriation. This means that the higher the religiosity of employees, the lower their tendency to commit fraud.

This study also has limitations, including its use of the questionnaire survey method. The use of perceived fraud data may be the most feasible method because occupational fraud is regarded as so sensitive that it is very difficult to obtain real crime data (Suh et al., 2018). Using a questionnaire survey may be the most feasible method because occupational fraud is more often detected by employees (ACFE, 2022). This study has attempted to minimize this bias, including by using techniques such as anonymous and confidential answers and reverse questions. Future research could use interview methods or secondary data collection to expand on the findings of this study. Future research could also test other occupational fraud schemes, namely corruption and financial statement fraud.

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