

# Determinants of asset misappropriation at the workplace: the moderating role of perceived strength of internal controls

Moderating  
role of  
perceived  
strength

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## Abstract

**Purpose** – This paper aims to investigate the prevalence of asset misappropriation at the workplace and examines the dominant factors that influence individuals to misappropriate assets at the workplace. Relying on the most recent theory on fraud (the stimulus/pressure, capability, opportunity, rationalization and ego (S.C.O.R.E. model) as the theoretical basis, the study examines the effect of pressure, rationalization, capability, opportunity/strength of internal control system and ego on asset misappropriation at the workplace while controlling for the effect of ethical values.

**Design/methodology/approach** – A total of 883 valid responses from individuals working in various organizations in Ghana were collected by means of a self-administered questionnaire. The hypothesized relationships of the study were tested by means of a structural model analysis using the partial least square based structural equation modelling technique.

**Findings** – Results from the structural model analysis demonstrate that individuals misappropriate assets at their workplace due to pressures they face, their ability to rationalize their actions as not wrong, their capabilities and their egos. The results, however, indicate that the extent to which an individual will misappropriate asset depends, to a large extent, on the person's perception of the strength of internal control mechanisms at the workplace. The findings of the study make significant contributions to the fraud discourse.

**Originality/value** – Theoretically, the study is among the first to provide empirical support for the applicability of the S.C.O.R.E. model in the fraud literature. Again, this study extends knowledge on occupational fraud literature by examining an area that has received the least research attention: asset misappropriation. The study also highlights the important role of internal controls in reducing the occurrence of asset misappropriation at the workplace.

**Keywords** Fraud triangle, Structural equation modelling, Ethical values, Asset misappropriation, Internal control system

**Paper type** Research paper

## 1. Introduction

The occurrence of fraudulent activities remains one of the key challenges confronting many business organizations in contemporary times. The issue of fraud continues to attract the



attention of researchers globally because of the increasing growth in reported cases of fraud and its negative impact on sustainability of businesses. Organizations lose about 5% of their revenues to fraud every year, translating to about US\$7.1bn from a sample of 2,690 cases reviewed by the [Association of Certified Fraud Examiners \(ACFE\) \(2016\)](#) in their 2018 report to the nations ([ACFE, 2016](#)). While the literature acknowledges that fraud could be perpetuated both externally and internally, the evidence provided by extant studies ([Asmah et al., 2019](#); [Nigrini, 2019](#); [Robinson and Aria, 2018](#); [Zahari et al., 2020](#)) demonstrate that internally perpetrated fraud by employees, management and sometimes owners of firms (occupational fraud) has been more rampant than the former in recent years. Most of these studies have focussed predominantly on financial statement fraud with less attention on the other forms of occupational fraud.

Notwithstanding the relevance of financial statement fraud to the fraud discourse, empirical studies have shown that the frequency with which employees engage in other forms of fraudulent activities, most especially asset misappropriation, far surpasses the former ([ACFE, 2016](#); [ACFE, 2018](#); [Zahari et al., 2020](#)). According to the [ACFE \(2018\)](#) report, asset misappropriation alone occurred in 89% of all reported fraud cases between 2016 to 2018. Interestingly, while cases of asset misappropriation continue to be on the rise, the focus of most academic researchers have been on financial statement fraud. The few existing studies on asset misappropriation have focussed on issues such as financial expertise of audit committees in relation to asset misappropriation ([Mustafa and Youssef, 2010](#)), the internal audit function and the detection of asset misappropriation ([Coram et al., 2008](#)), red flags of asset misappropriation ([Gullkvist and Jokipii, 2013](#)), asset misappropriation and corporate governance ([Chapple et al., 2007](#)) but not on the factors that influence individuals to misappropriate asset at the workplace.

In addition, most studies in the area of fraud have relied heavily on the fraud triangle theory (FTT) and the fraud diamond theory (FDT) in developing theoretical underpinnings for the factors predicted to be responsible for the occurrence of fraud. While these theories have been useful in shaping our understanding on fraud and its related concepts, [Vousinas's \(2019\)](#) S.C.O.R.E. model though recent, is believed to be wider in scope, and hence, should provide useful extension to our understanding on the fraud phenomenon. The theory proposes that five factors influence individuals to commit any fraudulent act, namely, pressure, rationalization, capability, opportunity and ego. However, till date, the applicability of the S.C.O.R.E. model remains an open question as it lacks empirical support. The study finds the factor "opportunity" of the S.C.O.R.E. model, from an accounting perspective, to bother more on internal control issues. In this paper, the element opportunity is redefined to measure the perceived strength of internal controls (PSICs) from the view point of employees.

This study fills the aforementioned gaps by investigating the prevalence of asset misappropriation at the workplace focussing on the factors that influence individuals to misappropriate asset at the workplace. The study also uses the new theory on fraud, S.C.O. R.E. model, in examining the relationships that exist among the variables in the study. The study, in addition, tests the moderating role of the PSICs in the relation the identified determinants have with asset misappropriation.

The rest of the paper is structured as follows: the Section 2 reviews existing literature on the variables of interest and underpinning theories and discusses how the hypotheses tested in the study were developed. Section 3 follows with a discussion of the methods used in the study. The subsequent Section 4 presents and discusses the key findings of the data analysis. The paper ends with a summary of the entire paper and draws conclusions by highlighting the key findings and contributions of the study in Section 5.

## 2. Literature review

### 2.1 Asset misappropriation

Considered to be the most pervasive form of occupational fraud, an action by employee is termed to be misappropriation of asset when the employee “steals or misuses the organization’s resources e.g. theft of company cash, false billing statements or inflated expense reports” (ACFE, 2012). The perpetrator of the fraud in this instance uses trickery or deceit means in stealing or misusing the assets of an organization. For asset misappropriation to occur, “the “act” of asset theft, concealment and conversion must all be present” (Albrecht *et al.*, 2008, p.1). Again, the assets in question should have been taken for the personal benefit of the individuals misappropriating the assets. Such individuals could be employees of the organization, customers or vendors to the organization or individuals who neither work for nor work with the organization (Albrecht *et al.*, 2008).

Asset misappropriation is reported to be the most common amongst the fraud types as it usually the easiest form of fraud to commit (ACFE, 2018; Global Fraud Examiners, 2016; Padgett, 2015). Although the most common of the fraud schemes, asset misappropriation often does not result in huge direct losses as in the case of financial statement fraud (Global Fraud Examiners, 2016). Asset misappropriation, however, rids organizations of resources that could have been used to enhance their performance and profitability. ACFE (2018) reports that asset misappropriation cases increased by about 7% since their 2016 report, i.e. from 83.5% to 89%.

The 2018 report to the nations by the ACFE classifies asset misappropriation schemes into two main types, namely, cash misappropriation and misappropriation involving inventory and all other assets. On the basis of these categories five different misappropriation schemes have been identified as: theft of cash on hand; theft of cash receipts in the form of skimming or cash larceny; fraudulent disbursements in the form of billing, payroll or expense reimbursement schemes, check and payment tampering and register disbursement; and misuse of assets and larceny of assets (ACFE, 2018).

Asset misappropriation is the main focus of this study as the phenomenon has not received much attention in existing studies although it remains the most common type of occupational fraud (ACFE, 2018), which can be committed by all individuals within a firm (Zahari *et al.*, 2020). In addition to its dominance, asset misappropriation is a phenomenon that is of great importance to the Accounting discipline, especially in the field of auditing. The current professional audit standards, International Standards on Auditing (ISA) 240, extends auditors responsibility for fraud detection to include asset misappropriation. This, therefore, makes asset misappropriation a topical issue in accounting worth the attention of accounting researchers.

### 2.2 Theoretical review

The FDT which is an improvement of the FTT are the most widely used models for explaining why people commit fraud. Recent studies suggest, however, that the FTT and the FDT should not be seen as the sufficiently reliable models (Lokanan, 2015; Vousinas, 2019). Based on the criticisms of the FTT and FDT a more recent theory The S.C.O.R.E. model was developed by Vousinas (2019) to address some of the inherent limitations of the FTT and FDT. Vousinas (2019) argues that apart from the four known predictors of fraud based on the FTT and FDT, the ego of an individual should also be considered when investigating the determinants of fraud.

To establish the role of ego in the fraud discourse, Vousinas (2019) introduces the construct “ego” as an addition to the FDT and calls on researchers to test if this construct is prevalent in various contexts and under different circumstances. The S.C.O.R.E. model

consequently, postulates that five factors may account for why individuals engage in fraud: stimulus/pressure, capability, opportunity, rationalization and ego. Thus, conceptually the S.C.O.R.E. model is distinct from the other models by the addition of the construct Ego. The S.C.O.R.E. model is represented graphically as shown in [Figure 1](#). The next section discusses these factors and their relationships with the occurrence of asset misappropriation.

### 2.3 Pressure/stimulus

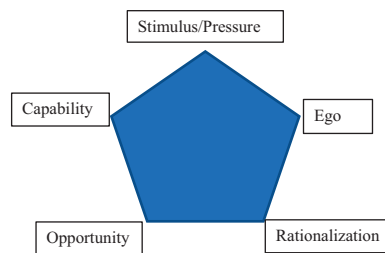
Pressure, termed stimulus in the S.C.O.R.E. model, is defined as a non-shareable problem either from work (usually in the form of high expectations under limited time and deadlines) or from home (a financial burden to provide for a relative or loved one) that motivates a person to engage in actions that would help alleviate such pressures ([Cressey, 1953](#)). Pressure to commit fraud arises when an individual is faced with financial and non-financial burdens that may drive him/her to engage in fraudulent activities ([Cressey, 1953](#)).

### 2.4 Opportunity

From the tenets of the S.C.O.R.E. model, another important factor that influences individuals to commit fraud is the existence of “opportunity” to engage in the fraudulent act. The opportunity for the occurrence of fraudulent actions at the workplace is as often a result of an organization having weak control systems ([Cressey, 1953](#); [Omar and Mohamad Din, 2010](#)). Accordingly, the study conceptualizes the strength of the internal control system of an entity as a measure of the extent to which opportunities would be created in the organization to make room for individuals to engage in fraudulent or otherwise. The construct “PSIC” is, therefore, used in this study and not “opportunity”. [Kumar et al. \(2018\)](#) report that if overtime, organizations fail to seal opportunities for occurrence of fraud, some workers in the organization may see it as a signal of “slack organizational culture” and eventually take advantage of these opportunities.

### 2.5 Rationalization

Perpetrators of fraud often have a mind-set that makes them give excuses to justify their actions ([Hooper, 2010](#)). This mind-set has been referred to as rationalization in the fraud literature and is one of the tenets of the S.C.O.R.E. model. Rationalization has been explained as an attitude of an individual that makes him or her justify immoral acts they engage in as not criminal ([Abdullahi and Mansor, 2015](#)). Rationalization, therefore, enables perpetrators of fraud to justify their actions to make them acceptable to themselves and protect their belief and self-image as honest, innocent persons who were unfortunate to be caught up in a critical situation and not criminals ([Cressey, 1953](#); [Said et al., 2018](#)).



**Figure 1.**  
The S.C.O.R.E. model

Source: (Vousinas, 2019)

### 2.6 Capability

The concept of capability was first introduced into the fraud theory literature by [Wolfe and Hermanson \(2004\)](#) and defined as personal traits and abilities of individuals that play a major role in whether fraud may actually occur. The capability of an individual to recognize an opportunity to take advantage of it is important for a fraudulent act to occur. A fraud perpetrator should, therefore, be in a position within the organization that would enable him or her to engage in the fraudulent act or have the skills and ability to actually commit the fraud ([Wolfe and Hermanson, 2004](#)).

### 2.7 Ego

Ego is what makes an individual decide what is considered moral and what is not. People care what others think of them regarding their actions because of the ego they have. People work at building a reputation or status in life and do their possible best to maintain it ([Vousinas, 2019](#)). To keep their ego, some individuals engage in all sorts of activities, even fraudulent acts. [Vousinas \(2019\)](#), again, documents that some individuals delight in the belief that they are outsmarting the world when their first crimes are successful and undetected, which boost their ego. This encourages such individuals to engage again and again in such fraudulent activities as far as they are not being caught. The ego of individuals can, therefore, be a factor for which a person will engage in fraudulent acts such as asset misappropriation.

While the S.C.O.R.E. model provides a more comprehensive approach of investigating fraud determinants, the five factors are by no means exhaustive in explaining why individuals engage in fraud. Empirically, some existing studies have also found the effect of ethical values of an individual be particularly relevant in the fraud determinants discourse ([Awang and Ismail, 2017](#); [Mintz, 2006](#); [Said et al., 2018](#); [Said et al., 2017](#)). This study, therefore, includes ethical values as a controlling variable.

### 2.8 Conceptual framework and hypotheses development

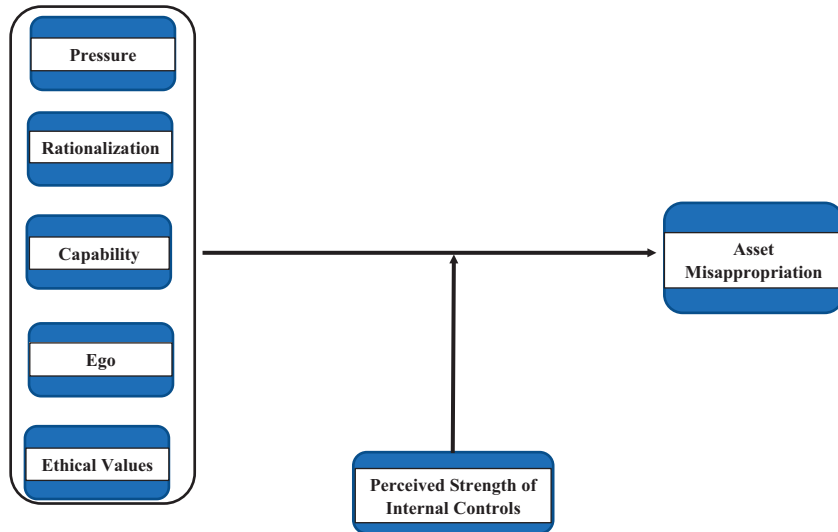
The framework for this study is developed with reference to the S.C.O.R.E. model and past studies that had objectives similar to that of the current study ([Kassem and Higson, 2012](#); [Melorose et al., 2015](#); [Sujeewa et al., 2018](#); [Vousinas, 2019](#)). The conceptual framework as shown in [Figure 2](#) describes the interrelationships among the constructs of interest in the study. From a theoretical perspective, the S.C.O.R.E. model explains the effect of pressure, rationalization, capability, opportunity (conceptualized as PSIC system in this study) and ego on asset misappropriation while controlling for effect of ethical values on asset misappropriation. Further, this paper argues that the effect of these constructs on the propensity of an individual to misappropriate asset depends substantially on how individuals perceive the internal control systems of an organization to be.

Based on this conceptual framework, the following hypotheses will be tested:

### 2.9 Pressure and asset misappropriation

Individuals misappropriate assets when they experience some form of financial or non-financial pressures, which they do not intend to share. The non-shareable nature of these forms of pressure pushes such individuals to do whatever it takes to get out of the situation, including fraudulent acts ([Cressey, 1953](#)). Individuals can have very high expectations and targets from work, which poses a lot of pressure on them. Organizations may also face certain pressures, which trickle down to employees ([Lokanan, 2015](#)). Some pressures may arise from conditions outside the workplace. Individuals who have family and friends who depend on them can be faced with the pressure to meet the needs of these family members or

Figure 2.  
Conceptual  
framework



friends. As a way of reducing or managing such pressures some individuals may end up misusing the assets of the organization (Cressey, 1953; Omar and Mohamad Din, 2010; Global Fraud Examiners, 2016).

Researchers have found that people usually engage in fraudulent activities because they are faced with some form of pressure (Albrecht *et al.*, 2010; Ruankaew, 2016; Said *et al.*, 2017). Ruankaew (2016) clearly states that every fraud perpetrator must have faced some kind of pressure to commit fraud. Theoretically, pressure has been found to be a great influencing factor for the fraudulent acts to occur. The FTT, the FDT and the S.C.O.R.E. model for fraud all highlight pressure as a factor that causes individuals to engage in fraud. In line with these findings, this study proposes that individuals misappropriate assets at the workplace when they are faced with some form of pressure, either personal or work-related, financial or non-financial, to alleviate such pressures. Hence, it is hypothesized in this study that:

H1. Pressure has a significant and positive effect on asset misappropriation.

### 2.10 Rationalization and asset misappropriation

Most people who engage in fraudulent activities, especially acts such as misappropriation of assets, often rationalize by holding the belief that their actions were useful or causes no harm to others (Ruankaew, 2016; Vousinas, 2019). Misappropriating assets at the workplace is easy for some individuals because they make excuses that justify their actions and makes them maintain a mindset that they have done nothing wrong and are still trusted persons (Cressey, 1953; Hooper, 2010). Often, the internal culture of organizations serves as breeding grounds for some rationalizations of employees to commit fraud (Murphy and Dacin, 2011). For example, people justify their fraudulent behaviours at the workplace with rationalizations such as “bribery is a common culture here” and “everyone does it, why not me”?



Empirically, several studies (Jackson *et al.*, 2010; Ruankaew, 2016; Vousinas, 2019) have concluded that rationalization has important implication on the occurrence of fraud and that individuals who are not able to provide justifications for their wrong doings are unlikely to engage in fraudulent activities. Rationalization is even more evident with first-time fraud offenders. Findings from Cressey (1953) report that most individuals who were engaged in some fraudulent acts for the first time justified their wrong doings. Thus, the extent to which an individual can rationalize acts deemed to be wrong may be an important predictor of why some individuals misappropriate assets at the workplace. The study, therefore hypothesizes that:

*H2.* Rationalization has a significant and positive effect on asset misappropriation.

### *2.11 Capability and asset misappropriation*

It is often easier to engage in fraudulent acts such as asset misappropriation when the perpetrator is in a position that gives him or her access to the resources of the firm. Also, individuals need to possess certain personal traits and abilities that would enable them misappropriate assets at the workplace without being caught (Wolfe and Hermanson, 2004). Thus, the ability to recognize the existence of the opportunity alone is not enough to commit fraud unless an individual is well-positioned to take advantage of that opportunity. A fraud perpetrator should, therefore, have the skills and ability to actually commit the fraud (Wolfe and Hermanson, 2004).

Individuals misappropriate assets when they have the capacity to understand and exploit internal control systems so they are not detected or if caught, they are confident they will get out of it easily and can deal with any stress thereafter (Albrecht *et al.*, 1995). Existing studies on fraud have found a positive relationship between fraud and capability (Mackevicius and Girunas, 2013; Albrecht *et al.*, 1995; Kassem and Higson, 2012). Similar to these studies this study hypothesizes that:

*H3.* Capability has a significant and positive effect on asset misappropriation.

### *2.12 Perceived strength of internal control systems and asset misappropriation*

The level of strength of a firm's internal control systems could create opportunities in the organization for the occurrence of fraud or seal the loopholes that could provide opportunities for fraud (Cressey, 1953). Strong internal control systems are often capable of detecting wrong acts whereas weak internal control systems do not (COSO, 2013). It is, therefore, important how individuals within an organization perceive the internal control systems put in place in their organizations to be. This is because an individual's perception of the internal control situation in his or her organization can influence them to engage in fraudulent activities. For instance, individuals may misappropriate assets at the workplace when they believe the internal control systems at the workplaces are weak, and hence, they will not be detected. When the internal controls are strong, however, it serves as a deterrent to the occurrence of fraud. Individuals do not get the chance to misappropriate assets as they know they will be exposed by the internal systems.

There is empirical evidence from existing studies that when individuals perceive internal controls to be strong, their initial willingness to engage in fraudulent acts such as asset misappropriation would be lost, and therefore, they will not engage in such acts (Holtfrete, 2004; Jokipii, 2010; Le and Tran, 2018). Similarly, this study hypothesizes that:

H4. PSIC has a negative association with asset misappropriation.

#### 2.13 *Ego and asset misappropriation*

The average individual attaches some level of importance to what others think of them because of their ego. Individuals often work at building a status in life, which they aim to maintain. Because people cherish and do not want to lose their status, especially one of power, they may involve themselves in certain activities just to keep their ego (Vousinas, 2019). Findings from some existing studies demonstrate that fraud perpetrators are often egoistic (Pedneault *et al.*, 2012). Vousinas (2019) also documents that ego appears to be a common trend in some of the most recent shocking frauds and provides instances of fraud cases where ego is seen to play a role. In line with the proposition by Vousinas (2019), this study posits that individuals with strong sense of attachment to statuses in life are likely to involve themselves in acts of misconducts such as misappropriation of their organization assets. The reason is that such individuals would want to maintain their status, and hence, may be willing to engage in acts that may be fraudulent. Therefore, this study hypothesizes that:

H5. There is a positive relationship between ego and asset misappropriation.

#### 2.14 *Ethical values and asset misappropriation*

Various industries and professional bodies have established codes of ethics that are binding on organizations that belong to the industry. Most organizations, therefore, adapt these codes of ethics to generate ethical standards that are expected to direct the way their employees behave at the workplace. Some individuals are also guided by personal ethical stance that informs their actions. What is right or wrong, good or bad, all depends on the ethical lens from which a person looks.

Interest of researchers in the study of ethics heightened after the world witnessed the collapse of large corporations, which was associated with lack of ethical display by some employees of these corporations (Low *et al.*, 2008; Tang and Sutarso, 2013). Findings from these studies suggest that people engage in fraudulent acts because they do not have ethical values or they do not respect the ethical codes at their workplaces. However, individuals with strong ethical beliefs hardly commit fraud (Awang and Ismail, 2017; Mintz, 2006; Said *et al.*, 2018; Said *et al.*, 2017). Hence, the study hypothesizes that:

H6. Ethical values have a significant and negative effect on asset misappropriation.

#### 2.15 *The moderating role of perceived strength of internal controls systems*

Internal controls are what create or seal the opportunity for fraud in an organization. When internal controls are strong, all loopholes that may give room for the occurrence of fraudulent activities in the workplace are sealed, therefore minimizing the rate of fraud at the workplace. However, when internal controls are weak, people are able to take advantage of the opportunities created in the loose systems to engage in fraudulent activities.

Drawing from the updated 2013 COSO framework, the construct PSIC, as used in the study, comprises indicators that reflect the five components of internal control: the control environment, risk assessment, control activities, information and monitoring activities (Foster and Schandl, 2019). The study examines individuals' perception of the strength of



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the internal controls in their organizations and how that can influence the extent to which they misappropriate assets in the presence of the identified factors.

H7. PSICs moderates favourably the relationship between pressure and asset misappropriation.

H8. PSICs moderates favourably the relationship between rationalization and asset misappropriation.

H9. PSICs moderates favourably the relationship between capability and asset misappropriation.

H10. PSICs moderates favourably the relationship between ego and asset misappropriation.

H11. PSICs moderates favourably the relationship between ethical values and asset misappropriation.

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### 3. Methodology

#### 3.1 Research design, research instrument and data collection

The study uses the survey method with questionnaires being the tool for data collection from a sample of individuals working in diverse organizations in Ghana. The questionnaire consisted of two main sections, sections A and B. Section A of the questionnaire asked questions about the demographic characteristics of the respondents while Section B had questions on the variables used in the study measured on a seven-point Likert scale. The indicators used to measure the constructs were adapted from works of [Said et al. \(2018\)](#), [Kazemian et al. \(2019\)](#), [Said et al. \(2017\)](#) and [Crocker et al. \(2003\)](#). In all, a total of 1,300 questionnaires were administered out of which 1,019 were returned. However, 883 valid questionnaires were used for the analysis, representing 87% of the total responses received.

#### 3.2 Data analysis and results

The characteristics of the data collected was first explored using descriptive statistics and subsequently inferentially by using the structural equation modelling (SEM) technique, specifically, partial least squares-structural equation modelling (PLS-SEM) technique to examine the predicted relationships among the study constructs. SEM is found to be particularly useful in evaluating complex model relationships simultaneously ([Afthanorhan, 2013](#)) and more suitable for studies such as this that use latent or unobserved variables ([Astrachan et al., 2014](#)).

#### 3.3 Descriptive statistics of respondents

[Table 1](#) presents results on the descriptive statistics of the respondents. The results show that the respondents of the study had an almost even distribution of men and women as men were 3% more than women. The study sample was largely youthful as about 74% of the respondents were 35 years or below. In terms of working experience, a good number of the respondents (approximately 47%) have worked with their respective organizations for over 3 years. About half of the respondents came from financial institutions or manufacturing and retail firms (51.2%). Exactly 11% of the respondents came from practicing accounting firms and nearly 12% of the respondents were from educational institutions (11.9%). Approximately 7% of the respondents were health workers followed closely by the extractive and energy industry (6%). The security and telecommunication industries both

**Table 1.**  
Descriptive statistics  
on respondents

Measure	Item	Frequency	(%)
<i>Gender</i>	Male	467	52.9
	Female	416	47.1
<i>Age</i>	30 and below	458	51.9
	31-35	197	22.3
	36-40	132	14.9
	41 and above	96	10.9
<i>Years of working</i>	Less than three years	469	53.1
	3-4 years	169	19.1
	5-6 years	67	7.6
	More than six years	178	20.2
<i>Type of org</i>	Financial institution	259	29.3
	Manufacturing and retail	193	21.9
	Accounting firm	97	11.0
	Educational	105	11.9
	Extractive and energy	53	6.0
	Health	59	6.7
	Security	49	5.5
	Telecom	51	5.8
	Others	17	1.9

had close to 6% of the respondents from the sectors. The results show that the respondents include individuals from diverse sectors in the country, which demonstrates that the study sample is a reasonable representation of the population of interest.

### 3.4 Descriptive statistics of constructs

Table 2 presents the views of the respondents on asset misappropriation at their workplaces and the factors that influence the misappropriation of assets. The mean scores and standard deviations of the indicators and the overall mean scores of the constructs are reported in Table 2. The average scores for the indicators under each construct measure the degree of importance respondents attach to that indicator. With respect to the determinants of asset misappropriation, all the factors had mean scores above four, which indicate that pressure, rationalization, capability, ego, ethical values and PSICs are important when discussing misappropriation of assets. The dependent variable of the study, asset misappropriation had an overall mean of 2.81, an indication of the existence of the occurrence of asset misappropriation at the workplace but not to a high extent. Most of the respondents admitted, however, that they often use office time, internet service, computer and printer for personal use, which makes the use of office internet, computers and printers the most common forms of asset misappropriation. The construct pressure with a mean of 4.52 demonstrates that the respondents are faced with some form of pressure either from family members or at the workplace. A mean score of 4.24 for the construct rationalization indicates that individuals indeed rationalize their actions most of the time. Overall, the construct capability had the highest rating in the study with a mean score of 5.11, meaning most of the respondents believe they have certain traits that set them apart from others at their workplaces. With respect to the construct ego, a mean score of 4.96 signifies that individuals care about their status in life and would want to maintain it. Ethical values had an overall mean score of 4.71, which means that the respondents are in strong agreement with the statements measuring an individual's ethical values in the study. Finally, PSIC had an

Code	Constructs/indicators	Mean	SD
	<i>Pressure</i>	4.52	
P1	My work poses a lot of pressure on me	4.77	1.90
P2	My work needs me to achieve key performance indicators given by the company	5.54	1.75
P3	I have different tasks that must be done simultaneously	5.31	1.79
P4	I am often unable to meet the targets given me	3.39	2.05
P5	I am faced with tension and frustration because of the constant pressure at work	3.76	2.05
P6	Expenses on necessities need to be cut off sometimes to ensure that my salary will be sufficient until the end of the month	4.64	2.06
P7	Family expenses are extremely costly, which I cannot afford to pay in some cases	4.12	2.07
P8	I am fully responsible to support my family financially	4.31	2.20
P9	The increasing costs of living nowadays make me stressed	4.85	1.95
	<i>Rationalization</i>	4.24	
R1	I think that I am underpaid with the amount of responsibility given to me at work	4.78	2.07
R2	I believe I must help a family member or loved one who is in need of financial aid	5.61	1.65
R3	Sometimes, I find myself in a desperate financial situation although my organization makes so much money	4.44	1.98
R4	I believe my organization owes me money, looking at what I do	4.27	2.17
R5	I only borrow the asset of the office and I will return it when I am done	3.10	2.26
R6	Using office assets serves as a reward for my efforts	3.25	2.21
R7	Using office assets for personal purposes hurts no one	3.56	2.27
R8	I am using the office asset for a good purpose even if it is for my personal use	3.95	2.24
R9	I believe that I should be given some discretion in performing my job	4.77	1.79
R10	I believe that a gift from a customer, a vendor or a colleague is a gesture of good service rendered by me	4.63	2.13
	<i>Capability</i>	5.11	
C1	I have the ability to convince other staff to go along with my suggestions	5.02	1.69
C2	My ability to multitask makes me superior at the workplace	5.01	1.75
C3	My ability to solve the problems of customers/clients makes me trusted by my employers	5.50	1.52
C4	I have influence over situations in my department because I believe I am good at what I do	5.36	1.62
C5	My position provides me with access to resources of my organization	4.73	1.93
C6	I can deal with stress very well	5.06	1.58
	<i>Ego</i>	4.96	
E1	I care what other people think of me	4.65	2.02
E2	What others think of me has an effect on what I think about myself	3.70	2.12
E3	I care if other people have a negative opinion about me	4.42	2.07
E4	My self-esteem would suffer if I did something unethical	5.46	1.75
E5	My self-esteem depends on whether or not I follow my moral/ethical principles	5.24	1.78
E6	I can not respect myself if I do not live up to a moral code	5.14	1.85
E7	Whenever I follow my moral principles, my sense of self-respect gets a boost	5.81	1.53
E8	Doing something I know is wrong makes me lose my self-respect	5.27	1.86

(continued)

**Table 2.**  
Descriptive statistics  
of constructs

Code	Constructs/indicators	Mean	SD
	<i>Ethical Values</i>	4.71	
EV1	I do not compromise with my ethical principles	5.50	1.79
EV2	When a choice has to be made between what is right and what benefits me, I would choose what is right	5.74	1.58
EV3	My ethical action depends on the situation I am in	4.12	2.18
EV4	The more I think about a situation, the more ethical my decision will be	5.21	1.72
EV5	My definition about what is right or wrong depends entirely on my personal belief	4.83	1.98
EV6	I should be allowed to form my own ethical standards because ethical consideration varies from one individual to another	4.27	2.05
EV7	I would not tell the truth if I know I will have to pay a price for it	3.31	2.16
	<i>PSIC</i>	5.03	
PSIC1	Every transaction has sufficient documentation and approval by an appropriate more senior member of staff	5.60	1.71
PSIC2	Transactions are recorded within the stipulated time frame	5.52	1.63
PSIC3	Separation of roles and responsibilities is clear	5.48	1.71
PSIC4	Proper supervision, monitoring and review of work are implemented	5.31	1.73
PSIC5	Policies, procedures and guidelines are well-documented and communicated to employees proactively	5.01	1.89
PSIC6	Closed-circuit television is used to monitor all activities	3.96	2.38
PSIC7	There are proper records and documentation for all resources	5.18	1.86
PSIC8	There is proper supervision over usage of organization's facilities such as telephones and internet connections	4.66	1.98
PSIC9	Physical controls of use of asset are sufficient	4.69	1.87
PSIC10	There is proper supervision to prevent employees from abusing medical certificates and other employment incentives	4.86	1.92
	<i>Asset Misappropriation</i>	2.81	
AM1	Take some resources of the organization	2.71	2.182
AM2	Use office time for personal work	3.09	2.183
AM3	Do not comply with all policies regarding asset usage	2.75	2.112
AM4	Borrow cash/cash equivalent for personal use	2.24	2.067
AM5	Borrow office assets for personal purposes	2.63	2.131
AM6	Use the internet service of the office for personal purposes	3.79	2.335
AM7	Bring home office assets for personal use	2.57	2.151
AM8	Use the computer and printer of the office for personal use	3.64	2.306
AM9	File medical expenses that may not be entirely true	1.90	1.677

**Note:** P – pressure; R – rationalization; C – capability; E – ego; EV – ethical values; PSIC – perceived strength of internal control; AM – asset misappropriation

**Table 2.**

overall mean of 5.03, which stipulates that most of respondents perceive there are strong internal controls at their work places.

### 3.5 Reliability and validity

The study adopts the two-step approach recommended by [Hair et al. \(2014\)](#) by first assessing the measurement model to test for validity and reliability of the constructs before assessing the structural model. With reference to the Cronbach alpha (CA) and Composite reliability (CR) scores, the reliability of the constructs was tested. The results as shown in [Table 3](#) shows that the model is reliable as the recommended threshold of 0.7 for both CA

and CR was met (Hair *et al.*, 2011; Nunnally and Bernstein, 1978). The validity of the model was assessed by means of convergent and discriminant tests. As suggested by Fornell and Larcker (1981), the average variance extracted (AVE) criterion was used to assess the convergent validity of the measurement model. The results in Table 3 shows that all the AVEs exceeded the recommended threshold of 0.5. The discriminant validity test was conducted using the Fornell and Larcker criterion, which recommends that a construct should have its AVE greater than the squared cross-correlations between the constructs. Again, the results of in Table 4 demonstrates that discriminant validity is assured.

### 3.6 Structural model analysis

Having established the suitability of the model in terms of validity and reliability, the study proceeded to test for multicollinearity issues in the structural model. The variance inflation factor (VIF) estimated for each factor shows that the model does not suffer from multicollinearity issues as the VIF values as shown in Table 5 were far below the maximum threshold of 10 (Hair *et al.*, 2011).

Factor	CA	CR	AVE
Asset misappropriation	0.93	0.94	0.63
Pressure	0.72	0.86	0.78
Rationalization	0.80	0.85	0.51
Capability	0.70	0.77	0.54
Ego	0.81	0.87	0.69
Ethical values	0.71	0.81	0.52
Perceived strength of internal control	0.90	0.91	0.53

**Table 3.**  
CA, CR and AVE

Construct	AM	C	E	EV	PIC	P	R
AM	0.795						
C	0.190	0.740					
E	0.239	0.181	0.730				
EV	0.399	0.180	0.288	0.727			
PIC	-0.258	0.211	0.000	-0.101	0.730		
P	0.358	0.137	0.305	0.302	-0.052	0.719	
R	0.535	0.308	0.226	0.410	-0.081	0.338	0.756

**Table 4.**  
Fornell and larcker  
criterion of  
discriminant validity

**Notes:** AM – asset misappropriation; C – capability; E – ego; EV – ethical values; PSIC – perceived strength of internal control; P – pressure; R – rationalization

Factor	VIF
Pressure	1.229
Rationalization	1.382
Capability	1.199
Ego	1.175
Ethical values	1.302
Perceived strength of internal control	1.083

**Table 5.**  
Variance inflation  
factor

Again, due to the sensitive nature of the information sought for the study, common method bias was assessed to ensure that respondents did not provide socially desirable answers. The herman one-factor model test was conducted for this purpose and the result shows that the percentage variance for the first factor is approximately 14%, which is less than the recommended threshold of 50% (Podsakoff and Organ, 1986).

Figure 3 presents the structural model indicating the relationship between the exogenous and the endogenous constructs. The proposed hypotheses were finally tested using the bootstrapping procedures of SMART-PLS 3.0. Results from the bootstrapping are presented in Table 6.

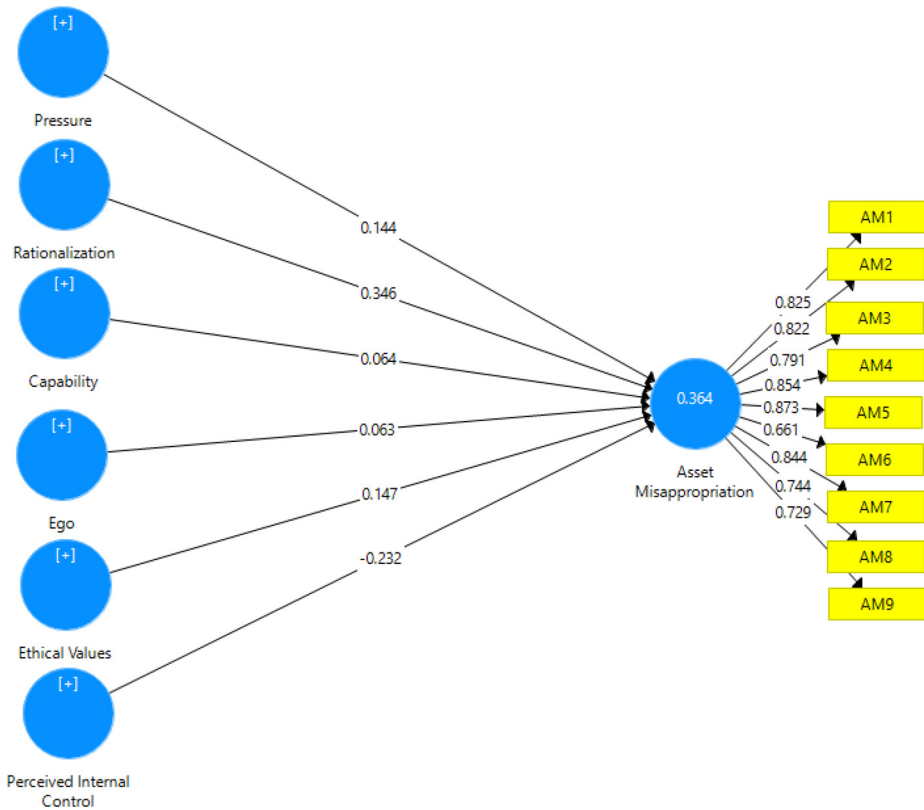


Figure 3. Structural Model I

Hypothesis	Hypothesis path	Coefficient	p-value	Result
H1	Pressure → asset misappropriation	0.144	0.000	Accepted
H2	Rationalization → asset misappropriation	0.346	0.000	Accepted
H3	Capability → asset misappropriation	0.064	0.015	Accepted
H4	Ego → asset misappropriation	0.063	0.009	Accepted
H5	Ethical values → asset misappropriation	0.147	0.000	Rejected
H6	Perceived strength of internal control → asset misappropriation	-0.232	0.000	Accepted

Table 6. Coefficients, p-values for hypotheses



### 3.7 Discussion of results

Test of the general model quality was evaluated using the coefficient of determination ( $R^2$ ) and the cross-validated redundancy ( $Q^2$ ) before testing the hypotheses of the study. An  $R^2$  of 36.4% recorded exhibits that 36.4% of the variation in the dependent variable (asset misappropriation) is explained by the independent variables (identified factors). The predictive significance of the model was assessed by adopting Hair *et al.* (2014) blindfolding rules ( $Q^2$ ). With a  $Q^2$  estimation of 0.20, the model is assumed to have predictive importance as the  $Q^2$  ought to be above zero to predict relevance (Chin, 1998; Fornell and Cha, 1994).

As shown in Table 6, all the independent variables had a significant and positive relationship with asset misappropriation with the exception of the construct "PSIC", which had a negative relationship with asset misappropriation.

The positive and highly significant relationship (at 1% significance level) between pressure and asset misappropriation indicates that when faced with intense pressure both from within and outside the working environment, the likelihood of an individual engaging in acts considered to be fraudulent such as misappropriation of a firm's assets will be high. From theoretical perspective, all the existing theories on fraud (FTT, FDT and the S.C.O.R.E. model) generally argue that when individuals find themselves in situations that poses financial/non-financial burdens on them, they tend to seek interim options to solve their problems even if that means engaging in fraudulent activities. Empirically, the result is consistent with the evidence provided by several existing studies on fraud (Howe and Malgwi, 2006; Omar and Mohamad Din, 2010; Ruankaew, 2016; Said *et al.*, 2017).

The relationship between rationalization and asset misappropriation also yielded a positive and highly significant relationship, which demonstrates that individuals who hold the belief that their wrongful actions are in fact needful, and therefore, are quick to justify their actions are more prone to engaging in fraudulent acts at the workplace. For instance, a frequently cited justification for asset misappropriation at the workplace is the notion that it is a means of compensating oneself for poor remuneration by the employer. Such mindsets developed by people form grounds on which they rationalize their actions by understanding why they have to misappropriate assets and maintaining the belief that they have done nothing wrong. Several studies on fraud provide empirical support for this result (Ghafoor *et al.*, 2018; Kazemian *et al.*, 2019; Vousinas, 2019).

Similar to pressure and rationalization, the results also show the existence of a positive relationship and highly significant relationship between capability asset misappropriation. This finding implies that asset misappropriation at the workplace are often committed by individuals in position of influence. By virtue of their position, such individuals usually have good understanding of the control systems and are able to exploit weaknesses to perpetuate fraud. This finding is consistent with the conclusion by several existing studies (Mackevicius and Giriunas, 2013; Albrecht *et al.*, 1995).

The study found ego to be a positive and significant influencer to asset misappropriation. This finding stipulates that individuals misappropriate assets at their workplaces because of strong egos they have and the quest to maintain such egos. Ego constitutes a major element of the theory underpinning the study as follows: the S.C.O.R.E. model, which opines that in addition to the factors of the FDT, the ego of an individual is also fundamental in determining why individuals engage in fraudulent activities such as asset misappropriation. The findings of the study, therefore, support the viability of this new theory on fraud. Extant studies have also found ego to be a motivating factor for the occurrence of fraudulent activities (Kranacher and Riley (2019); Pedneault *et al.*, 2012).

Contrary to what the study hypothesized and what prior studies found (Awang and Ismail, 2017; Mintz, 2006; Said *et al.*, 2018; Said *et al.*, 2017) ethical values was significant but

positively related to asset misappropriation. Thus, individuals misappropriate assets at their workplace irrespective of their ethical stands. This is rather worrying as it is expected that ethics would shape the behaviour of individuals at their workplaces. While the positive association of ethical values and asset misappropriation does not make sense, it is a wakeup call for researchers to investigate the conditions under which an individual's ethical values will predict behaviour.

The negative and significant association of the perceived strength of an organization's internal control system with asset misappropriation implies that when workers perceive that the internal mechanisms that monitor their activities are capable of detecting wrongful acts at the workplace, the motivation to engage in fraudulent acts is usually low. This finding again is consistent with a number of empirical studies posit that the quality of the internal control mechanisms of an organization remains one of the potent and effective means of reducing the occurrence of fraud at the workplace (Le and Tran, 2018; Jokipii, 2010).

#### 4. Moderation analysis

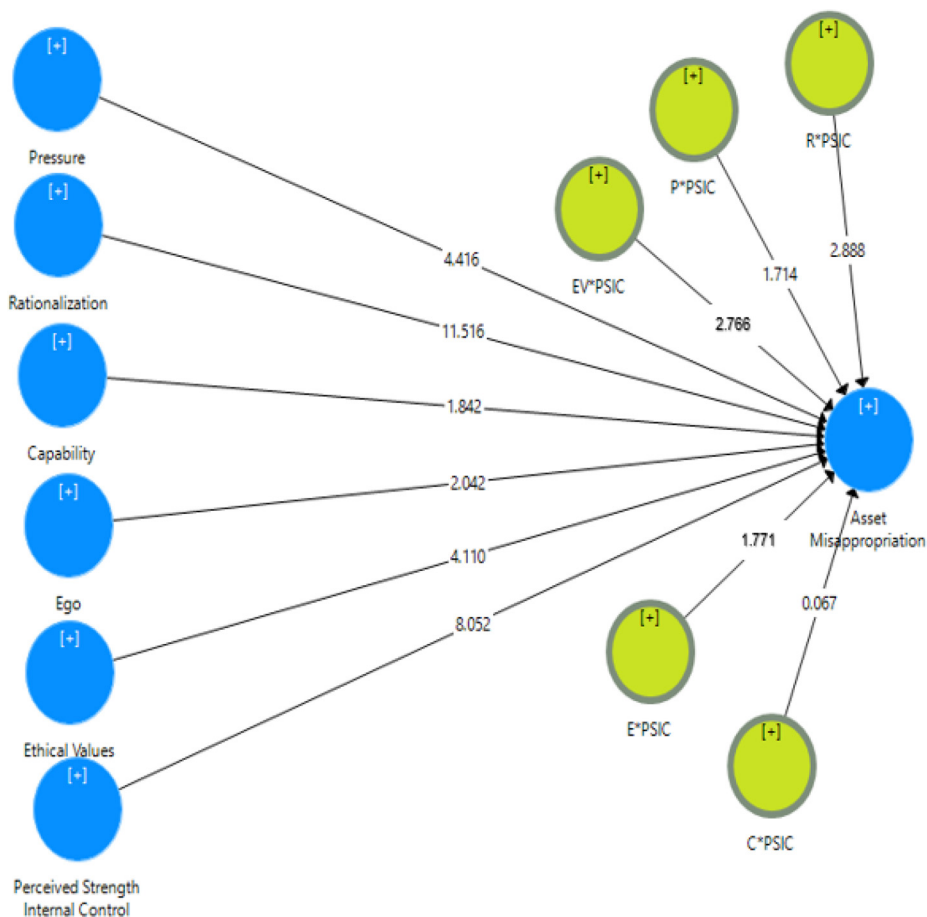
Having examined the key predictors of asset misappropriation at the workplace, the study further ascertained whether the predicted relationship between the determinants and asset misappropriation will change in the presence of the perception of strong internal control systems at the workplace. Figure 4 presents the structural model used as a guide in examining the moderation analysis in SMART PLS 3.0. Results from the bootstrapping are presented in Table 7.

##### 4.1 Discussion of moderation results

As shown in Table 7, the perception of strong internal control system at the workplace moderates favourably the relationship between the identified factors and asset misappropriation except capability. This result implies that even when faced with excessive pressure, there will be no motivation to engage in asset misappropriation if individuals have the perception that control systems in place can detect their actions. Also, no matter how well-individuals can provide reasons to justify their actions as not wrong, when these individuals have a belief that their actions could be detected by the internal control systems at the workplace, they would not misappropriate assets.

Egoistic individuals are generally concerned about their public image, and hence, even if a form of misappropriation could help them maintain the kind of public image they wish to have, the slightest possibility of being exposed would be enough to deter them from engaging in such acts. This is because being associated with such fraudulent acts in itself tarnishes the image such individuals seek to create in the eyes of the public. Again, the earlier positive relationship between ethical values and asset misappropriation when moderated favourably by the perception of the existence of strong internal control systems. This means that the ethical stance of an individual alone may not be enough to prevent them from misappropriating assets at the workplace unless the internal control system is perceived to be strong.

Finally, the insignificant result from the moderation of capability and asset misappropriation is a demonstration that the presence of strong internal control system may not be enough to deter individuals in privileged positions from misappropriating assets. This finding, in part, may be explained by the fact that individuals in capable position to engage in fraudulent activities usually possess the ability to understand and exploit the internal control systems to their advantage (Kassem and Higson, 2012; Wolfe and Hermanson, 2004).



**Figure 4.**  
Structural Model II

Hypothesis	Hypothesis path	Coefficient	<i>p</i> -value	Result
H7	P * PSIC → asset misappropriation	-0.075	0.008	Accepted
H8	R * PSIC → asset misappropriation	-0.092	0.000	Accepted
H9	C * PSIC → asset misappropriation	-0.035	0.111	Rejected
H10	E * PSIC → asset misappropriation	-0.056	0.038	Accepted
H11	EV * PSIC → asset misappropriation	-0.075	0.003	Accepted

**Notes:** P – pressure; R – rationalization; C – capability; E – ego; EV – ethical values; PSIC – perceived strength internal control

**Table 7.**  
Moderation output

## 5. Conclusion

Motivated by the apparent lack of research on asset misappropriation as a dimension of occupational fraud, this study investigated the occurrence of asset misappropriation at the workplace in Ghanaian firms and examined the dominant factors that influence individuals to misappropriate assets at the work place. Relying on the S.C.O.R.E. model as the theoretical basis, the study hypothesized that the factors pressure, rationalization, capability, ego and ethical values may explain why some individuals engage in asset misappropriation at the workplace. The findings of the study suggest that people misappropriate assets due to pressures they face, how well they rationalize their actions, their capabilities at work and their egos. Thus, for instance, the study provides evidence to support the argument that individuals misappropriate assets because of certain financial or non-financial pressures they face either at work or from family and friends.

The study further ascertained whether the motivation to engage in asset misappropriation by individuals at the workplace could in any way be affected by the perception of strong internal control systems at the workplace. The results demonstrated that the moderating effect of the PSICs was favourable in the relationships between the factors identified and asset misappropriation with the exception of capability. Thus, in the presence of a strong internal controls, individuals would not misappropriate assets at the workplace. However, individuals who hold key roles in firms may not be perturbed by the internal control mechanisms as such individuals usually have the capacity to circumvent the internal control mechanisms of their firms to cover their wrong doings.

The findings of the study have important implications for organizations and policymakers. An understanding of the push factors identified in this study (pressure, rationalization, capability and ego) is very critical to managers and policymakers in mapping up strategies aimed at reducing the occurrence of fraud at the workplace. The study also established that an adequate and robust internal control mechanisms at the workplace is one of the potent ways of reducing the occurrence of asset misappropriation at the workplace. In terms of originality, this study is among the first to provide empirical support for the applicability of the S.C.O.R.E. model in the fraud discourse using organizations from diverse industries. The study, in addition, introduces a new construct, the PSIC, as a moderating variable between the identified factors and asset misappropriation.

## References

- Abdullahi, R. and Mansor, N. (2015), "Fraud triangle theory and fraud diamond theory. Understanding the convergent and divergent for future research", *International Journal of Academic Research in Accounting, Finance and Management Science*, Vol. 1, pp. 38-45.
- ACFE (2018), 2018 Global Fraud Study: Report to the nation on occupational fraud and abuse Asia-Pacific Edition. pp. 1-28.
- Afthanorhan, W.M.A.B.W. (2013), "A comparison of partial least square structural equation modelling (PLS-SEM) and covariance based structural equation modelling (CB-SEM) for confirmatory factor analysis", *International Journal of Engineering Science and Innovative Technology*, Vol. 2 No. 5, pp. 198-205.
- Albrecht, C., Kranacher, M. and Albrecht, S. (2008), Asset Misappropriation Research White Paper for the Institute for Fraud Prevention.
- Albrecht, C., Turnbull, C., Zhang, Y. and Skousen, C.J. (2010), "The relationship between South Korean chaebols and fraud", *Management Research Review*, Vol. 33 No. 3, pp. 257-268.

- Albrecht, W.S., Williams, T.L. and Wernz, G.W. (1995), *Fraud: Bringing Light to the Dark Side of Business*, Burr Ridge, IL: Irwin.
- Asmah, A.E., Atuilik, W.A. and Ofori, D. (2019), "Antecedents and consequences of staff-related fraud in the Ghanaian banking industry", *Journal of Financial Crime*, Vol. 26 No. 3, pp. 669-682.
- Association of Certified Fraud Examiners (ACFE) (2012), Report to the nations on occupational fraud and abuse: 2012 global fraud study.
- Association of Certified Fraud Examiners (ACFE) (2016), Report to the nations on occupational fraud and abuse: 2016 global fraud study.
- Astrachan, C.B., Patel, V.K. and Wanzenried, G. (2014), "A comparative study of CB-SEM and PLS-SEM for theory development in family firm research", *Journal of Family Business Strategy*, Vol. 5 No. 1, pp. 116-128.
- Awang, Y. and Ismail, S. (2017), "Determinants of financial reporting fraud intention among accounting practitioners in the banking sector", *International Journal of Ethics and Systems*, Vol. 34 No. 1, pp. 32-54.
- Chapple, L. Ferguson, C. and Kang, D. (2007), Corporate governance and misappropriation.
- Chin, W.W. (1998), "Commentary: issues and opinion on structural equation modelling", *MIS Quarterly*, No. 1, p. 22.
- Coram, P., Ferguson, C. and Moroney, R. (2008), "Internal audit, alternative internal audit structures and the level of misappropriation of assets fraud", *Accounting and Finance*, Vol. 0 No. 0, pp. 543-559.
- COSO (2013), "COSO issues updated 'internal control – integrated framework' and related illustrative documents", COSO news release, available at: [coso.org/Documents/COSO-Framework-Release-05142013.pdf](https://coso.org/Documents/COSO-Framework-Release-05142013.pdf)
- Cressey, D.R. (1953), "The criminal violation of financial trust", *American Sociological Review*, Vol. 15 No. 6, pp. 738-743.
- Crocker, J., Luhtanen, R.K., Lynne Cooper, M. and Bouvrette, A. (2003), "Contingencies of Self-worth in college students: theory and measurement", *Journal of Personality and Social Psychology*, Vol. 85 No. 5, pp. 894-908.
- Fornell, C. and Cha, J. (1994), "Partial least squares", in: Bagozzi, R.P. (Ed.), *Advanced Methods of Marketing Research*, (Blackwell Business).
- Fornell, C. and Larcker, F.D. (1981), "Structural equation models with unobservable variables and measurement error", *Journal of Marketing Research*, Vol. 18 No. 3, pp. 382-388.
- Foster, P.L. and Schandl, A. (2019), *COSO Internal Control – Integrated Framework: An Implementation Guide for the Healthcare Provider Industry*, Committee of sponsoring organizations of the treadway commission
- Ghafoor, A., Zainudin, R. and Mahdzan, N.S. (2018), "Factors eliciting corporate fraud in emerging markets: case of firms subject to enforcement actions in Malaysia", *Journal of Business Ethics*, Vol. 160 No. 2, pp. 1-22.
- Global Fraud Examiners (2016), Report To the Nations.
- Gullkvist, B. and Jokipii, A. (2013), "Perceived importance of red flags across fraud types", *Critical Perspectives on Accounting*, Vol. 24 No. 1, pp. 44-61.
- Hair, J.F., Sarstedt, M., Hopkins, L. and Kuppelwieser, G.V. (2014), "Partial least squares structural equation modeling (PLS-SEM)", *European Business Review*, Vol. 26 No. 2, p. 26.
- Hair, J.F., Ringle, C.M. and Sarstedt, M. (2011), "PLS-SEM: indeed a silver bullet", *Journal of Marketing Theory and Practice*, Vol. 19 No. 2, pp. 139-152.
- Holtfreter, K. (2004), "Fraud in US organisations: an examination of control mechanisms", *Journal of Financial Crime*, Vol. 12 No. 1, pp. 88-96.

- Hooper, M.J. (2010), *Deterring and Detecting Financial Fraud: A Platform for Action*. Center for audit quality.
- Howe, M.A. and Malgwi, C.A. (2006), "Playing the ponies: a \$5 million embezzlement case", *Journal of Education for Business*, Vol. 82 No. 1, pp. 27-33.
- Jackson, K., Holland, D., Albrecht, C. and Woolstenhulme, D. (2010), "Fraud isn't just for big business: understanding the drivers, consequences, and prevention of fraud in small business", *Journal of International Management Studies*, Vol. 5 No. 1, pp. 160-164.
- Jokipii, A. (2010), "Determinants and consequences of internal control in firms: a contingency theory based analysis", *Journal of Management and Governance*, Vol. 14 No. 2, pp. 115-144.
- Kassem, R. and Higson, A. (2012), "The new fraud triangle model", *Journal of Emerging Trends in Economics and Management Sciences*, Vol. 3 No. 3, pp. 191-195.
- Kazemian, S., Said, J., Nia, E.H., Vakilifard, H. and Futter, A. (2019), "Examining fraud risk factors on asset misappropriation: evidence from the Iranian banking industry", *Journal of Financial Crime*, Vol. 26 No. 2.
- Kranacher, M.J. and Riley, R. (2019), "Forensic accounting and fraud examination", John Wiley & Sons.
- Kumar, K., Bhattacharya, S. and Hicks, R. (2018), "Employee perceptions of organization culture with respect to fraud – where to look and what to look for", *Pacific Accounting Review*, Vol. 30 No. 2, pp. 187-198.
- Le, T.T.H. and Tran, M.D. (2018), "The effect of internal control on asset misappropriation: the case of Vietnam", *Business and Economic Horizons*, Vol. 14 No. 4, pp. 941-953.
- Lokanan, M.E. (2015), "Challenges to the fraud triangle: questions on its usefulness", *Accounting Forum*, Vol. 39 No. 3, pp. 201-224.
- Low, M., Davey, H. and Hooper, K. (2008), "Accounting scandals, ethical dilemmas and educational challenges", *Critical Perspectives on Accounting*, Vol. 19 No. 2, pp. 222-254.
- Mackevicius, J. and Giriunas, L. (2013), "Transformational research of the fraud triangle", *Ekonomika*, Vol. 92 No. 4, pp. 150-163.
- Melrose, J., Perroy, R. and Careas, S. (2015), "The new fraud diamond Model- How can it help forensic accountants in fraud investigation in Nigeria?", *Statewide Agricultural Land Use Baseline*, Vol. 1 No. 4, pp. 129-138.
- Mintz, S.M. (2006), "Accounting ethics education: Integrating reflective learning and virtue ethics", *Journal of Accounting Education*, Vol. 24 Nos 2/3, pp. 97-117.
- Murphy, P.R. and Dacin, M.T. (2011), "Psychological pathways to fraud: understanding and preventing fraud in organizations", *Journal of Business Ethics*, Vol. 101 No. 4, pp. 601-618.
- Mustafa, S.T. and Youssef, N.B. (2010), "Audit committee financial expertise and misappropriation of assets", *Managerial Auditing Journal*, Vol. 25 No. 3.
- Nigrini, M.J. (2019), "The patterns of the numbers used in occupational fraud schemes", *Managerial Auditing Journal*, Vol. 34 No. 5, pp. 602-622.
- Nunnally, J.C. and Bernstein, I.H. (1978), *Psychometric Theory McGraw-Hill New York, NY*, The role of university in the development of entrepreneurial vocations: a Spanish study.
- Omar, N.B. and Mohamad Din, H.F. (2010), "Fraud diamond risk indicator: an assessment of its importance and usage", *CSSR 2010 - 2010 International Conference on Science and Social Research*, pp. 607-612.
- Padgett, S. (2015), "About the association of certified fraud examiners and the report to the nations on occupational fraud and abuse", *Profiling the Fraudster*, pp. 239-242.
- Pedneault, S., Silverstone, H. and Rudewicz, F. (2012), *Forensic Accounting and Fraud Investigation for Non-Experts*, John Wiley and Sons.



- Podsakoff, P.M. and Organ, D. (1986), "Statische aeroelastische anforderungen beim multidisziplinären strukturentwurf von transportflugzeugflügeln", *DLR Deutsches Zentrum Fur Luft- Und Raumfahrt e.V. - Forschungsberichte*, 2016-Janua(34), pp. 1-239.
- Robinson, W.N. and Aria, A. (2018), "Sequential fraud detection for prepaid cards using hidden Markov model divergence", *Expert Systems with Applications*, Vol. 91, pp. 235-251.
- Ruankaew, T. (2016), "Beyond the fraud diamond", *International Journal of Business Management and Economic Research*, Vol. 7 No. 1, pp. 474-476.
- Said, J., Alam, M.M., Karim, Z.A. and Johari, R.J. (2018), "Integrating religiosity into fraud triangle theory: findings on Malaysian police officers", *Journal of Criminological Research, Policy and Practice*, Vol. 4 No. 2, pp. 111-123.
- Said, J., Alam, M.M., Ramli, M. and Rafidi, M. (2017), "Integrating ethical values into fraud triangle theory in assessing employee fraud: evidence from the Malaysian banking industry", *Journal of International Studies*, Vol. 10 No. 2, pp. 170-184.
- Said, J., Asry, S., Rafidi, M., Obaid, R.R. and Alam, M.M. (2018), "Integrating religiosity into fraud triangle theory: empirical findings from enforcement officers", *Global Journal Al Thaqafah*, Vol. 8 No. 1, pp. 131-143.
- Sujeewa, G.M.M., Yajid, M.S.A., Azam, S.M.F. and Dharmaratne, I. (2018), "The new fraud triangle Theory - Integrating ethical values of employees", *International Journal of Business, Economics and Law*, No. 5, p. 16.
- Tang, T.L.P. and Sutarso, T. (2013), "Falling or not falling into temptation? Multiple faces of temptation, monetary intelligence, and unethical intentions across gender", *Journal of Business Ethics*, Vol. 116 No. 3, pp. 529-552.
- Vousinas, G.L. (2019), "Advancing theory of fraud: the S. C. O. R. E. model", *Journal of Financial Crime*, Vol. 26 No. 1, pp. 372-381.
- Wolfe, D.T. and Hermanson, D.R. (2004), "The fraud diamond: considering the four elements of fraud: Certified public accountant", *The CPA Journal*, Vol. 74 No. 12, pp. 38-42.
- Zahari, A.I., Said, J. and Arshad, R. (2020), "Organisational fraud: a discussion on the theoretical perspectives and dimensions", *Journal of Financial Crime*, Vol. 27 No. 1.

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