FRAUD RISK FACTORS IN RELATION TO EXECUTIVE FRAUD POST IMPLEMENTATION OF AU-C 240

by

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Abstract

This study examined the fraud risk factors associated with fraud occurrence after implementing auditing standard AU-C 240. Understanding these risk factors can mitigate fraud occurrence. However, an under-researched area in accounting literature about fraud risk is the fraud triangle component of rationalization. Framed by fraud triangle theory, this study offers findings of current fraud risk factors associated with executive fraud schemes. The primary research question asked to what extent is there a statistically significant relationship between fraud risk factors and fraud occurrence after implementing AU-C 240. Through this quantitative study, I used binary logistic regression analysis to answer the research question. The factors examined were average tenure, gender distribution, CEO duality, stock options paid to executives, the one-year change in assets, the percentage of insider members on the board, and recent changes in auditors. The larger target population included publicly traded U.S. firms from various industries and sizes, with an Accounting and Auditing Enforcement Release (AAER) violation between 2014 and 2018. The fraud sample consisted of 80 randomly chosen fraud firms obtained from the AAER violations public database provided by the Securities and Exchange Commission (SEC). The control sample of 80 non-fraud firms matched the size and industry. I obtained secondary data from publicly available databases provided by the SEC, including the AAER dataset and the SEC EDGAR database. Data from AAER violation releases, financial statements, and proxy statements were prepared for analysis using Excel 10 spreadsheets and analyzed using SPSS version 28 software. While examining the extent to which there is a statistically significant relationship between fraud risk factors and fraud occurrence, results showed that the likelihood of fraud occurrence decreased when more insider members were serving on the board of directors and when the firm had a recent auditor change.

Dedication

I thank God for this opportunity and am grateful to have had this experience. I dedicate this work to my family, mentors, and close friends who have encouraged me throughout my life and supported me during this Ph.D. journey. Thank you to my husband Bill and children Angelina, William, and Juliana. I acknowledge this journey was a sacrifice for all of us and truly appreciate your support. Thank you to my parents and brother, Angelo, Theresa, and Edward, for your ongoing encouragement. Finally, thank you to Teresa Wickizer, Dr. Patricia Davis, and Melaina Benscoter for inspiring me to begin different phases of my academic career. A note to my children, I am proof it is possible to have a family, a career, and further your education. Do not let anyone tell you otherwise. However, it is by no means an easy journey and takes sacrifice. Surround yourself with a strong support system, as I named above, and anything is possible!

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CHAPTER 1. INTRODUCTION

Corporate fraud has remained a concern since the announcement of landmark fraud scandals in the early 2000s, such as Enron, WorldCom, Freddie Mac, AIG, and Lehman Brothers. In response to these fraud cases, accounting regulators aim to gain public trust and protect investors (Securities & Exchange Commission [SEC], 2019). A 2020 global study on occupational fraud and abuse report compiled 2,650 cases of fraud committed between January 2018 and September 2019 (Association of Certified Fraud Examiners [ACFE], 2020). Researchers found a $3.6 billion loss due to fraudulent activity during this period (ACFE, 2020). Understanding the fraud risk factors associated with these fraudulent acts is crucial to mitigating fraud loss in the future.

The fraud triangle theory has become the mainstream theory used by researchers to examine fraud risk factors. This theory was created by Donald Cressey in 1950, when he claimed that for financial misdeeds to occur, an opportunity, pressure, and rationalization must be present (Cressey, 1950). Researchers continue to provide theoretical support for fraud triangle theory by extending the body of knowledge regarding these three elements of the fraud triangle (Sorunke, 2016). Accounting standards regarding fraud risk factors are informed by fraud literature, providing practitioners with best practices for fraud detection. Assessing these risk factors enables the corporation to mitigate fraud loss by strengthening its internal controls (Curtis et al., 2019) and fostering an organizational culture of integrity and fraud awareness (Eaton & Korach, 2016).

According to the Clarified Statement on Auditing Standard (AU-C) Section 240: Consideration of Fraud in a Financial Statement Audit (AU-C 240), fraud risk occurs when an individual in a position of trust knows of internal control deficiencies that can be exploited

(American Institute of Certified Public Accountants [AICPA], 2019). Likewise, researchers attribute the findings of greater financial loss at the hands of executives to these individuals having easier access to override controls and often greater access to the firm's assets (ACFE, 2020). Fraud risk factors matched with the incentives of committing fraud include conditions where an executive is under pressure to achieve earnings targets or financial results that appear unrealistic (AICPA, 2019). According to the AICPA (2019), executives may justify or rationalize fraudulent behavior citing the communication of inappropriate values or ethical standards set by their superiors or predecessors.

A gap in accounting literature about fraud risk factors focuses on rationalizations of executives committing fraud. Rationalization has been the least researched aspect of the fraud triangle, citing its lack of measurability as the culprit (Abdullahi & Mansor, 2015). This study examines the risk factors present when executives of U.S. firms commit fraud post-implementation of auditing standard AU-C 240. This study will advance fraud theory and contribute to the advancement of research in accounting. Examining these opportunities, pressures, and rationalizations of fraud after implementing AU-C 240 will provide timely insight into relevant fraud risk factors, informing future accounting standards.

Recent accounting literature is predominantly qualitative when aiming to answer the question of why fraud occurs. However, to answer questions regarding when and under what conditions fraud exists, researchers use a quantitative approach to better suit the research (Roden et al., 2016; Schnatterly et al., 2018; Shaio et al., 2017). Quantitative researchers use multivariate regression (Irani & Gerayeli, 2017), logistical regression (Lie, 2005; Roden et al., 2016), and linear regression (Quigley et al., 2019) when addressing fraud research topics such as the presence of fraud triangle elements and their respective fraud risk factors. This study extends the

research of Roden et al. (2016), thus adopting the same statistical analytical model using logistic regression. Consistent with Beasley (1996) and Roden et al. (2016), this quantitative study of fraud risk factors will use a random sample of fraud firms, matched with a sample of non-fraud control firms. The fraud sample will consist of fraud violations from 2014 to 2018, whereas non-fraud firms will not have a violation listed during this time. The control sample will also match the size and industry of the fraud firms selected (Beasley, 1996; Roden et al., 2016).

This first chapter offers an introduction to the research. The background of the problem and statement of the problem is provided first. Following these sections is a discussion about the purpose and significance of the study. Next, I provide a summary of the research design and research questions. Finally, the chapter defines key terms and discusses the organization of the remainder of the study.

Background of the Problem

Fraud risk factors are events or conditions that reveal an incentive, provide an opportunity, or indicate justifications for fraud perpetrating (AICPA, 2019). Corporate fraud has remained a concern for society and the accounting profession since landmark fraud cases in the early 2000s such as Enron, WorldCom, Freddie Mac, AIG, and Lehman Brothers. In response to these frauds, many regulatory changes aim to gain back public trust and protect investors (SEC, 2019). Corporate fraud remains a relevant and robust topic found within the accounting literature.

Executives are still committing fraud despite regulatory changes (Bartov et al., 2016; Gupta et al., 2018; Pozner et al., 2018; Roden et al., 2016). Between January 2018 and September 2019, $3.6 billion in losses were reported as fraudulent activity (ACFE, 2020). According to the ACFE (2020), while non-executives committed fraud more frequently, greater

financial loss was suffered when executives committed the crimes. Regulatory bodies continue to address corporate fraud, looking for ways to prevent and detect it as technology advances the sophistication of fraud schemes.

Understanding fraud risk factors can mitigate the risk of fraud within a corporation (Huang et al., 2017). Previous studies regarding fraud risk factors have used the fraud triangle theory as a framework for identifying these risk factors (Cressey, 1950). Fraud theory is widely recognized in accounting literature and within accounting legislation (Huang et al., 2017; Lou & Wang, 2009; Roden et al., 2016; Schnatterly et al., 2018). In 2002 regulators addressed financial reporting and corporate fraud accountability by creating the Act (SOX). Additionally, AU-C 240 provides specific examples of fraud risk factors associated with the fraud triangle. Appendix A of AU-C 240 provides auditors with fraud risk factors matched with the opportunities, pressures, and rationalizations present when executives commit fraud (AICPA, 2019).

The nature of the industry may provide opportunities to engage in fraudulent activity (AICPA, 2019). According to AU-C 240, fraud risk occurs when the executive is in a trust position and knows the internal control deficiencies that they can exploit (AICPA, 2019). Likewise, researchers attribute the findings of greater financial loss at the hands of executives to these individuals having easier access to override controls and often greater access to corporate assets (ACFE, 2020). Fraud risk factors matched with the incentives of committing fraud are conditions where an executive is under pressure to achieve earnings targets or financial results that may be unrealistic (AICPA, 2019). According to the AICPA (2019), executives may justify fraudulent behavior by citing the communication of inappropriate values or ethical standards by their superiors.

Before AU-C 240, researchers found that fraud risk factors were present when executives committed fraud. Zahra et al. (2005) explained how fraud risk factors, at the organizational level, for senior executives committing fraud include board composition, leadership, and organizational culture. These findings complemented the study of Beasley (1996), who found that firms that perpetrated financial statement fraud had fewer outside board members than their non-fraud firm counterparts. Conversely, Kesner et al. (1986) suggested that adding outsiders to boards will not reduce the likelihood of executives committing fraud. Understanding these indicators for fraud risk can determine the internal controls needed by an organization to establish a strategy to safeguard against fraud (Tiffen, 2015) appropriately.

Roden et al. (2016) introduced fraud risk factors present in fraud violations between 2003 and 2010 before implementing auditing standard AU-C 240. However, it is unclear if these fraud risk factors changed or are still relevant since implementing AU-C 240 in 2012. This study extends Roden et al. (2016) research, examining risk factors present in fraud violations between 2014 and 2018. This study contributes to accounting literature to offer updated practice and policy implications and new contributions to fraud triangle theory.

Statement of the Problem

Identifying fraud risk factors can mitigate the risk of fraud within a corporation (Huang et al., 2017). Guidance for accounting practitioners identifies risk factors specific to the opportunities, pressures, and rationalizations present when fraud occurs (AICPA, 2019). Researchers indicate that executives commit fraud when their firms have poor performance, a stronger need for external financing, when the board of directors has fewer women, longer membership tenure, more insiders, and when the CEO acts as the board chairperson (Huang et al., 2017; Roden et al., 2016; Schnatterly et al., 2018). Roden et al. (2016) used guidance from

auditing standard AU-C 240 to present the fraud risk factors in their study. However, they examined these risk factors based on fraud violations reported by the Securities and Exchange Commission (SEC) back from 2003 to 2010. It is unknown if these fraud risk factors presented by Roden et al. (2016) have changed since implementing auditing standard AU-C 240. The problem is the lack of testing the impact of this standard. This problem should be addressed to ensure that current anti-fraud framework is relevant to the fraud schemes committed by executives in recent years. To include more recent fraud cases, I examine fraud violations reported by the SEC from 2014-2018, post-AU-C 240.

Purpose of the Study

The purpose of this quantitative non-experimental correlational research study will be to apply the fraud triangle theory to examine fraud risk factors after the implementation of AU-C 240. Fraud violations between 2014 and 2018 are used to extend the Roden et al. (2016) study to reexamine these relationships after the 2012 effective date of AU-C 240. The study will include variables classified as opportunity variables, pressure variables, rationalization variables, and control variables to examine if the relationship between fraud risk factors and the occurrence of fraud has changed after implementing AU-C 240.

Recent research has found that executives cause the greatest financial losses when committing fraud (ACFE, 2020). According to researchers, fraud schemes that executives primarily take part in include financial statement and disclosure fraud (ACFE, 2020; Roden et al., 2016), stock options fraud (ACFE, 2020; Lie, 2005), and corruption which includes bribery schemes to government officials (ACFE, 2020). The implementation of AU-C 240 aims to provide fraud detection guidance to auditors performing financial statement audits (AICPA,

2019). This standard provides specific examples of fraud risk factors that auditors are now responsible for examining to assess the likelihood of fraud occurrence.

It is unclear if the fraud risk factors presented by Roden et al. (2016) are still significant since the researchers used fraud violations before implementing auditing standard AU-C 240. This problem should be researched to ensure anti-fraud framework is relevant to the fraud schemes occurring in recent years. Thus, I used fraud violations from 2014-2018 to examine current fraud risk factors present when executives commit fraud. This study is significant due to its advancement of the fraud triangle theory and its contribution to scientific research.

Rationale

Researchers examining fraud risk factors investigate the opportunity, pressure, and rationalization associated with committing fraud (Roden et al., 2016; Schnatterly et al., 2018). However, previous studies typically focus on only one element of the fraud triangle, primarily examining the opportunity and pressure components. Some researchers argue these studies lack consideration for the changes taking place within the accounting profession (Vousinas, 2019). Conversely, this study offers updated information about current fraud risk factors associated with executive fraud schemes. The research is framed by fraud triangle theory (Cressey, 1950) and updated accounting standards (AICPA, 2019; Roden et al., 2016).

According to scholars, theoretical research in accounting literature is declining (Caskey & Corona, 2016; Chen et al., 2016; Huber, 2016). Researchers suggest narrowing the gap between theory and practice to encourage empirical research in accounting (Caskey & Corona, 2016). Researchers argue that current accounting literature pertains to a restricted topical area and lacks diverse research methodologies (Huber, 2016). This study is beneficial to the advancement of scientific knowledge for fraud because it includes several fraud risk factors

representing each element of the fraud triangle. Extending the research of Roden et al. (2016), this study uses logistic regression to examine the fraud risk factors present when executives commit fraud.

Significance of the Study

Fraud research is continuously evolving as fraud cases erupt throughout our global business environment. Influential anti-fraud researchers such as Cressey (1950,1952), Dorminey et al. (2012), Lie (2005), and Roden et al. (2016) provide foundational studies informing fraud researchers and practitioners alike. The fraud triangle theory is the predominant framework used in anti-fraud literature discussing fraud risk factors. Accounting regulators have also adopted fraud triangle framework when providing accounting professionals with guidance regarding fraud detection.

Existing fraud studies offer evidence of fraud risk factors but primarily focus on one element of the fraud triangle instead of covering all aspects (Hogan et al., 2008). While rationalization remains under-researched, the opportunity and pressure components are heavily discussed (Abdullahi & Mansor, 2015). Researchers recommend that future research focus on why CEOs commit fraud (Schnatterly et al., 2018) and the rationalizations involved (Free, 2015; Hogan et al., 2008). This study examines the fraud risk factors, post-implementation of AU-C 240, advancing fraud theory, and contributing to the advancement of scientific research.

The present study addresses previous calls for future research by examining the fraud risk factors present when executives commit fraud. Further, all three elements of the fraud triangle are investigated rather than only focusing on one component. As executive fraud schemes evolve, it becomes more important for corporations to identify risk factors that leave them

vulnerable to fraud. I provide updated information to apply anti-fraud measures necessary for a firm to take proactive steps in mitigating the risk of fraud.

Research Questions

According to the fraud triangle theory, Cressey (1950,1952) assumes that perceived opportunities, motivations/pressures, and rationalizations are present when someone commits a fraudulent act. Adopting the fraud triangle framework, AU-C 240 identifies specific risk factors used to assess these three elements (AICPA, 2019). These fraud risk factors are used in both seminal and recent accounting research as variables measuring the three elements of the fraud triangle. For instance, Roden et al. (2016) used proxy variables representing opportunity, pressure, and rationalization to assess which fraud risk factors presented in AU-C 240 could predict the occurrence of fraud. However, the relationships between these risk factors and current executive fraud schemes are under-researched.

Roden et al. (2016) examine fraud risk factors present in fraud violations between 2003 and 2010 before implementing auditing standard AU-C 240. However, it is unclear if these fraud risk factors have changed or are still relevant since implementing the auditing standard in 2012. Extending the research of Roden et al. (2016), I used fraud violations from 2014-2018 to answer the research questions of this study. The research questions guiding this study are

1. To what extent is there a statistically significant relationship between the fraud risk factor of opportunity and the occurrence of fraud, since the effective date of AU-C 240?
2. To what extent is there a statistically significant relationship between the fraud risk factor of pressure and the occurrence of fraud, since the effective date of AU-C 240?

3. To what extent is there a statistically significant relationship between the fraud risk factor of rationalization and the occurrence of fraud, since the effective date of AU-C 240?

The next section defines the terminology used to describe these constructs and other aspects of this study.

Definition of Terms

This section first defines key terms in the study and then discusses constructs, variables, and operational definitions of those variables.

Executive Fraud. Executive fraud is the premeditated deceit by a senior manager, through their abuse of power, to claim corporate property for their own personal gain (Sheridan, 2010).

Fraud Risk Factors. Fraud risk factors, according to Auditing Standard AU-C 240, are "events or conditions that indicate an incentive or pressure to perpetrate fraud, provide an opportunity to commit fraud, or indicate attitudes or rationalizations to justify a fraudulent action" (AICPA, 2019, p. 161).

Fraud Firm. A publicly traded U.S. company used in the study that, according to the SEC AAERs, committed fraud during the study's time frame (Roden et al., 2016). These fraud firms had financial data available on the SEC Edgar database and were matched to a non-fraud control firm by size and industry.

Non-fraud Firm. A publicly traded U.S. company used in the study as part of the matched control sample. According to the SEC Accounting and Auditing Enforcement Releases (AAERs), these firms did not receive a violation by the SEC for committing fraud during the study time frame (Roden et al., 2016).

AU-C 240. AU-C 240 provides specific examples of fraud risk factors associated with the fraud triangle (AICPA, 2019).

SOX. The Sarbanes-Oxley Act of 2002 (SOX) addresses corporate fraud accountability and enhanced responsibility for financial reporting (SEC, 2019).

Constructs

The first construct examined in this study was the fraud risk factors representing the fraud triangle's opportunity, pressure, and rationalization components. The second construct was the occurrence of executive fraud. Existing knowledge focusing on the relationships between these two constructs is lacking. Instead, researchers are examining certain fraud risk factors concerning specific types of fraud schemes. This study examines these constructs in relation to the implementation of AU-C 240.

Construct 1. Independent Variables

The first construct investigated in this study was the fraud risk factors representing the fraud triangle's opportunity, pressure, and rationalization components. The current model, operating under the assumptions of Roden et al. (2016), assumes these fraud risk factors are present when fraud occurs. The significant fraud risk factors identified by Roden et al. (2016) are included in the current model and are associated with fraud triangle elements. Seven proxy variables for this construct represent the fraud triangle elements of opportunity, pressure, and rationalization.

Opportunity

Opportunity is a perceived chance to override internal controls for personal gain (Cressey, 1950) by individuals in a position of power or who have knowledge of deficiencies (AICPA, 2019). According to researchers, the opportunity component of the fraud triangle has

been heavily researched (Abdullahi & Mansor, 2015). The variables used in this study to examine opportunity are:

Board Tenure. Tenure is the average amount of time served by the board members (DeBoskey et al., 2019; Tosun & Senbet, 2020). While some researchers found longer tenure leads to less fraud occurrence (Beasley, 1996) and better monitoring of executives (Bonini, et al., 2015), other researchers have found a longer tenure can cause overfamiliarity resulting in diminished independence (Almutairi & Quttainah, 2020). According to auditing standard AU-C 240, board tenure is a fraud risk factor associated with opportunity (AICPA, 2019).

Gender of the Board. According to researchers (Roden et al., 2016; Schnatterly et al., 2018) and accounting guidance (AICPA, 2019), the gender composition of the board of directors is considered a fraud risk factor of opportunity. The gender component indicates the percentage of men to women on the board. Researchers find that women are more risk averse (DeBoskey et al., 2019), more likely to encourage ethical business decisions (Indiraswari et al., 2020), and less likely to commit fraud (Roden et al., 2016).

CEO Duality. According to auditing standard AU-C 240, when the CEO has dual roles, this is an example of a fraud risk factor associated with opportunity (AICPA, 2019). This risk factor indicates if the chief executive officer plays dual roles, also acting as chair of the board of directors (DeBoskey et al., 2019). When these dual roles are present, researchers suggest that board independence and monitoring for fraud risk could be compromised (Freire, 2019).

Pressure

Pressure, also referred to as motivation, represents an incentive to commit fraud due to internal or external factors which may result in significant consequences (AICPA, 2019). Researchers find the pressure to commit fraud stems from executive compensation (Redpath &

Vogel, 2020), the rapid growth of a corporation (Altman, 1968), and pressure from superiors to meet financial targets (Suh et al., 2020). The variables used in this study to examine pressure are:

Stock Options Paid. According to Roden et al. (2016), financial pressure is a fraud risk factor associated with the element of pressure. Stock options paid to executives are a fraud risk factor when analyzing the pressure element of the fraud triangle (Roden et al., 2016). Accounting researchers addressing the relationship between executive fraud and stock option compensation posit the desire of increasing stock options value gives executives an incentive to manipulate accounting records (AICPA, 2019; Burns & Kedia, 2006).

One-Year Change in Assets. A variable used in this study to examine pressure is the one-year change in assets of a firm. Researchers indicate that rapid growth may lead to financial pressures for an executive to commit fraud (Altman, 1968; Roden et al., 2016). According to AU-C 240, a change in assets is a fraud risk factor associated with pressure (AICPA, 2019).

Rationalization

Rationalization is when an individual commits fraud then defends their actions in a way that makes them feel justified (Cressey, 1950). Common risk factors of rationalization include a history of contention with auditors (AICPA, 2019), multiple insider members on the board (Roden et al., 2016), moral disengagement (Johnson et al., 2021), and poor organizational culture (Schnatterly et al., 2018). The variables used in this study to examine rationalization are:

Insider Members. The fraud risk factor of having insider members on the board of directors is used to identify the rationalization element (Roden et al., 2016). Researchers define board member independence as when members monitor the actions of executive directors, intending to prevent opportunism (Guerrero-Villegas et al., 2018). According to researchers,

these insider members on the board are less likely to monitor executives during a period of increased earnings (Roden et al., 2016).

Auditor Change. Roden et al. (2016) explain that managers are more likely to rationalize a fraudulent act when there is a strained relationship with an auditor. Frequent disputes between management and auditors, unreasonable demands, inappropriate restrictions on accessing information, and attempts to limit the scope of an audit are all identified as fraud risk factors (AICPA, 2019). A change in auditors may indicate an effort to reduce the detection of fraudulent activity within the firm (Ghafoor et al., 2019).

Construct 2. Dependent Variable

In the existing literature, researchers choose to examine specific fraud risk factors related to a certain type of fraud scheme. These studies typically focus on either the opportunity or pressure variables of financial statement fraud, often lacking evidence regarding risk factors of the rationalization component (Abdullahi & Mansor, 2015; Murphy, 2012; Murphy & Dacin, 2011). The second construct investigated in this study, the dependent variable, was fraud occurrence. This study examines fraud risk factors present when fraud occurs and includes all three opportunity, pressure, and rationalization components.

Executive Fraud

Executive fraud is the premeditated deceit by a senior manager, through their abuse of power, to claim corporate property for their own personal gain (Sheridan, 2010). The ACFE reported in their 2020 global study on occupational fraud and abuse, that executives committing fraud contributed to the highest median losses compared to other fraud perpetrators in their research (ACFE, 2020). The current model used a sample of fraud firms and matched them to a

controlling sample of non-fraud firms to examine if the fraud risk factors were present when the fraud was committed.

Operational Definitions

This study uses the framework established by Roden et al. (2016) regarding fraud risk factors indicating fraud occurrence. The independent variables include proxy variables to measure the opportunity, pressures, and rationalizations present when fraud occurs. Cressey (1950) was the first to present opportunities, pressures, and rationalizations in his landmark study examining financial mistrust. These three elements are known as the fraud triangle. This section provides operational definitions for the proxy variables used in this study to represent the three fraud triangle elements.

Opportunity

Opportunity is a perceived chance to override internal controls for personal gain by individuals in a position of power or who know about deficiencies (AICPA, 2019; Cressey, 1950). The proxy variables for opportunity include board tenure, gender, and CEO duality. The data source for these variables includes proxy statements (DEF 14A) and Form 10K, which will be accessed utilizing the publicly available SEC Electronic Data Gathering, Analysis, and Retrieval (EDGAR) website.

Tenure is the average amount of time served by the board members (DeBoskey et al., 2019; Tosun & Senbet, 2020). Researchers suggest that the length of time a director spends on the board can impact board effectiveness (Roden et al., 2016). The gender variable will indicate the composition of men and women on the board. In recent accounting literature, researchers suggest that having women on the board of directors can influence the functions and effectiveness of corporate boards (Guerrero-Villegas et al., 2018; Wahid, 2019). The proxy

variable called CEO duality indicates whether the chief executive officer plays dual roles, also serving as Chair of the Board of Directors (DeBoskey et al., 2019). Researchers found that these two positions should be separated to ensure board effectiveness (Roden et al., 2016).

Pressure

Pressure is an incentive to commit fraud due to internal or external factors which may result in significant consequences (AICPA, 2019). AU-C 240 explains that when an executive is under pressure to meet unrealistic financial goals, it may perpetuate fraud (AICPA, 2019). Stock options paid and the one-year change in assets will be the proxy variables used for the pressures of committing fraud.

The proxy variable of stock options refers to when executives and directors are compensated with stock of the company. Accounting researchers addressing the relationship between fraud and stock option compensation indicate that the desire to increase stock options value gives executives an incentive to manipulate accounting records (AICPA, 2019; Burns & Kedia, 2006). The data source for the stock options paid variable includes DEF 14A (proxy statement), which will be accessed using the publicly available SEC EDGAR database.

Researchers indicate rapid growth of a firm may lead to financial pressures for an executive (Roden et al., 2016). The one-year change in assets will measure the pressures of committing fraud. According to Roden et al. (2016), the one-year change in assets is a percentage of change in the year before the fraud occurs. The data source includes form 10K using the publicly available SEC EDGAR database for access for the one-year change in assets.

Rationalization

Rationalization occurs when a fraud perpetrator can 'knowingly and intentionally' commit fraud then justify their actions in a way they feel makes their actions appropriate- or

even excusable (AICPA, 2019; Cressey, 1950). Rationalizations are measured using the proxy variables of insider members and auditor change. The data source for these variables includes proxy statements and form 10K, which will be accessed utilizing the publicly available SEC EDGAR database.

The proxy variable called insider members measures board member independence. Researchers define board member independence as when members monitor the actions of executive directors, intending to prevent opportunism (Guerrero-Villegas et al., 2018). The proxy variable of auditor change is when an organization switches auditors at some point in the two years before fraud occurring (Ghafoor et al., 2019).

Control Variables

I used control variables to ensure the size, leverage, and profitability of the matched sample of non-fraud firms (Beasley, 1996). Control variables include total assets, debt ratio, and return on assets. Total assets are the dollar amount of resources the firm owns, as stated on their financial statements (Roden et al., 2016). For this study, the debt ratio is the measure of leverage calculated by dividing total liabilities with total assets, according to financial statement data (Altman, 1968; Beasley, 1996). Return on assets represents a firm's profitability, calculating EBIT divided by total assets (Altman, 1968). The data source for these variables includes form 10K, specifically financial statements, which will be accessed utilizing the publicly available SEC EDGAR database.

Research Design

The process of studying an event to advance theory or inform practice, ultimately extending the body of knowledge around that phenomenon, is referred to as research. Different designs for research studies, known as quantitative and qualitative, are at the disposal of the

researcher. Qualitative research is based on the ontological assumption that multiple realities exist, dependent on the subjectivity of the participant (Punch, 2014). Conversely, the quantitative design aims to build upon the knowledge of other studies rather than construct it (Punch, 2014).

A strength of quantitative research includes having the ability to systematically take measurements and comparisons and present them in a more precise fashion (Punch, 2014). However, a weakness of this methodology may include the limitation of not always considering the participants' perspectives of the topic being studied. For example, when a researcher performs a study involving financial fraud, they may want to know the rationalizations or motivations of the person who committed the crime. This "why" can be more thoroughly explained through a qualitative lens, exploring the perspective of the participant through an interview. However, to answer questions regarding when and under what conditions fraud exists, a quantitative approach would better suit the research as the relationships between fraud risk factors, and the occurrence of fraud can be examined.

Fraud-related studies under this approach include correlational research and survey research. Quantitative researchers use multivariate regression (Irani & Gerayeli, 2017), logistical regression (Lie, 2005; Roden et al., 2016), and linear regression (Quigley et al., 2019) when addressing fraud research topics. Recent fraud-related quantitative studies using fraud triangle theory primarily used regression analysis to analyze multiple variables involving opportunity, pressures, and rationalization. These researchers examined fraud risk factors (Roden et al., 2016), particularly the risk factor of stock options (Gupta et al., 2018). To study the fraud risk of executive compensation, researchers such as BenYoussef and Khan (2018), Bratten and Xue (2016), Irani and Gerayeli (2017), and Li and Kuo (2017) chose to use regression analysis.

Recently, fraud researchers used regression analysis to study excessive risk-taking by executives (Zolotoy et al., 2019) and the role of auditors in the prevention of fraud (Mohliver, 2019).

Choosing a methodological approach should not be dictated by the preference of the researcher but instead the appropriateness of the topic being studied. A quantitative approach reflects postpositivist philosophical assumptions, testing a theory through an experimental study then interpreting the data into a conclusion. The research design was chosen to examine the fraud risk factors present when executives commit fraud is a quantitative correlational research design using logistic regression. Consistent with the research design of Roden et al. (2016), logistic regression best suits this study as multiple variables of different types are used to measure the three fraud triangle elements.

Assumptions and Limitations

Assumptions

Assumptions of the researcher, or weaknesses in design, can potentially impact conclusions made by the researcher (Ross & Zaidi, 2019). Assumptions signify what the researcher knows to be the truth or what they expect to occur. Theoretical, philosophical, methodological, and data assumptions are all considered for this study.

Theoretical Assumptions

Fraud theory operates under the assumption that a series of events must always be present for fraud to occur. Cressey (1950) introduced these assumptions of 'violation of financial trust,' claiming the person must be experiencing a non-shareable problem, aware that their problem could be solved by defrauding their organization and possess the technical skills to perpetuate the fraud. The assumption, consistent with the fraud triangle theory, is that there must be a perceived

pressure, opportunity, and rationalization present for executives to commit fraud (Cressey, 1950).

Philosophical Assumptions

Philosophical assumptions frame how theories inform accounting research (Pieter, 2018). This study examining the topic of fraud risk factors requires a strong theoretical framework and consideration of current accounting regulations and standards (Huber, 2016). The philosophical underpinnings of fraud theory suggest that the violation of financial trust stems from the decision an individual makes and the presence of a non-shareable problem (Cressey, 1950). The fraud perpetrator takes advantage of the opportunity to commit the fraud to resolve this non-shareable problem. The decision made by the fraud perpetrator to commit this deception is then rationalized in a way to justify the behavior (Sorunke, 2016).

Methodological Assumptions

A quantitative approach reflects postpositivist philosophical assumptions, testing a theory through an experimental study (Punch, 2014). The researcher then interprets the data into a conclusion. The ontological positivist stance assumed is that the fraud risk factors under examination already existed in a generalizable way, and they could be understood in an objective manner then credibly concluded upon.

Data Assumptions

In extending the research of Roden et al. (2016), I used AAER violations to identify fraud firms used in the sample, adopting the assumption of Roden et al. (2016) that the data provided in this dataset are accurate. This study also utilizes financial information from a publicly available dataset provided by the Securities and Exchange Commission (SEC). The assumption

is that the financial data provided on this electronic data gathering, analysis, and retrieval (EDGAR) website is accurate and reliable in accordance with accounting regulations.

Limitations

According to Ross and Zaidi (2019), research may be vulnerable to weaknesses in design that may influence conclusions. Likewise, a researcher may consciously make decisions that narrow the scope of their study (Ross & Zaidi, 2019). Both design limitations and delimitations are considered for this research study.

Design Limitations

Design limitations must be identified and discussed when performing research. Researchers explain that weaknesses may influence conclusions of a study design (Ross & Zaidi, 2019). The control sample of non-fraud firms in this study could have included firms who indeed committed fraud during the years of inquiry but have not yet been discovered by the Securities and Exchange Commission.

Delimitations

To narrow the scope of the study, I include only U.S. firms charged with SEC violations from 2014-2018. This decision limits the scope of the study to U.S. firms during this time, rather than broadening the sample to include global fraud cases. Select fraud risk factors previously studied and proven to show statistical significance are used in the study. Other independent variables used by Roden et al. (2016) were excluded in the study, as they were not statistically significant.

Organization of the Remainder of the Study

The remainder of the study is organized into four chapters which provide a literature review, methodology, results of the study, and discussion of implications and recommendations

for future research. The literature review, Chapter 2, explains the methods used to search for literature related to fraud triangle theory, fraud risk factors, and the occurrence of fraud. The theoretical orientation of this study is also discussed. Next, this section provides a review of the literature. Previous studies are critiqued, providing a discussion of the findings and methods used by previous researchers. Chapter 3, methodology, discuss the research questions, hypotheses, and research design. Next, population, sample, and power analysis are explained. This chapter also addresses research procedures such as participant selection, protection of the participants, data collection, and data analysis. Finally, instruments and ethical considerations are discussed, and a summary of the chapter is provided. A discussion of the results, Chapter 4, starts with an explanation of the background. Next, a description of the sample is discussed. Chapter 4 also offers an analysis of the hypothesis. To conclude this section, a summary of the chapter is provided. Chapter 5 is a discussion of the study, implications, and recommendations for further research. This section begins with an overview of the results and discussing the findings. A conclusion is then offered based on the results of the study, including a discussion of limitations. Implications for practice and recommendations for future research are then provided.

CHAPTER 2. LITERATURE REVIEW

According to theory and research findings, this chapter summarizes what is known about fraud risk factors to date. The chapter begins with an explanation of methods of searching for literature about the research topic, followed by a discussion regarding the theoretical orientation for this study. Next, an exhaustive literature review discusses the (a) evolution of the fraud triangle theory, (b) fraud risk factors, and (c) the occurrence of fraud. These research findings are synthesized, and a critique of previous research methods is provided. Finally, the chapter concludes with a summary.

Methods of Searching

This section of Chapter 2 describes the search strategy utilized by the researcher to find scholarly literature about the research topic of fraud risk factors. The search began with the Capella University Library, accessing both the ProQuest Central and Summon databases. Additionally, the Google Scholar database was also used.

ProQuest Central Database

First, I used the keywords *fraud risk factors* and *executive fraud*, and as a result, returned 277,081 results. Refining the results for scholarly peer-reviewed sources reduced the results to 16,806 entries. The time frame was then refined to the last five years, reducing the results to 5,820. Finally, selecting the subject terms of *fraud, audit, auditors, and chief executive officers* reduced the entries to 904 results. I manually reviewed these results, to identify relevant research for the study. The majority of articles focused on how the fraud triangle can be used to determine fraud risk. Specifically, studies focused on executive compensation, board tenure, stock options, and the role of regulatory agencies in fighting fraud. A larger percentage of these

studies examined non-U.S. firms, using regression models to investigate financial statement fraud.

Capella Library Summon Database

First, I used keywords such as *fraud risk factors* and *executive fraud*, and as a result, returned 136,798 results. Further refinements of these results addressed quality, time frame, subject terms, and language. Refining the results for scholarly peer-reviewed sources reduced the results to 14,802 entries. The time frame was then refined to the last five years, reducing to 4,309 results. The discipline of business was selected next, bringing the results down to 1,684. Finally, choosing the *auditing, executives, and fraud* subject terms reduced the entries to 355 results. Through a manual review of these results, I identified relevant research for the study. The review found more studies focused on the fraud risk factors of opportunity and pressure, such as board composition and stock options paid to executives. Risk factors associated with the rationalizations of a fraudster were under-researched. Additionally, a larger percentage of these studies used fraud violations before the implementation of AU-C 240. Also observed was the use of regression models in prior research studies regarding fraud.

Google Scholar Database

In addition to the Capella Library Summon database, I used the Google Scholar database to confirm how often these seminal and current studies were cited in other research. Using the same keywords in the Capella Library Summon search, additional scholarly peer-reviewed articles were also found. An article written by Roden et al. (2016) specifically addressed fraud risk factors, as prescribed by auditing standard AU-C 240. However, despite their recent article addressing fraud risk factors, the fraud violations used in their study did not consider fraud cases discovered after the implementation of AU-C 240. I chose to extend the study of Roden et al.

(2016), utilizing fraud violation releases occurring post-implementation of AU-C 240, to address calls for future research. This research study examines fraud risk factors to include the rationalizations of fraudsters in violations discovered after implementation of this auditing standard.

Theoretical Orientation for the Study

Fraud theory is present in seminal and recent accounting research, framing studies regarding fraud risk factors (Dorminey et al., 2012; Roden et al., 2016; Schnatterly et al., 2018) and executives committing fraud (Mohliver, 2019). Fraud theory refers to a collection of theoretical frameworks often to prevent or detect accounting fraud, dating back to the works of Sutherland (1940, 1944). Another focus in fraud literature is understanding the perceived pressures, opportunities, and rationalizations of a fraudster. Cressey (1950) was the first to present these elements in his seminal study examining financial mistrust. These three elements are known as the fraud triangle theory.

Theoretical Foundation: Fraud Triangle Theory

Researchers examining the fraud risk factors for fraud framed their studies using the fraud triangle theory of Cressey (1950). The fraud diamond, fraud pentagon, and fraud scale are all expansions upon the original fraud triangle (Dorminey et al., 2012; Huber, 2016). Albrecht et al. (1984) developed the fraud scale, replacing the rationalization component of the fraud triangle with personal integrity. In later years, Glover and Aono (1995) proposed a fraud risk model focusing on a company's organizational culture, as the researchers posit that traditional evaluation of audit risk for detecting executive fraud is not effective. Glover and Aono (1995) provide new fraud risk assessment tools to aid auditors in preventing and detecting fraud by illuminating early warning signs of fraud vulnerability. In 2004, Wolfe and Hermanson further

extended fraud theory to consider the competency of the fraud perpetrator (Wolfe & Hermanson, 2004).

The MICE model considers the motivations behind highly skilled fraud perpetrators, which extended the fraud triangle to include competency (Dorminey et al., 2012). According to Dorminey et al. (2012), the MICE acronym stands for money, ideology, coercion, and ego/entitlement. Harrison et al. (2019) discusses how the perceived anonymity a fraudster has may increase the capability aspect of the fraud diamond, thereby increasing rationalizations of committing the fraud. The fraud triangle and fraud diamond models combined to create yet another advancement of the original model. Sorunke (2016) explains this fraud pentagon extends both models to bring personal ethics into the equation. However, Vousinas (2019) developed the S.C.O.R.E. model, taking the fraud pentagon further by considering corruption as an additional element. The elements of the S.C.O.R.E. model include stimulus, capability, opportunity, rationalization, and ego. Corruption is an element that considers current developments in the field and white-collar crime cases (Vousinas, 2019). The fraud triangle model is continuing to evolve in the accounting literature as fraud becomes more prevalent.

Theoretical Framework

Examining the topic of fraud risk factors requires a strong theoretical framework and consideration of current accounting regulations and standards (Huber, 2016). Applying fraud triangle theory offers a foundation for focusing on the motives, opportunities, and rationalizations present when an executive commits fraud (Dorminey et al., 2012). Dorminey et al. (2012) state "while top executives clearly feel pressure to deliver solid financial results, it is not the non-shareable individualized pressure" (Dorminey et al., 2012, p. 564). This non-shareable pressure coincides with the theoretical assumptions of fraud triangle theory of Cressey

(1952). Cressey explains these assumptions as a fraud perpetrator experiencing a non-shareable problem, deciding their problem could be solved by defrauding their organization and possessing the technical skills needed to perpetrate the fraud (Cressey, 1952).

The theoretical framework for identifying fraud risk factors addresses the opportunities, pressures, and rationalizations associated with the occurrence of fraud (Roden et al., 2016; Schnatterly et al., 2018). Consistent with the research of Roden et al. (2016) and Schnatterly et al. (2018), fraud risk factors are measured in terms of the opportunity, pressures, and rationalizations present when fraud occurs. Roden et al. (2016) provide risk factors as proxy variables to represent these fraud triangle components. The researchers use guidance set forth by Auditing Standard AU-C 240, which outlines specific fraud risk factors associated with these variables (AICPA, 2019). The research of Roden et al. (2016) is used as the theoretical framework for this study.

Contribution to Theory

Scholars, practitioners, educators, and regulators all have an interest in the contribution to accounting theory, as it improves the quality of the accounting profession by informing practice (Deb, 2019). Fraud theory indicates that perceived pressures, opportunities, and rationalizations must be present for fraud to occur (Cressey, 1950). Aligning these foundational theoretical elements with fraud risk factors will add to existing knowledge of fraud theory by examining relationships among the variables to advance the understanding of fraud theory since the implementation of Auditing Standard AU-C 240. Examining fraud risk factors will build upon the fraud theory framework, evaluating seminal and current accounting literature, fraud case data, and pertinent accounting regulations and standards. Doing so will offer scholars and practitioners an updated framework for future fraud prevention and detection studies.

Utilizing fraud theory will be beneficial to the advancement of scientific knowledge for fraud triangle theory because it encompasses several different considerations of fraud factors. According to scholars, theoretical research in accounting is declining (Caskey & Corona, 2016; Huber, 2016). Researchers suggest narrowing the gap between theory and practice to encourage empirical research in accounting (Caskey & Corona, 2016). Current accounting literature pertains to a restricted topical area and lacks in diverse research methodologies (Huber, 2016). Increasing theoretical research as a framework for accounting literature will guide the research methodology being implemented.

Review of the Literature

This section provides a review of relevant literature about the topic of this study. First is a discussion about the evolution of fraud theory, recognizing the most widely used theories in anti-fraud literature. Next, the fraud risk factors associated with fraud triangle theory are explained. Finally, a collection of the anti-fraud research focusing on executive fraud and resulting regulations are presented.

Evolution of Fraud Theory

Researchers examining fraud risk factors framed their studies using fraud theory. The first of these theories was presented by Sutherland (1944), known as the white-collar crime theory. Donald Cressey, a student of Sutherland, followed up on this theory presenting his fraud triangle (Cressey, 1950) and differential association theories (Cressey, 1952). The fraud diamond, fraud pentagon, and fraud scale expand upon the original fraud triangle model (Dorminey et al., 2012; Huber, 2016). The corporate culture and industry traits (Glover & Aono, 1995), MICE (Kranacher et al., 2011), and S.C.O.R.E. (Vousinas, 2019) models also offer additional components to consider when assessing fraud risk factors.

Despite numerous variations, researchers have continued to rely on Cressey's fraud triangle theory to develop new models for preventing and detecting fraud. According to Huber (2016), new fraud theory expanding the fraud triangle has not been as widely recognized by the anti-fraud community due to a lack of further research developments. These theories did not consider changes happening within the accounting profession (Vousinas, 2019). Applying fraud triangle theory to this study focuses on the motives, opportunities, and rationalizations present when an executive commits fraud (Dorminey et al., 2012).

The White-Collar Crime Theory

Sutherland (1940) was the first to examine and recognize the differences between violent crimes and economic crimes in his study investigating white-collar criminality. In this study, Sutherland (1940) investigated the criminal behavior of individuals from different socioeconomic statuses. The researcher discovered that upper-class individuals were penalized less severely than offenders from lower socioeconomic classes. Sutherland (1944) revisited criminal behavior involving financial mistrust four years later, introducing the differential association and social disorganization theories.

Differential Association Theory

In his 1944 study on the prevalence of white-collar crime, Sutherland (1944) discussed that the laws written for white-collar crime masked the criminality of the behavior. Sutherland (1944) proposed that this criminal behavior was produced by social learning, thus presenting his theory of differential association. The researcher explained that often these crimes were looked at as mere technical violations without moral culpability. This theory became widely accepted by criminologists as the sociological formulation of crime causation (Cressey, 1952).

Despite its widespread acceptance, the theory was not without limitations. Cressey (1952), a student of Sutherland, challenged differential association theory finding that criminal behavior is not only learned but can also happen when rationalization of this fraudulent behavior occurs. Cressey (1952) suggested this theory was not subjected to the test of empirical research and argued that the theory lacked generalizability across different forms of crime. His evidence rejected the hypothesis that the techniques to commit fraud are learned by association with criminal behavior patterns.

Fraud Triangle Theory

Fraud triangle theory operates under the assumption that three elements must be present for fraud to occur. Opportunity, pressure, and rationalization are the three concepts of the fraud triangle. Cressey (1950) introduced these assumptions of 'violation of financial trust', claiming the person must be experiencing a non-shareable problem, aware that their problem could be solved by defrauding their organization, and possess the technical skills to perpetuate the fraud. Previous studies regarding fraud risk factors have used fraud triangle theory as a framework for identifying these risk factors (Roden et al., 2016; Schnatterly et al., 2018). Fraud triangle theory has been widely recognized in accounting literature and referenced in legislation (Andon et al., 2015; Free & Murphy, 2015; Huang et al., 2017; Lou & Wang, 2009). While the SOX legislation addresses corporate fraud accountability and enhanced responsibility for financial reporting, SAS No. 99 explains the fraud risk factors present when fraud occurs. AU-C 240 takes SAS No.99 one step further to provide specific examples of fraud risk factors practitioners should be aware of regarding the elements of the fraud triangle (SEC, 2019).

Researchers use these standards and fraud triangle theory to examine fraud risk factors to predict corporate fraud (Alden et al., 2012; Chen & Elder, 2007; Skousen et al., 2008). To

develop fraud detection models researchers, use non-linear regression models (Alden et al., 2012; Fanning & Cogger, 1998; Feroz et al., 2000; Green & Choi, 1997; Li, 2015; McKee, 2009; Ravisankar et al., 2011) and financial ratios (Arshad et al., 2015; Kaminski et al., 2004; Özcan, 2016; Persons, 2011; Somayyeh, 2015; Zainudin & Hashim, 2016). Using these standards, researchers used regression models to examine fraud risk factors by matching a sample of fraud firms to non-fraud firms (Dalnial et al., 2014; Hasnan et al., 2013; Roden et al., 2016; Skousen et al., 2008). Researchers found significant statistical results using fraud risk factors as predictors of fraud occurring (Beneish, 1997; DeChow et al., 2011; Roden et al., 2016; Schnatterly et al., 2018; Summers & Sweeney, 1998) and for improving risk assessment (LaSalle, 2007; Manurung & Hadian, 2013).

Opportunity. AU-C 240 explains how the nature of the industry or the entity's operations provides opportunities to engage in fraudulent activity (AICPA, 2019). Opportunity is a perceived chance to override internal controls for personal gain (Cressey, 1950), by individuals in a position of power or who know about deficiencies (AICPA, 2019). Cressey (1950) stated an individual must have the knowledge to commit a crime. Researchers agreed the individual may perceive overriding internal controls as an opportunity to commit fraud but needs the skills to do so (Free, 2015; Wilson, 2006). An employee's capabilities to commit a fraudulent act depend on exploiting the opportunities in the organization's control environment (Dorminey et al., 2012). AU-C 240 offers accounting practitioners guidance on recognizing these red flags for opportunity. Risk factors associated with the opportunity element of fraud include board tenure, gender, and the CEO duality (Roden et al., 2016).

Pressure. Pressure, also referred to as motivation, represents an incentive to commit fraud due to internal or external factors which may result in significant consequences (AICPA,

2019). The pressure element of the fraud triangle has evolved since Cressey stated that a non-shareable financial problem was the motivator of fraud (Albrecht et al., 2011). Abdullahi and Mansor (2015) discussed extending the fraud triangle to consider the incentive of both financial and non-financial problems contributing to the pressures of committing fraud. The researchers argued that these perceived non-financial pressures may be personal, political, or social in nature (Abdullahi & Mansor, 2015). Fraud examiners identify the presence of the pressure element by determining if stock options are paid to executives (Schnatterly et al., 2018), and calculating the one-year change in assets calculation (Roden et al., 2016).

Rationalization. Rationalization is when a fraud perpetrator can 'knowingly and intentionally' commit fraud then justify their actions in a way they feel makes their actions appropriate or even excusable (AICPA, 2019; Cressey, 1950). Cressey (1952) focuses on an individual internalizing the fraudulent behavior as morally justified. However, many researchers have used multi-disciplinary theoretical frameworks to examine rationalization (Free & Murphy, 2015). According to Lokanan (2015), researchers also use the moral disengagement and cognitive dissonance theories to study fraud. AU-C 240 suggests auditors can identify the element of rationalization by determining the number of insider members and non-financial experts on the board of directors and investigating any auditor changes (AICPA, 2019).

Fraud Scale

The Fraud Scale developed in 1984 by Albrecht et al. replaces the rationalization component of the fraud triangle with personal integrity (Vousinas, 2019). Albrecht et al. (1984) described personal integrity as an individual's code of behavior. Researchers agree with Albrecht et al. (1984) that the fraud triangle does not consider the lack of integrity of the fraudster (Kidder, 2005; Levi, 2006; Murphy, 2012; Ramamoorti, 2008). According to Vousinas (2019),

jointly considering motivation, opportunity, and integrity is a successful approach used in fraud risk assessment when determining if a situation has a higher probability for fraud.

The fraud scale model supports Gross et al. (2013) that if certain personality traits can be linked to fraud, organizations can design interventions around allowing these employees to enter the company to begin with. Gross et al. (2013) indicated employees low in conscientiousness, agreeableness, and emotional stability are more likely to commit fraud. Researchers find that providing employees with an organizational culture built on integrity and a corporation's ethical values can reduce fraud (Eaton & Korach, 2016). A criticism of the fraud scale is that this theory does not consider the capability of the fraudster.

Fraud Detection Models for Corporate Culture and Industry Traits

Glover and Aono (1995) proposed a fraud risk model focusing on the company's organizational culture, as the article posits that traditional evaluation of audit risk regarding detecting fraud is not effective. The authors presented a new way for auditors to assess fraud risk. Their method considered the underlying cause of fraud, not only traditional factors. Glover and Aono (1995) provided a fraud risk assessment to aid auditors in preventing and detecting fraud by illuminating early warning signs of fraud vulnerability. Glover and Aono explained their new model as the sum of control risks and the product of corporate culture by industry traits to equal fraud detection risk. However, this article lacked a methodological study to test their model, and its effectiveness. Instead, the authors relied on research to assess traditional fraud risk assessment. Glover and Aono (1995) suggested future research involving field studies where their model is applied to determine the relevance and effectiveness of their proposed model. The researchers also identified a gap in fraud research related to the relationship between organizational culture and the opportunity to commit fraud.

According to Eaton and Korach (2016), the organizational culture of a firm can facilitate unethical behavior on an individual level. However, Zona et al. (2013) found that the key drivers in preventing fraud in the workplace are upper-level management's moral values and psychological traits, not necessarily the organizational culture. An ethical tone at the top can trickle down to employees, thereby promoting a positive ethical culture (Kotz`e & Nel, 2015). Glover and Aono (1995) find that corporate culture provides a more comprehensive examination of the overall management philosophy and control environment. Their research concludes that organizations must review their culture to understand their fraud risk. This culture should be designed to reduce the motivations, opportunities, and rationalizations of a fraudster while making the continuous effort to enforce the code of ethical conduct throughout all employment levels.

Fraud Diamond

In 2004, Wolfe and Hermanson further extended fraud theory to include the competency of the fraud perpetrator (Wolfe & Hermanson, 2004). Their fraud diamond theory extends the fraud triangle, adding the capability to bolster the effectiveness of preventing and detecting fraud (Harrison et al., 2019). The researchers explained how the opportunity to commit fraud is not enough without the fraudster having the skills to exploit that opportunity (Wolfe & Hermanson, 2004). Researchers agree that fraud cannot occur without the fraudster having the capability to carry out the scheme (Mackevicius & Giriunas, 2013). Some researchers found the fraud diamond to be superior to the original fraud triangle model (Boyle et al., 2015). However, Sorunke (2016) argued that the fraud diamond theory lacked the consideration of personal ethics.

MICE

Researchers have suggested the need for expanding upon the pressure element of the fraud triangle (Coleman, 1987; Ramamoorti et al., 2013). Kranacher et al. (2011) presented the MICE acronym, which stands for money, ideology, coercion, and ego/entitlement. This was the first model extending fraud triangle theory to include an element of collusion. The MICE model considers the motivations behind highly skilled fraud perpetrators to extend the pressure element of the fraud triangle (Dorminey et al., 2012). Dorminey et al. (2012) argued that while this model oversimplifies the motivations of a fraudster, it goes beyond Cressey's non-shareable financial pressure.

Fraud Pentagon

The fraud triangle and fraud diamond models were combined to create yet another advancement of the original model. Goldman (2010) was the first to create the pentagon, arguing the components of greed and employee alienation would best advance the fraud triangle theory. Four years later, a different fraud pentagon was proposed by Marks (2014), adding arrogance and competence to the original model, was proposed. However, Sorunke (2016) provides the most recent update to the fraud pentagon. Sorunke (2016) explains the fraud pentagon model extends both the fraud triangle and fraud diamond to include a personal ethics element lacking in previous fraud prevention and detection models.

S.C.O.R.E.

The S.C.O.R.E. model, developed by Vousinas (2019), takes the fraud pentagon a step further by considering ego and corruption as additional elements. The elements of the S.C.O.R.E. model include stimulus, capability, opportunity, rationalization, and ego. Corruption is an element that considers current developments in the field and white-collar crime cases (Vousinas,

2019). Changes in the accounting profession, and the increase in frequency and severity of fraud cases, led the researcher to develop this theory.

Predominant Theory in Anti-Fraud Literature

Fraud triangle theory is the mainstream theory used in accounting literature addressing fraud risk factors. Specifically, researchers examining the fraud risk factors present when fraud occurs framed their studies using the fraud triangle theory of Cressey (1950). Cressey (1950) is the first to present these elements in his seminal study examining financial mistrust and corporate fraud. Opportunities, pressures, and rationalizations represent the constructs of fraud theory, later known as the fraud triangle. In a later study, Cressey (1952) provided greater insight into his hypothesis, claiming that fraudulent activity requires a more complex explanation than simply a lack of morals on the part of the fraudster. Cressey (1952) provided fraud researchers and educators a strong foundation for both theoretical and empirical studies examining fraud risk factors. Cressey suggested fraudulent activity needs further research to understand why fraudsters violate trust in financial situations (Cressey, 1952).

The anti-fraud community has not as widely recognized new fraud theory expanding the fraud triangle to a lack of further research developments (Huber, 2016). Vousinas (2019) explains that those theories do not consider changes happening within the accounting profession. Researchers have continued to rely on Cressey's fraud triangle theory to develop new models to prevent and detect fraud despite numerous variations. The fraud triangle theory is the framework for this study examining fraud risk factors present when executives commit fraud post implementation of AU-C240.

Fraud Risk Factors

Events or conditions which reveal an incentive, provide an opportunity, or indicate justifications to perpetrating fraud are referred to as fraud risk factors, according to auditing standard AU-C 240 (AICPA, 2019). Previous studies have used the hypothesis of Cressey (1950) as a theoretical framework for identifying fraud risk factors. However, by extending this framework, researchers have made suggestions on best practices for risk assessment. Accounting regulators have referred to this research when addressing fraud risk in SAS 99, AU-C 240, FAS 123 (R), and AU-C 316 (Roden et al., 2016; Schnatterly et al., 2018; Shaio et al., 2017). While SOX addresses corporate fraud accountability and enhanced responsibility for financial reporting, AU-C 240 provides specific examples of fraud risk factors associated with the fraud triangle (SEC, 2019). Appendix A of AU-C 240 provides auditors with fraud risk factors for the opportunities, pressures, and rationalizations present when executives commit fraud (AICPA, 2019).

Risk Factors Associated With Opportunity

According to Cressey (1950), opportunity is when someone has a perceived chance to override existing internal controls for personal gain. These individuals are in a position of power or have first-hand knowledge of internal control inadequacies (AICPA, 2019). Researchers identify risk factors for opportunity to include board tenure, gender, and the Chief Executive Officer (CEO) acting as chair (Roden et al., 2016; Schnatterly et al., 2018).

Tenure. According to auditing standard AU-C 240, board tenure is a fraud risk factor associated with opportunity (AICPA, 2019). Tenure is the average amount of time served by the board members (DeBoskey et al., 2019; Tosun & Senbet, 2020). Researchers posit the longer amount of time spent on the board by a member leads to enhanced decision-making and valuable insight (Libit & Freier, 2015). Additionally, some researchers found longer tenure leads to less

fraud occurrence (Beasley, 1996) and better monitoring of executives (Bonini, et al., 2015). Conversely, other researchers argue that CEO tenure may lead to overconfidence, influencing their judgment (Tosun & Senbet, 2020). These findings are consistent with researchers who claim long-term members may lose their independence after some time (Almutairi & Quttainah, 2020; DeBoskey et al., 2019).

Gender. According to accounting literature, the gender composition of the board of directors is considered a fraud risk factor of opportunity (AICPA, 2019, Roden et al., 2016). Researchers suggest that having women on the board of directors can influence the functions and effectiveness of corporate boards (Guerrero-Villegas et al., 2018; Wahid, 2019). These suggestions are consistent with the research of Lenard et al. (2017) and DeBoskey et al. (2019), who found more risk aversion among women on the board. Furthermore, it is explained in fraud literature that fraud is less likely to occur when women are on the board (Roden et al., 2016). The researchers also found women to have a higher commitment to ethical policies (Lenard et al., 2017), being more likely to encourage ethical business decisions (Indiraswari et al., 2020).

CEO Duality. According to auditing standard AU-C 240, when the CEO has dual roles, this is an example of a fraud risk factor associated with opportunity (AICPA, 2019). Researchers suggested executives also acting as Chair have a unique opportunity to exert their control over both internal and external stakeholders of an organization due to their knowledge of the firm's operating environment (DeBoskey et al., 2019). This risk factor indicates that if the chief executive officer plays dual roles and serves as Chair of the Board of Directors, there is an increased risk for fraud (DeBoskey et al., 2019). Although it is argued in the literature that combining these two roles may offer profit motivations (Roden et al., 2016), the shared role may also compromise board oversight (Freire, 2019; Roden et al., 2016).

Risk Factors Associated With Pressure

The pressure element signifies an incentive to commit fraud due to internal or external factors which may lead to significant consequences (AICPA, 2019). According to AU-C 240, this incentive may occur when an individual is under pressure to achieve somewhat unrealistic earnings targets or financial results (AICPA, 2019; Suh et al., 2020). Fraud risk factors associated with the pressures element of the fraud triangle include Altman's Z, stock options paid, and the one-year change in assets (Altman, 1968; AICPA, 2019; Roden et al., 2016).

Altman's Z. According to Roden et al. (2016), financial pressure is a fraud risk factor associated with pressure. Researchers found that calculating Altman's Z score is an appropriate measurement of financial distress (Altman, 1968; Casey et al., 1984; Káčer et al., 2019; Roden et al., 2016). According to fraud literature and accounting guidance, financial distress may offer executives the incentive to commit fraud (Altman, 1983; AICPA, 2019). The revised four-variable formula used for the school-approved topic combines working capital to total assets, retained earnings to total assets, earnings before interest and tax (EBIT) to total assets, and book value of equity to total liabilities (Casey et al., 1984; Káčer et al., 2019).

Stock Options Paid. According to Roden et al. (2016), paying executives with stock options is a fraud risk factor for pressure. Accounting researchers addressing the relationship between fraud and stock option compensation indicate the desire to increase stock options value gives executives an incentive to manipulate accounting records (AICPA, 2019; Burns & Kedia, 2006). Researchers examining executive stock options provide empirical findings, stating that stock option incentives motivate executives to take part in excessive risk-taking (Izhakian & Yermack, 2017; Lie, 2005; Schnatterly et al., 2018). Likewise, current research findings suggest that stock options offer executives the incentive to inflate earnings by participating in fraudulent

financial reporting (He et al., 2017; Hill & Ruch, 2019; Redpath & Vogel, 2020). In recent studies, researchers explain that executives may have an incentive to maintain short-term earnings at an artificially increased level (Ghafoor et al., 2019).

One-Year Change in Assets. A change in assets is a fraud risk factor associated with the pressure element of the fraud triangle (Roden et al., 2016). According to Roden et al. (2016), the one-year change in assets is a percentage of change in the year before the fraud taking place. Percent of change in total assets for the year before fraud occurring can indicate rapid growth (Altman, 1968), leading to financial pressure (Roden et al., 2016). AU-C 240 explains when an executive is under pressure to meet unrealistic financial goals, it may lead to fraudulent behavior (AICPA, 2019).

Risk Factors Associated With Rationalization

According to AU-C 240, rationalization occurs when an individual 'knowingly and intentionally' commits fraud (AICPA, 2019). The fraud perpetrator will then justify their crimes in a way they feel makes their actions appropriate (Cressey, 1950). Consistent with the research of Roden et al. (2016), rationalizations are measured using the proxy variables of insider members, non-financial experts, and auditor change.

Insider Members. SOX states audit committee members must be independent and one member, at minimum, must be a financial expert (SEC, 2019). Roden et al. (2016) explained that the fraud risk factor of having insider members is a fraud risk factor for the rationalization component of the fraud triangle. Researchers define board member independence as when members monitor executive directors' actions to prevent opportunism (Guerrero-Villegas et al., 2018). Guerrero-Villegas et al. (2018) suggested members may have close ties with executive officers, sometimes leading to a lack of oversight.

Non-Financial Experts. According to Roden et al. (2016), the amount of non-financial experts on the board is a fraud risk factor associated with rationalization. Non-financial experts are non-accounting and finance experts on the board of directors, as indicated on proxy statements. The researchers claim that having fewer financial experts on the board of directors increases the likelihood of SEC violations (Roden et al., 2016). According to the Sarbanes-Oxley Act, at least one board member must be a financial expert (SEC, 2019).

Auditor Change. The fraud risk factor of auditor change is associated with the element of rationalization. The factor of auditor change is identified when an organization switches their auditor at some point in the two years before fraud occurring (Ghafoor et al., 2019). Researchers indicate from recent studies that an organization is more likely to encounter fraud if it has a strained relationship with auditors (Ghafoor et al., 2019). Roden et al. (2016) explain that managers are more likely to rationalize a fraudulent act when there is a strained relationship with an auditor. A change in auditors may indicate an attempt to reduce the detection of fraudulent activity within the firm (Ghafoor et al., 2019).

Corporate Fraud

Corporate fraud is an issue that presents global business challenges. Mangala and Kumari (2015) explain that corporate fraud is a willful act committed for or against a business firm to obtain money, property, or any other advantages the fraudster otherwise is not lawfully authorized to own. Accounting researchers and regulators have all joined the fight against fraud, seeking ways for prevention and detection. Fraud-related research is not only found in accounting literature but also in criminology and psychology.

After a surge of corporate fraud scandals surfaced in the early 2000s, regulators raced to find a way to gain back the public trust. Likewise, researchers heavily studied the topic searching

for ways to prevent and detect fraud. Despite seminal researchers like Sutherland (1940) and Cressey (1950), providing a framework for researchers and regulators, the occurrence of fraud has not declined. Conversely, fraud occurrence has only increased over the years. A definitive answer on preventing all fraud from occurring, or the total financial loss of fraud, does not exist.

The Association of Certified Fraud Examiners (ACFE) has examined the costs and impact of corporate fraud since 1996. These reports have revealed that fraud imposes tremendous costs on corporations throughout the globe. Scholars have used these ACFE studies to gain insight into current fraud cases, and how fraud cases are evolving. In their most recent *2020 Report to the Nations*, the ACFE researchers examined over 2500 cases of fraud, covering 125 countries (ACFE, 2020).

In the *2020 Report to the Nations* study, fraud cases totaled a loss of more than $3.6 billion (ACFE, 2020). In their study, these fraud cases typically lasted 14 months before being detected, causing an average loss of $8300 per month. The Certified Fraud Examiners suggest that organizations lose 5% of their revenue due to fraud each year, with an average loss per case of $1,509,000. Out of these cases, 80% of these frauds were committed by non-executive employees, and 20% by owners/executives. However, the researchers found that executives committing fraud caused greater financial losses (ACFE, 2020).

According to the ACFE (2020), asset misappropriation schemes were the most common and accounted for 86% of the fraud cases studied. However, it was also the least costly scheme causing a $100,000 median loss (ACFE, 2020). The most expensive fraud scheme was financial statement fraud at a median loss of $954,000, accounting for 10% of the fraud cases in the report (ACFE, 2020). A lack of internal controls contributed to nearly one-third of the frauds committed in the ACFE report. However, firms having anti-fraud controls in place experienced

lower fraud losses and accelerated detection of fraud. Gender was included in the report, revealing that men committed 72% of the fraud cases and caused larger financial losses than their female counterparts (ACFE, 2020). The researchers also reported that as many as 46% of victim organizations declined to refer cases to law enforcement.

According to the ACFE (2020), the concealment methods used by these fraudsters included creating and altering physical documents and creating and altering electronic files. Many of the cases were initially detected by a tip, while only some by the work of external auditors. Other methods of detection included management review, surveillance and monitoring, and document examination. According to the report, corporations without fraud hotlines nearly doubled their median losses suffered from fraud.

Manufacturing, government/public administration, and the banking and financial services industries were the top three industries with fraud cases on the ACFE (2020) report. The two most common fraud schemes for the banking and financial services industry were corruption and cash larceny. Corruption and billing were the two most common fraud schemes for the government and public administration industry. The manufacturing industry suffered most from corruption, billing, and expense reimbursement schemes.

Non-Executive Fraud

According to the *2020 Report to the Nations*, non-executive employees were responsible for 80% of the fraud cases examined (ACFE, 2020). The most common non-executive fraudulent activities include asset misappropriation, skimming, cash larceny, check and payment tampering, accounts payable, payroll, and expense reimbursement schemes (ACFE 2020). According to the ACFE (2020), these schemes occurred predominantly in the industries of education (skimming), foodservice and hospitality (cash larceny), healthcare (billing), real estate

(check and payment tampering), government and public administration (payroll), and professional services (expense reimbursement schemes).

Anti-fraud literature addressing non-executive fraud primarily focuses on preventing and detecting fraud by identifying red flags and utilizing proper internal controls (Nawawi & Ahmad Saiful Azlin, 2018; Omar et al., 2016; Peltier-Rivest, 2018; Wang & Fargher, 2018). According to the ACFE (2020), a lack of internal controls contributed to the fraudsters' ability to commit 32% of the fraud cases examined in their report. Whereas management and executives overriding existing internal controls accounted for 18% of the fraud cases examined. The researchers also found that smaller size firms are more likely to lack internal controls. A lack of internal controls contributed to the employees' opportunities to commit and conceal their fraud schemes (ACFE, 2020).

While fraud triangle theory is the mainstream theory used in accounting research examining corporate fraud, researchers often examine fraud using theory from multiple disciplines. Merging these theories with the technical aspects of accounting allows these researchers to dive deeper into the motivation aspect of fraud theory (Eaton & Korach, 2016). Researchers examine the criminology, sociology, and psychology of corporate fraud using fraud theory, rational choice theory, and general deterrence theory. Eaton and Korach (2016) explained the purpose of researching theories across disciplines is to better ensure prevention by understanding the motivations behind the fraudulent activity.

Executive Fraud

Accounting literature states that executive fraud can be defined as premeditated deceit by a senior manager, through their abuse of power, to claim corporate property for the purpose of their own personal gain (Sheridan, 2010). Researchers indicate that fraud risk factors associated

with executives committing fraud include firms having poor performance, a stronger need for external financing when the board of directors has fewer women, longer membership tenure, more insiders, and when the CEO also acts as the board chairperson (Huang et al., 2017; Roden et al., 2016; Schnatterly et al., 2018). Scholars have also found that moral disengagement (Johnson et al., 2021) and poor organizational culture (Schnatterly et al., 2018; Suh et al., 2020; Tiffen, 2015) contribute to executive fraud.

Fraud risk occurs when an individual is in a position of trust, knowing of internal control deficiencies they can exploit (AICPA, 2019). Likewise, greater financial loss occurs when executives commit fraud because these individuals have easier access to override controls and often greater access to a firm's assets (ACFE, 2020). Fraud risk factors matched with the incentives of committing fraud include conditions where an executive is under pressure to achieve earnings targets or financial results that are unrealistic (AICPA, 2019). According to the AICPA (2019), executives may justify fraudulent behavior by citing the communication of inappropriate values or ethical standards by their superiors. According to researchers, this rationalization component has been the least evolved aspect of the fraud triangle, citing its lack of measurability as the culprit (Abdullahi & Mansor, 2015).

The ACFE reported in their 2020 global study on occupational fraud and abuse that executives committing fraud contributed to the highest median losses compared to other fraud perpetrators in their study (ACFE, 2020). The most common fraud scheme was financial statement fraud, accounting for a $600,000 median loss. Financial statement fraud includes timing differences, fictitious revenues, concealed liabilities and expenses, improper asset valuations, and improper disclosures (ACFE, 2020). These schemes occur predominantly in the industries of construction and manufacturing (ACFE, 2020). The ACFE researchers name poor

tone at the top as the primary risk factor in 22% of all financial statement fraud cases (ACFE, 2020). Other executive fraud schemes include corruption which involves bribery, kickbacks, bid-rigging, and economic extortion. According to the ACFE (2020), these schemes occur mainly in the energy, telecommunications, and transportation industries.

Framework for Anti-Fraud Practitioners

Recognizing the red flags present when an executive commits fraud can enable the firm to mitigate fraud loss. Fraud risk factors associated with fraud triangle theory are not only recognized in accounting literature (Roden et al., 2016; Schnatterly et al., 2018; Shaio et al., 2017) but also by legislation and accounting regulations such as the Sarbanes-Oxley Act of 2002 (SOX), the Statement on Auditing Standards No. 99 (SAS No.99), and auditing standard AU-C 240: The Consideration of Fraud in a Financial Statement Audit (AU-C 240). Despite these regulatory changes made after the announcements of corporate fraud scandals, executives are still committing fraud (Bartov et al., 2016; Gupta et al., 2018; Pozner et al., 2018; Roden et al., 2016). This study examining fraud risk factors, post-implementation of AU-C 240, advances fraud theory and contributes to the advancement of scientific research in accounting. Thus, providing updated information for future fraud prevention and detection literature within the field of accounting.

SOX

After the announcements of corporate fraud scandals in the early 2000s, the Sarbanes-Oxley act of 2002 (SOX) was introduced to enhance corporate responsibility and financial disclosures and combat corporate fraud (SEC, 2019). This legislation aimed for more accountability of executives and transparency of financial data. When accomplished, this would then restore investor confidence in the accounting profession (Baranek, 2018). SOX also initiated

the oversight of activities within the auditing profession by establishing the Public Company Accounting Oversight Board (PCAOB). The PCAOB oversees the compliance of public accounting firms offering auditing services, ensuring the enforcement of SOX. While researchers have recognized their importance, others have contested the cost-effectiveness and success of SOX and PCAOB in achieving their objectives.

Baranek (2018) found that the Sarbanes-Oxley legislation substantially influenced accounting regulators and the regulatory process. Baranek claimed in his study that there was an increase in the total workload of the Financial Accounting Standards Board (FASB) and a decrease in the speed of standard-setting (Baranek, 2018). According to Lail (2014), the accounting profession lost its right to self-regulation by creating the PCAOB. Also, researchers have claimed that SOX amplified the regulatory power and increased funding to the SEC (Lail, 2014). According to Gupta et al. (2018), corporations spent an average of $3 million to comply with the internal control requirements of Section 404. While firms incur significant costs in complying with SOX requirements, they also benefit from improved productivity over time (Chang & Choy, 2016). Even still, Boylan (2015) argues that the benefits of Sarbanes-Oxley indeed outweigh the compliance costs associated with its implementation. The author explains how SOX lowered the number of discretionary accruals, addressed the backdating of stock options, revealed material reporting weaknesses, and improved the quality of internal controls (Boylan, 2015).

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Regulators released additional guidance to auditors to ensure compliance with the Sarbanes-Oxley Act of 2002 and avoid sanctions posed by the PCAOB. In 2002, the AICPA officially adopted fraud triangle theory as the framework used to guide accountants on assessing

fraud risk. This was accomplished by implementing SAS No.99: The Consideration of Fraud in a Financial Statement Audit (SAS No.99), which established auditors' responsibilities and functions to fulfill their responsibility to obtain reasonable assurance about misstatements due to fraud (AICPA 2019). This standard explained fraud and its characteristics, the importance of exercising professional skepticism, and requiring discussions among individuals on the engagement team regarding the risk of material misstatement due to fraud.

This standard was the first to explain what fraud risk factors an auditor should be aware of. SAS No.99 listed fraud risk factors for each opportunity, pressure, and rationalization element of the fraud triangle. Researchers examined these risk factors in studies of fraud risk factors present in financial statement fraud cases (Skousen et al., 2008). Skousen et al. (2008) found statistically significant relationships among seven of the opportunity and pressure fraud risk factors identified by SAS No. 99. However, they did not find any significance for the risk factors listed under the rationalization component of the fraud triangle. Like other researchers, Skousen et al. (2008) suggested further research into this aspect of the fraud triangle and its respective fraud risk factors. Later, additional guidance such as AU-C Section 240: Consideration of Fraud in a Financial Statement Audit (AU-C 240) provided best practices to auditors for recognizing specific fraud risk factors in a practical and easy-to-read format for practitioners.

AU-C 240

AU-C 240 provides specific examples of fraud risk factors associated with the fraud triangle (SEC, 2019). Appendix A of AU-C 240 provides auditors with fraud risk factors associated with the opportunities, pressures, and rationalizations present when executives commit fraud (AICPA, 2019). This auditing standard provides best practices to auditors for

recognizing risk factors. According to auditing standard AU-C 240, fraud risk occurs when an individual is in a position of trust knowing of internal control deficiencies they can exploit (AICPA, 2019). Fraud risk factors matched with the incentives of committing fraud are conditions where an executive is under pressure to achieve somewhat unrealistic earnings targets or financial results (AICPA, 2019). According to the AICPA (2019), executives may justify their fraudulent behavior by blaming the communication of inappropriate values or ethical standards by their superiors.

Before AU-C 240, seminal researchers indicated that certain fraud risk factors were present when fraud occurred. Zahra et al. (2005) explained how fraud risk factors at the organizational level for senior executives committing fraud include board composition, leadership, and organizational culture. These findings complemented the study of Beasley (1996), who found that firms who perpetrated fraud had fewer outside board members than their non-fraud firm counterparts. However, in an earlier examination, Kesner et al. (1986) suggested adding outsiders to boards will not reduce the likelihood of executives committing fraud. These seminal studies are further developed by fraud researchers, as found in recent accounting literature. Understanding these red flags for fraud risk can determine the type of framework needed by an organization to establish a strategy to safeguard against fraud (Tiffen, 2015).

In recent research, Roden et al. (2016) introduce fraud risk factors present in fraud violations between 2003 and 2010 before implementing auditing standard AU-C 240. However, what is unknown is whether their fraud risk factors have changed in relation to fraud violations perpetrated since AU-C 240 took effect after December 15, 2012. Using these fraud risk factors presented by Roden et al. (2016) as a framework for this study, I examine fraud violations between 2014-2018 (after the 2012 effective date of AU-C 240). Thus, extending the

examination of fraud risk factors to include current fraud cases will add to the existing body of knowledge by offering updated practice and policy implications.

Findings

Fraud theory has continued to evolve since the seminal works of Sutherland (1940) and Cressey (1950). Accounting regulations continue to rely on fraud triangle theory as a framework for anti-fraud professionals. Regulatory updates continue to surface as the financial loss due to fraud continues to increase. This section synthesizes the research findings regarding fraud literature, discusses gaps in the literature, and recalls research recommendations from previous studies. This section will also recount the fraud risk factors included in this study, which Roden et al. (2016) found to be predictors of corporate fraud.

Gaps in Literature

Fraud research has primarily discussed the fraud triangle elements and how understanding their fraud risk factors can prevent fraud from occurring. A literature review shows that the fraud risk factors of opportunity and pressure, discussed in auditing standard AU-C 240 and other regulations, are heavily debated. However, a gap in this research exists for fraud risk factors of the rationalization element of the fraud triangle (Abdullahi & Mansor, 2015). Researchers have specifically called for future studies to focus on why CEOs commit fraud (Schnatterly et al., 2018) and the rationalizations involved (Free, 2015; Hogan et al., 2008).

Researchers have noted how existing fraud studies offer evidence of fraud components but focus only on one element of the fraud triangle instead of covering all aspects (Hogan et al., 2008). Researchers studying executive fraud often examine theory from multiple disciplines and merge it with the mechanical aspects of accounting to dive deeper into the opportunity or pressure elements of fraud theory (Eaton & Korach, 2016). However, researchers found

rationalization to be the least evolved aspect of the fraud triangle, citing its lack of measurability as the culprit (Abdullahi & Mansor, 2015; Murphy, 2012; Murphy & Dacin, 2011). Cressey (1952) called for more empirical research regarding evidence on the rationalizations of fraudulent behavior. A lack of empirical evidence on attitudes and rationalizations in current fraud research still exists (Hogan et al., 2008).

Recommendations for Future Research

Fraud literature has mainly paid attention to the fraud triangle components and how they can prevent fraud from occurring. A review of the literature shows that the fraud risk factors of opportunity and pressure, discussed in auditing standard AU-C 240, are heavily discussed, while rationalizations are under-researched (Abdullahi & Mansor, 2015). Researchers have specifically called for future studies to focus on why CEOs commit fraud (Schnatterly et al., 2018) and the rationalizations involved (Free, 2015; Hogan et al., 2008). This section presents previous research recommendations regarding fraud risk factors.

Fraud Risk Factors From Fraud Triangle

Opportunity

Opportunity is a perceived chance to override internal controls for personal gain (Cressey, 1950) by individuals in a position of power or who have knowledge of deficiencies (AICPA, 2019). The capabilities of an employee to commit a fraudulent act depend on exploiting the opportunities in the control environment of the organization (Dorminey et al., 2012). Strong internal controls are a vital aspect in reducing the opportunity for fraud in the workplace. Peltier-Rivest (2018) found that ethics training can increase the awareness of the internal controls used by an organization, thereby increasing the perception of fraud detection, thus reducing fraudulent behaviors. AU-C 240 offers accounting practitioners guidance on recognizing risk factors for

opportunity. Risk factors associated with the opportunity element of fraud include board tenure, gender, and CEO duality (Roden et al., 2016).

Board Tenure. According to auditing standard AU-C 240, board tenure is a fraud risk factor associated with opportunity (AICPA, 2019). Tenure is the average amount of time served by the board members (DeBoskey et al., 2019; Tosun & Senbet, 2020). After accounting standards identified tenure as a fraud risk factor, researchers examined how this variable could impact a corporation and its risk of falling victim to fraud. While some researchers stated longer tenure leads to enhanced decision making and valuable insight (Libit & Freier, 2015), others argue that longer tenure leads to overconfidence, influencing their judgment (Tosun & Senbet, 2020). Researchers also claim long-term members may lose their independence after some time (DeBoskey et al., 2019). Consistent with Roden et al. (2016), this study includes the fraud risk factor of board tenure.

Gender. According to researchers (Roden et al., 2016; Schnatterly et al., 2018) and accounting guidance (AICPA, 2019), the gender composition of the board of directors is considered a fraud risk factor of opportunity. The gender component indicates the composition of men and women on the board. Researchers have found that women on the board (Roden et al., 2016) and in executive roles (Liu et al., 2016) are less likely to commit fraud (Roden et al., 2016) and engage in risky behaviors (Schnatterly et al., 2018). Previous researchers recommend examining how gender impacts the effectiveness of the board functions as related to fraud risk. In recent accounting literature, researchers answered that call for research and found that having women on the board of directors can influence the functions and effectiveness of corporate boards (Guerrero-Villegas et al., 2018; Wahid, 2019). Consistent with Roden et al. (2016), this study includes the fraud risk factor of gender as a variable for opportunity.

CEO Duality. According to auditing standard AU-C 240, when the CEO has dual roles, this is an example of a fraud risk factor associated with opportunity (AICPA, 2019). This risk factor indicates if the chief executive officer plays dual roles, also acting as chair of the board of directors (DeBoskey et al., 2019). While some researchers suggest that executives acting as Chair have a unique opportunity to exert control over internal and external stakeholders of an organization (DeBoskey et al., 2019), other researchers say combining these two roles also compromises board oversight (Roden et al., 2016). Consistent with the research of Roden et al. (2016), and auditing standard AU-C 240, this study includes the risk factor of CEO duality.

Pressures

Fraud theory operates under the assumption that a series of events must always be present for fraud to occur. Cressey introduced these assumptions of 'violation of financial trust', claiming the person must be experiencing a non-shareable problem and be aware that their problem could be solved by defrauding their organization while also possessing the technical skills to perpetrate the fraud (Cressey, 1950). Pressure, also referred to as motivation, represents an incentive to commit fraud due to internal or external factors which may result in significant consequences (AICPA, 2019). Fraud examiners identify the presence of the element of pressure by using the Altman's Z calculation (Altman, 1968), determining if stock options are being paid to executives (Schnatterly et al., 2018), and calculating the one-year change in assets calculation (Roden et al., 2016).

Altman's Z. According to Roden et al. (2016), financial pressure is a fraud risk factor associated with the element of pressure. Researchers found that Altman's Z is an appropriate measurement of financial distress (Altman, 1968; Káčer et al., 2019; Roden et al., 2016). The revised four-variable formula of Altman's Z combines working capital to total assets, retained

earnings to total assets, earnings before interest and tax (EBIT) to total assets, and book value of equity to total liabilities (Casey et al., 1984; Káčer et al., 2019). Consistent with AU-C 240, I will instead use the one-year change in assets to indicate rapid growth.

Stock Options. Researchers examine the fraud risk factor of stock options paid to executives when analyzing the pressure element of the fraud triangle (Roden et al., 2016). Accounting researchers addressing the relationship between executive fraud and stock option compensation posit the desire of increasing stock options value gives executives an incentive to manipulate accounting records (AICPA, 2019; Burns & Kedia, 2006). Lie (2005) urged researchers to examine the use of executive stock options in future studies. Researchers answering that call for inquiry found stock option incentives to motivate executives to engage in excessive risk-taking (Izhakian & Yermack, 2017; Schnatterly et al., 2018). Further, the researchers suggested that stock options offer executives the incentive to inflate earnings by participating in fraudulent financial reporting (He et al., 2017; Hill & Ruch, 2019). Consistent with the research of Roden et al. (2016) and auditing standard AU-C 240, I include the risk factor of stock options in this study.

One-Year Change in Assets. According to auditing standard AU-C 240, a change in assets is also a fraud risk factor associated with pressure (AICPA, 2019). Researchers indicate that rapid growth may lead to financial pressures for an executive to commit fraud (Altman, 1968; Roden et al., 2016). AU-C 240 explains when an executive is under pressure to meet unrealistic financial goals during a time of rapid growth, it may lead to fraudulent behavior (AICPA, 2019). Percent of change in total assets for the year before fraud occurring can indicate rapid growth (Altman, 1968), leading to financial pressure (Roden et al., 2016). Consistent with

the research of Roden et al. (2016) and auditing standard AU-C 240, the risk factor of one year change in assets as a variable is used in this study.

Rationalizations

Rationalization is when a fraud perpetrator can 'knowingly and intentionally' commit fraud (AICPA, 2019) then justify their actions in a way they feel makes their actions appropriate (Cressey, 1950). Of all the fraud triangle elements, rationalization has been the least evolved. Researchers suggest that rationalization has been studied less than pressures and opportunities because of its lack of measurability (Abdullahi & Mansor, 2015). AU-C 240 suggests auditors can identify the element of rationalization by determining the number of insider members and non-financial experts on the board of directors and investigating any auditor changes (AICPA, 2019). In response to future research suggestions, researchers have identified the fraud risk factors associated with the rationalizations found to be predictors of fraud (Roden et al., 2016; Schnatterly et al., 2018; Shaio et al., 2017).

Insider Members. The fraud risk factor of having insider members on the board of directors is used to identify rationalization (Roden et al., 2016). Researchers define board member independence as when members monitor the actions of executive directors, intending to prevent opportunism (Guerrero-Villegas et al., 2018). However, researchers found that long-term board members may lose their independence (DeBoskey et al., 2019) after developing close ties with executive officers, leading to a lack of oversight (Guerrero-Villegas et al., 2018). The Sarbanes-Oxley Act states audit committee members must be independent, and at least one member must be a financial expert (Securities and Exchange Commission [SEC], 2019).

Non-Financial Experts. According to Roden et al. (2016) a fraud risk factor associated with rationalization includes non-financial experts on the board. According to SOX, at least one

board member must be a financial expert (SEC, 2019). Non-financial experts are non-accounting and finance experts sitting on the board of directors, as indicated on proxy statements. The researchers claim that having fewer financial experts on the board of directors increases the likelihood of SEC violations (Roden et al., 2016). Consistent with the research of Roden et al. (2016), the fraud risk factor of non-financial experts is used as a variable in this study.

Auditor Change. The fraud risk factor of auditor change is a determinant of rationalization being present. Researchers find when there is a strained relationship with an auditor, managers are more likely to rationalize a fraudulent act (Roden et al., 2016). A change in auditors may indicate an attempt to reduce detection of fraudulent activity within the firm (Ghafoor et al., 2019). Consistent with the research of Roden et al. (2016) and auditing standard AU-C 240, the risk factor of auditor change is included in this study.

Executive Fraud

Researchers studying executive fraud often examine theory from multiple disciplines and merge it with the mechanical aspects of accounting to dive deeper into the opportunity or pressure elements of fraud theory (Eaton & Korach, 2016). These motivations or pressures were first mentioned in Cressey's fraud triangle theory. Cressey (1950) explained that a perceived opportunity, pressure, and rationalization must be present for fraud to occur. Eaton and Korach (2016) agree when investigating fraud, it is best to research theories across disciplines to better understand the motivations or pressures behind the fraudulent activity ensuring better prevention. However, researchers found rationalization to be the least evolved aspect of the fraud triangle, citing its lack of measurability as the culprit (Abdullahi & Mansor, 2015). In response to calls for future research, researchers and regulators have identified fraud risk factors associated with the

rationalizations of fraud (AICPA, 2019; Roden et al., 2016; Schnatterly et al., 2018; Shaio et al., 2017).

CEO misconduct, financial statement fraud, and excessive risk-taking can all be perpetuated when a firm offers its executives stock option incentives (Amoah et al., 2017; Liu et al., 2016; Yermack, 1997). Lie (2005) found that predicted returns are abnormally lower than before the awards, with abnormally high returns afterward. The author suggested "unless executives possess an extraordinary ability to forecast the future market-wide movements that drive these predicted returns, the results suggest that at least some of the awards are timed retroactively" (Lie, 2005, p. 802). Lie (2005) urged researchers to examine this phenomenon in future studies. The research study results led to hundreds of investigations from the FBI, SEC, and U.S. Department of Justice. In addition, new regulations went into effect to address backdating issues.

Answering this call for additional research, Dorminey et al. (2012) suggested options backdating fraud had the features of an epidemic, given its pervasiveness. This is consistent with the findings of Biggerstaff et al. (2015). These researchers explained that CEOs who have profited from backdating of stock option awards in the past would likely partake in this manipulation and misconduct again (Biggerstaff et al., 2015). Biggerstaff et al. (2015) suggested future research focuses on if some firms are at higher risk for hiring unethical CEOs and how to mitigate that risk. Empirical evidence has recently illustrated that ongoing manipulation around scheduled CEO stock option grants still exists, despite regulatory changes (Daines, et al., 2018).

Although regulatory updates, such as Sarbanes-Oxley and FASB 123(R), have attempted to safeguard against options backdating fraud, offering incentive-based compensation still presents its complications to firms (Bartov et al., 2016). Directors may overlook their CEOs

taking excessive risks if short-term profit growth is attractive to investors (Persons, 2012). Executives experience the most benefit from compensation incentives such as stock options, resulting from increased short-term profit and growth (He et al., 2017). Researchers have found that these incentives may provide CEOs with the motivation needed to inflate earnings, thus manipulating accounting records and engaging in misconduct (He et al., 2017). The AICPA (2019) corroborates these findings, naming stock options as a fraud risk factor for the pressures element of the fraud triangle model. Researchers have specifically called for future studies to focus on why CEOs commit fraud (Schnatterly et al., 2018) and the rationalizations involved (Abdullahi & Mansor, 2015; Free, 2015; Hogan et al., 2008). This study addresses these calls for future research by examining the fraud risk factors present when executives commit fraud.

Critique of Previous Research Methods

A variety of research methods have been found in previous accounting literature addressing fraud risk factors and executive fraud. Different designs for these research studies, known as quantitative and qualitative, are at the disposal of the researcher. Qualitative research relies on the ontological assumption that multiple realities exist, dependent on the subjectivity of the participant. Conversely, quantitative designs aim to build upon the knowledge of other studies rather than construct it. Choosing a methodological approach should not be dictated by the preference of the researcher but instead, the appropriateness to the topic studied.

Qualitative Fraud Research

A qualitative research method works around the natural setting of a phenomenon, based on the observations of the researcher. Most common types of qualitative research studies found in fraud literature include case studies and interviews. Recently, qualitative methodologies, including case studies (Marshall & Cali, 2015), literature reviews (Catuogno et al., 2016), and

interviews (Cressey, 1950) are present in fraud literature. Fraud triangle theory is the premiere theory in qualitative fraud research. Seminal (Cressey, 1950,1952; Dorminey et al., 2012) and recent (Sorunke, 2016) fraud research takes a qualitative approach when answering research questions that focus on why fraud occurs. Likewise, qualitative research framed by fraud triangle theory is also found in accounting research when examining the fraud risk factors present when fraud occurs (Shaio et al., 2017) and executive wrongdoing (Schnatterly et al., 2018).

Previous researchers have called for further qualitative empirical research for professional accounting and auditing practices, considering elements of social theory research design (Georgios & Jack, 2018; Parker & Northcott, 2016; Power & Gendron, 2015). Like other research methods, a qualitative approach incites ethical concerns. As a mitigation strategy, it is imperative the researcher proactively considers and discloses any bias, ethical concerns, limitations, and approaches to collecting and analyzing data. This can also be said for non-experimental approaches in fraud research.

Regression Models

A quantitative approach reflects postpositivist philosophical assumptions, testing a theory through an experimental study then interpreting the data into a conclusion. If a researcher chooses a qualitative research method, where a quantitative method would have been more appropriate, the study may lack in measurable and precise analysis of the topic being studied. One can conclude this can further lead to compromising the confirmability of the data, hindering the researcher's ability to demonstrate the data presented is not based on their own viewpoints. A non-experimental quantitative study uses numbers to explain or predict phenomena.

Fraud-related studies under this approach include correlational research and survey research. Quantitative researchers use multivariate regression (Irani & Gerayeli, 2017), logistical

regression (Lie, 2005; Roden et al., 2016), and linear regression (Quigley et al., 2019) when addressing fraud research topics. Recent fraud-related quantitative studies using fraud triangle theory as a framework primarily used regression analysis to analyze multiple variables involving opportunity, pressures, and rationalization. These researchers examined fraud risk factors (Roden et al., 2016), particularly the risk factor of stock options (Gupta et al., 2018). Fraud researchers recently utilizing regression analysis to examine executive compensation include BenYoussef and Khan (2018), Bratten and Xue (2016), Irani and Gerayeli (2017), and Li and Kuo (2017). Other researchers recently focused on excessive risk-taking by executives (Zolotoy et al., 2019), and the role of auditors in preventing fraud (Mohliver, 2019).

A strength of quantitative research includes having the ability to systematically take measurements and comparisons and present them in a more precise fashion (Punch, 2014). However, a weakness of this methodology may include the limitation of not always considering the participants' perspectives of the topic studied. For example, when a researcher performs a study involving financial fraud, they may want to know the rationalizations or motivations of the person who committed the crime. This "why" can be more thoroughly explained through a qualitative lens, exploring the perspective of the participant through an interview.

Selected Method

In recent accounting literature, it is clear that a qualitative approach is more popular when aiming to answer why fraud occurs. However, to answer questions regarding when and under what conditions fraud exists, a quantitative approach would better suit the research. Quantitative researchers use multivariate regression (Irani & Gerayeli, 2017), logistical regression (Lie, 2005; Roden et al., 2016), and linear regression (Quigley et al., 2019) when addressing fraud research topics such as the presence of fraud triangle elements and their respective fraud risk factors.

Conversely, a case study would be more beneficial for research that involves understanding the perceptions of fraud and why it happens. Qualitative methodologies, including case studies (Marshall & Cali, 2015), literature reviews (Catuogno et al., 2016), and interviews (Cressey, 1950) are present in recent fraud literature. A quantitative methodology is chosen as the best-fit methodological approach for examining the topic of fraud risk factors after the effective date of Auditing Standard AU-C 240.

The research design chosen for this study is a non-experimental correlational study extending Roden et al. (2016) research. Like Beasley (1996) and Roden et al. (2016), this quantitative study of fraud risk factors will use a random sample of 80 fraud firms, matched with a sample of 80 non-fraud control firms. The fraud sample will consist of fraud violations from 2014 to 2018, whereas the control sample will match the size and industry of the fraud firms selected (Beasley, 1996; Roden et al., 2016). This quantitative non-experimental correlational research aims to apply fraud triangle theory to examine fraud risk factors and the occurrence of fraud after the implementation of AU-C 240.

Fraud violations between 2014 and 2018 will be used to extend the Roden et al. (2016) study to reexamine these relationships after the 2012 effective date of AU-C 240. The study will include variables classified as opportunity (average number of years on board, CEOs also the chair of the board, men on the board), pressure (stock options are paid and one year change in assets), rationalization (insider members on the board and auditor change), and control variables (total assets, debt ratio, and return on assets). These variables will examine if the relationship between fraud risk factors identified in pre AU-C 240 fraud studies has changed after implementing auditing standard AU-C 240, according to Accounting and Auditing Enforcement Release (AAER) violations.

Logistic Regression

Logistic regressions using the fraud triangle elements of opportunity, pressures, and rationalizations will examine the fraudulent behavior of executives. Logistic regression is a common statistical design found within the accounting literature, which addresses fraud research (Lie, 2005; Persons, 2012). Field (2018) explain that a researcher may use a logistic regression model to forecast categorical outcomes. The quantitative design of logistic regression chosen for this study is better suited for the stated purpose of this research. The chosen method corresponds with the nature of the relationship among examining fraud risk factors associated with executives committing fraud.

This study aims to extend the research of Roden et al. (2016), thus utilizing the same statistical analytical model. A logistic regression model allows for predicting categorical outcomes from both categorical and continuous predictors (Chao-Ying et al., 2002; Field, 2018). Hence, the model extends the analysis to include several explanatory variables of different types. Logistic regression is the best-fit methodological approach for this study examining fraud risk factors and the occurrence of fraud.

Summary

According to theory and research findings, this chapter summarizes what is known about fraud risk factors to date. The Capella University Summon database, and Google Scholar, were the primary databases used to search for literature about this research topic. The theoretical orientation for this study is presented in this chapter, introducing fraud triangle theory as the mainstream theory for fraud research. An exhaustive literature review was provided to discuss the evolution of fraud triangle theory, fraud risk factors, and the occurrence of executive fraud. These research findings are synthesized, and a critique of previous research methods is provided.

Fraud literature has mainly paid attention to the fraud triangle components and how they can prevent fraud from occurring. However, a review of the literature shows these studies typically focus on only one element of the fraud triangle for specific fraud schemes. Some researchers argue these studies do not account for the changes taking place within the accounting profession (Vousinas, 2019). Scholars express the need for future research addressing why executives commit fraudulent acts (Schnatterly et al., 2018) and their rationalizations to do so (Free, 2015; Hogan et al., 2008). This study answers these calls for future research by examining fraud risk factors when executives commit fraud. Further, all three elements of the fraud triangle are included rather than only focusing on one component. The next chapter discusses the methodology behind examining the fraud risk factors present when executives commit fraud.

CHAPTER 3. METHODOLOGY

Researchers found that executives caused the greatest financial losses when committing fraudulent acts within their companies (ACFE, 2020). Auditing standard AU-C 240 explains fraud risk factors auditors can use to assess the likelihood of fraud (AICPA, 2019). However, it is unclear if certain fraud risk factors are statistically significant since implementing auditing standard AU-C 240 in 2012. This study addressed this problem to ascertain if these risk factors are relevant to fraud schemes in recent years. Chapter 3 reintroduces the purpose of this study and discusses the research questions and hypotheses. Additionally, the chapter discusses the research design, target population and sample, procedures for firm selection and protection, and ethical considerations of the study.

Purpose of the Study

This quantitative research study aimed to apply fraud triangle theory to examine fraud risk factors after implementing AU-C 240. I used fraud violations occurring between 2014 and 2018 to extend the Roden et al. (2016) research, reexamining these relationships after the 2012 effective date of AU-C 240. The present study included variables representing each component of the fraud triangle to examine if the relationship between fraud risk factors and the occurrence of fraud changed after implementing AU-C 240.

Researchers recently found that executives fraud caused the greatest financial losses (ACFE, 2020). Fraud schemes that executives primarily took part in were financial statement and disclosure fraud (ACFE, 2020; Roden et al., 2016), stock options fraud (ACFE, 2020; Lie, 2005), and corruption which included bribery schemes to government officials (ACFE, 2020). The implementation of AU-C 240 aimed to provide fraud detection guidance to auditors performing financial statement audits (AICPA, 2019). This standard provided specific examples

of fraud risk factors that auditors are now responsible for examining to assess the likelihood of fraud occurrence.

In 2016, Roden et al. (2016) studied fraud risk factors using auditing standard AU-C 240 as the framework by which they examined the occurrence of fraud. However, the researchers used AAER violations occurring before AU-C 240. Therefore, it is unclear if the factors they presented in their study are still significant (Roden et al., 2016). Thus, fraud violations from 2014 to 2018 are used to examine current fraud risk factors present when fraud occurs. This study aims to advance fraud triangle theory and contribute to the scientific research of fraud risk factors associated with executives committing fraud.

Research Questions and Hypotheses

Fraud triangle theory operates under the assumption that when fraud occurs, certain opportunities, pressures, and rationalizations exist (Cressey, 1952). Adopting fraud triangle framework, AU-C 240 identified specific risk factors used to assess these three elements (AICPA, 2019). The fraud risk factors explained in this auditing standard are used in seminal and recent accounting research as variables measuring the three aspects of the fraud triangle. For instance, Roden et al. (2016) used proxy variables representing opportunity, pressure, and rationalization to assess which fraud risk factors presented in AU-C 240 could predict the occurrence of fraud. However, the relationships between these risk factors and current executive fraud schemes are under-researched. Roden et al. (2016) examined the fraud risk factors present in fraud violations between 2003 and 2010 before implementing auditing standard AU-C 240. It is unclear if these fraud risk factors have changed or are still significant since implementing the standard in 2012. Extending the research of Roden et al. (2016), recent AAER fraud violations are used to determine to what extent there is a statistically significant relationship between fraud

risk factors and fraud post-implementation auditing standard AU-C 240. The research questions guiding this study are

1. To what extent is there a statistically significant relationship between the fraud risk factor of opportunity and the occurrence of fraud, since the effective date of AU-C 240?
2. To what extent is there a statistically significant relationship between the fraud risk factor of pressure and the occurrence of fraud, since the effective date of AU-C 240?
3. To what extent is there a statistically significant relationship between the fraud risk factor of rationalization and the occurrence of fraud, since the effective date of AU-C 240?

Equation

$$Fraud\ (0, 1) = a + b_i[control\ variables] + c_i[opportunity\ variables] + d_i[pressure\ variables] + f_i[rationalization\ variables] + e_i \quad (1)$$

Hypotheses

Research Question 1

Research question 1 asked, "To what extent is there a statistically significant relationship between fraud risk factors for opportunity and the occurrence of fraud, since the effective date of AU-C 240?"

$H_{0\,(1)}$ There is no statistically significant relationship between the fraud risk factor of board tenure and the occurrence of fraud, since the effective date of AU-C 240.

$H_{a\,(1)}$ There is a statistically significant relationship between the fraud risk factor of board tenure and the occurrence of fraud, since the effective date of AU-C 240.

$H_{0\,(2)}$ There is no statistically significant relationship between the fraud risk factor of gender of board members and the occurrence of fraud, since the effective date of AU-C 240.

$H_{a\,(2)}$ There is a statistically significant relationship between the fraud risk factor of gender of board members and the occurrence of fraud, since the effective date of AU-C 240.

$H_{0\,(3)}$ There is no statistically significant relationship between the fraud risk factor of CEO duality and the occurrence of fraud since the effective date of AU-C 240.

$H_{a\,(3)}$ There is a statistically significant relationship between the fraud risk factor of CEO duality and the occurrence of fraud since the effective date of AU-C 240.

Research Question 2

Research question 2 asked, "To what extent is there a statistically significant relationship between fraud risk factors for pressure and the occurrence of fraud, since the effective date of AU-C 240?"

$H_{0\,(4)}$ There is no statistically significant relationship between the fraud risk factor of stock options paid and the occurrence of fraud, since the effective date of AU-C 240.

$H_{a\,(4)}$ There is a statistically significant relationship between the fraud risk factor of stock options paid and the occurrence of fraud, since the effective date of AU-C 240.

$H_{0\,(5)}$ There is no statistically significant relationship between the fraud risk factor of change in assets and the occurrence of fraud, since the effective date of AU-C 240.

$H_{a\,(5)}$ There is a statistically significant relationship between the fraud risk factor of change in assets and the occurrence of fraud, since the effective date of AU-C 240.

Research Question 3

Research question 3 asked, "To what extent is there a statistically significant relationship between fraud risk factors for rationalization and the occurrence of fraud, since the effective date of AU-C 240?"

$H_{0\,(6)}$ There is no statistically significant relationship between the fraud risk factor of insider members and the occurrence of fraud, since the effective date of AU-C 240.

$H_{a\,(6)}$ There is a statistically significant relationship between the fraud risk factor of insider members and the occurrence of fraud, since the effective date of AU-C 240.

$H_{0\,(7)}$ There is no statistically significant relationship between the fraud risk factor of auditor change and the occurrence of fraud, since the effective date of AU-C 240.

$H_{a\,(7)}$ There is a statistically significant relationship between the fraud risk factor of auditor change and the occurrence of fraud, since the effective date of AU-C 240.

Research Design

The research design chosen for this study was a non-experimental correlational study extending the research of Roden et al. (2016). Like Beasley (1996) and Roden et al. (2016), this quantitative study of fraud risk factors used a random sample of fraud firms, matched with a control sample of non-fraud firms. The fraud sample consisted of firms with AAER violations from 2014 to 2018, whereas the control sample matched the size and industry of the fraud firms selected (Beasley, 1996; Roden et al., 2016). This quantitative research aimed to apply fraud triangle theory to examine fraud risk factors in relation to the occurrence of fraud, post AU-C 240.

I extended the study of Roden et al. (2016) to reexamine these relationships after the 2012 effective date of AU-C 240. The study included independent variables classified as opportunity variables (average number of years on board, CEO duality, men on the board),

pressure variables (stock options and one year change in assets), rationalization variables (insider members on the board and auditor change), and control variables (total assets, debt ratio, and return on assets). The dichotomous dependent variable in the study was fraud occurrence. Consistent with the research design of Roden et al. (2016), logistic regression best suited the present study as multiple variables of different types measured the three fraud triangle elements relating to a dichotomous dependent variable.

Logistic regression is a common statistical design found within accounting literature addressing fraud occurrence (Lie, 2005; Persons, 2011). Field (2018) explains that a researcher may use a logistic regression model to forecast categorical outcomes. This chosen method corresponds with the nature of the relationship among examining fraud risk factors associated with executives committing fraud. This study aimed to extend the research of Roden et al. (2016), thus utilizing the same statistical analytical model. A logistic regression model allows for predicting categorical outcomes from both categorical and continuous predictors (Chao-Ying et al., 2002; Field, 2018). Hence, the model extends the analysis to include several explanatory variables of different types. Logistic regression is the best-fit methodological approach most appropriate for the present study.

Target Population and Sample

I utilized publicly available archival data to examine the fraud risk factors present when fraud occurs. Therefore, human participants were not included in this study. This section provides details regarding the population, sample, and power analysis for the study.

Population

The larger target population includes publicly traded U.S. fraud firms from various industries and sizes. For this study, fraud firms are publicly traded U.S. companies listed as

having a fraud violation on the SEC AAER database, which is publicly available. These firms were randomly identified using the Accounting and Auditing Enforcement Release (AAER) violations presented by the SEC. These violations took place during the time frame of 2014 to 2018. This date range indicates these violations occurred after the implementation of AU-C 240 in 2012. I used the AAER data to construct a random sample of fraud firms and a matched control sample of non-fraud firms.

Sample

The fraud sample consisted of randomly chosen fraud firms obtained from the AAER violations public database provided by the SEC. The control sample matched the fraud firm's size and industry, using conditions that build from the methodology of Beasley (1996) and Roden et al. (2016). There was no recruiting of live participants for this study. Instead, the sample consisted of publicly held U.S. companies. Data generated was sourced from publicly available data provided by the Securities and Exchange Commission (SEC). The sources of this secondary data were the Accounting and Auditing Enforcement Releases (AAER) dataset and the SEC EDGAR database. Permission was not needed to access this data since it is made available to the public. Prior researchers studying fraud also utilized these public databases to obtain data for their studies (Choi et al., 2019; Demaline, 2019; Rijsenbilt & Commandeur, 2013). To ensure the privacy of the firms, the names of companies used in this study will not be published.

Power Analysis

The sample size was calculated with G*Power 3.1.9.4 statistical software for binomial logistic regressions of an a priori two-tailed test. The confidence level input remained at the default of 95% and the margin of error of 5%. The G*Power software generated a required

sample size of 80. The target sample size for the study includes 80 fraud firms plus 80 matched non-fraud firms in the control sample, bringing the total amount of firms included in the study to 160.

Procedures

The study did not involve human participants. Instead, archival data that was publicly available was used to select firms used in the research study. The fraud violation and financial data obtained comes from the Securities and Exchange Commission databases, which are assumed to be accurate and reliable. This section describes the procedures used to carry out this research. The information includes firm selection, protection of firms selected, data collection, and data analysis procedures.

Firm Selection

Data were accessed using publicly available datasets from Accounting and Auditing Enforcement Release (AAER) Violations and the SEC EDGAR Database. While the present study posed a minimal risk, I still considered ethical issues. Ethical considerations regarding sample and data sources were assessed, including the risk of imperfect matching or improper sample size.

Fraud-Firms Selected

The AAER database was accessed to construct the sample of fraud firms. Once accessed, I chose the years of violations from 2014-2018, which were released after the implementation of AU-C 240. Each year was a separate list of fraud firms that received an AAER violation for that year. These lists were saved in an Excel spreadsheet for randomization and preparation of data. The list of AAER violators saved in Excel displayed the following columns: release number (link

to release document on AAER database), date of release, action, and other information (showing links to other release numbers, if any).

Once the list was randomized, each fraud firm violation release was accessed starting at the top by clicking on the release number in the first column. Within the violation release document, I verified the firm was a U.S. publicly held company. When necessary, notations were made if the firm could not be included in the sample on the Excel spreadsheet. If the firm was a U.S. company, I accessed the EDGAR database to ensure all documents required for the study were available. These documents included proxy statements for the year prior to the fraud, and form 10K for both the year of the fraud and the prior year. If required data was not available, it was noted that the firm could not be included in the sample on the Excel spreadsheet. These steps continued until the sample reached eighty fraud firms. The data was saved for each fraud firm on a secure password-protected USB drive that only they have access to.

Non-Fraud Firms Selected

Once a sample of 80 fraud firms was constructed, a matched control sample of non-fraud firms was selected. For the purpose of this study, non-fraud firms are not listed on the AAER database of violations from 2014 to 2018. To mitigate against imperfect matching a very detailed process was followed to determine best matches for the control sample. I used the criteria of constructing a matched sample of non-fraud firms presented by Roden et al. (2016) and Beasley (1996) as a base for the method used in this study. The following conditions were used to construct the control sample of firms without AAER violations:

- Condition A. The company does not have an AAER violation from 2014 through 2018.

- Condition B. The company's financial data is available in the SEC EDGAR database for the year of and before the first year of the violation reported in AAER for the fraud firm.
- Condition C. The company shares the same classification of four-digit SIC code as the fraud firm.
- Condition D. Market value of common equity is the closest to the given fraud firm, among the non-fraud firms that meet the first three conditions.
- Condition E. Size of the matched control firm is within 30% of the size of the fraud firm.
- Condition F. If no matching firm is found in condition D, modify condition C using a two-digit SIC code. Then, repeat conditions A through D with modified condition C, which will broaden the industry classification expanding the pool.
- Condition G. If a matching firm is not found, modify condition D by replacing market value of equity with net assets, then repeat conditions A through E. This is necessary if data is missing the information necessary for calculating market value of equity.

Protection of Firms

The *Belmont Report* explains the protections necessary for human participants in a research study (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979). As explained earlier, human participants were not used for this study. Participants of this study included U.S. publicly traded companies. Thus, no human participants could be harmed in this research. While all information regarding the firms selected was publicly available, the identity of the firms was kept confidential. No identifiable

information was revealed in the study. According to the required guidelines, the researcher will destroy the USB drives used to save firm data.

Data Collection

The data collection procedures for the study involved obtaining data from the Securities and Exchange Commission (SEC) AAER and EDGAR databases. The violation release document for fraud firms accessed from the SEC AAER database was downloaded and saved on a secure USB drive that only the researcher can access. Next, the SEC EDGAR database provided proxy statements (DEF 14A) and financial statements (form 10K) for all fraud and non-fraud firms. Documents were then downloaded and saved on a USB drive that only the researcher can access.

Once the required archival data was downloaded and properly saved, I collected the necessary data. The data collected included information regarding the average length of tenure on the board, percentage of male board members, CEO duality, if stock options were paid to executives, the one-year change in assets, percentage of insider members on the board, and if there was an auditor change in the two years prior to the fraud. Next, I used an Excel spreadsheet to compile and prepare the information for analysis in the SPSS software.

Opportunity Variables

Data collected for opportunity variables included board tenure, gender of the board, and CEO duality. The data source for board tenure was the SEC EDGAR database, where proxy form DEF 14A was retrieved for the firm. A column in Excel titled "Board Tenure" showed the average amount of time that the board members served at the time of the proxy statement. Next, the percentage of males serving on the board was computed using data gathered from form DEF 14A. A column in Excel titled "Gender" showed the percentage of men to women on the board

of directors for each firm. Finally, I collected data regarding whether the CEO plays dual roles at their firm by acting as chairperson on the board of directors. A column in Excel titled 'CEO Duality' specified yes or no. Later in SPSS, a dummy variable was be set to one for firms whose CEO was acting as chair and set to zero when they did not.

Pressure Variables

Data collected for pressure variables included stock options paid to executives and the one-year change in assets. I accessed the SEC EDGAR database to obtain form DEF 14A, by examining the executive compensation plan of the firm. A column in Excel titled "Stock Options Paid" specified yes or no. In SPSS, a dummy variable was set to one for when executives were compensated with stock options and at zero for when stock options were not paid. Next, form 10K, via the SEC EDGAR database, was used to calculate the one-year change in assets. A column in Excel titled "One-year Change in Assets" showed the percentage of change in the year before the fraud.

Rationalization Variables

Data collected for rationalization variables include the percentage of independent board members and a change in auditors. Accessing the SEC EDGAR database, form DEF 14A was used to identify the insider members serving on the board of directors. A column in Excel titled "Insider Members" showed the percentage of independent board members indicated on proxy statements. Next, I used form 10K from the SEC EDGAR database to determine if there was an auditor change in the last two years. A column in Excel titled "Auditor Change" specified yes or no. In SPSS, a dummy variable was set to one if there was an auditor change in the two years prior to fraud and was set to zero if no change was made.

Control Variables

Data collected for control variables included the total assets of the firm, debt ratio, and the return on assets. I calculated total assets by referencing the balance sheet found on form 10K, accessed via the SEC EDGAR database. According to the financial statements, a column in Excel titled "Total Assets" showed the amount for total assets, controlling for size. Next, the debt ratio was calculated using the SEC EDGAR database to access form 10K. A column in Excel titled "Debt Ratio" displayed the amounts for total liabilities/total assets according to the financial statements, calculating the debt ratio, controlling for leverage (Roden et al., 2016). Lastly, return on assets was computed from form 10K data, as provided on the SEC EDGAR database. A column in Excel titled "Return on Assets" displayed the amounts for EBIT/ total assets according to the financial statements, calculating the return on assets, controlling for profitability. Upon compiling and calculating the above information, I entered the data into the IBM SPSS, version 28, software for analysis.

Data Analysis

As previously described, data were prepared for analysis using Excel 10 spreadsheets to compile, sort, and compute information obtained from the AAER and EDGAR databases. Once prepared, the data pulled from AAER violation releases, financial statements, and proxy statements were analyzed. SPSS version 28 software was used for the analysis to evaluate data obtained from the sample and control firms.

Analysis in SPSS

Descriptive Statistics. There were seven independent variables, three control variables, and one dependent variable in this study. Tenure, gender, one-year change in assets, and insider members were all continuous independent variables. Likewise, all three control variables were also continuous (debt ratio, total assets, and return on assets). However, CEO duality, stock

options, and auditor change were all categorical independent variables with "no" coded as 0, and "yes" coded as 1. The dependent variable, fraud occurrence, was dichotomous with "no" coded as 0, and "yes" coded as 1. I computed the frequencies and percentages for the categorical and continuous variables. Descriptive statistics were analyzed via the SPSS/Analyze/Descriptive Statistics function. Table 1 summarizes the names and types of variables used in this study.

Table 1

Summary of Variables

Variables	IV/CV/DV	Data Type
The proxy variables to measure Opportunity		
Board Tenure	IV	Ratio
Gender	IV	Ratio
CEO duality	IV	Nominal
The proxy variables to measure Pressure		
Stock Options Paid	IV	Nominal
One-year change in Assets	IV	Ratio
The proxy variables to measure Rationalization		
Insider Members	IV	Ratio
Auditor Change	IV	Nominal
Total Assets	CV	Ratio
Debt Ratio	CV	Ratio
Return on Assets	CV	Ratio
Fraud Occurrence	DV	Nominal

Hypothesis Testing. As previously explained, a logistic regression model is utilized for this study. According to Field (2018), if the statistical information we use to make inferences is biased, those inferences will be as well. Like any linear model, a logistic regression model is open to several sources of bias. Additionally, issues regarding the assumptions of linearity and independence must also be considered.

Testing of Assumptions. Violation of assumptions is a form of bias for logistic regression models. A violation of an assumption refers to when assumptions made about the model being used turn out to be untrue. Hence, the test statistics and p-value may become inaccurate, leading to incorrect conclusions (Field, 2018). Poor quantitative research involves the distribution of unreliable information by which individuals will base decisions. Distributing flawed research findings can have a ripple effect on the research community and society as a whole.

There were eight assumptions for this study. The first five assumptions were related to the study design. These assumptions included having a dichotomous dependent variable, one or more independent variables that are either continuous or nominal, independence of observations, categories of dichotomous variables that are mutually exclusive, and meeting the minimum cases per independent variable (Laerd Statistics, 2017). The next three assumptions related to the data were the linearity of logit, multicollinearity, and independence of errors (Field, 2018). These three assumptions were tested in SPSS.

According to Field (2018), the linearity of logit assumes a linear relationship exists among continuous predictors and the logit of the outcome variable. Interactions of the continuous variables and their logs were analyzed using the SPSS software generating additional predictors such as LN_Tot_Assets, LN_Debt_Rat, LN_Ret_Assets, LN_Gender, LN_Tenure, and LN_Ins_Mem. Using these predictors, a logistic regression was performed using the Analyze/Correlate/Binary Logistic function. According to Field (2018), this assumption can be met if the level of significance for the interaction between a variable and its log exceeds .05.

Multicollinearity was also tested in this analysis, and no issues were found for this assumption. When several predictors in a regression model are highly correlated,

multicollinearity is suspected (Field, 2018). First, Pearson correlation coefficients were reviewed using the Analyze/Correlate/Bivariate function in SPSS. Next, the coefficients were confirmed using other collinearity diagnostics, such as the tolerance statistic and variance inflation factor (VIF). To obtain these statistics, I used the Analyze/Regression/Linear function in SPSS. According to Field (2018), a VIF greater than 10 or tolerance statistic of less than .1 would indicate serious issues.

The independence assumption means errors in a model are unrelated to one another. The independence of errors assumption, if violated, can cause overdispersion, making standard errors too small (Field, 2018). Field (2018) explained how violating this assumption would make confidence intervals and significance tests invalid. This assumption was tested by running pairwise crosstabulations using the Analyze/Descriptive Statistics/Crosstabs function in SPSS. Independence between the variables was established if the chi-square did not show significance at the .05 level.

Outliers are another form of bias in non-experimental quantitative studies. The effect of an outlier is important because of its involvement in the computation for standard deviation (Field, 2018). Thus, using this calculation to estimate the standard error has an influence on confidence intervals as well as test statistics. Similar to previous research, I used case diagnostics to test for outliers (Field, 2018; Laerd Statistics, 2017). These diagnostics measure standardized, studentized, or studentized deleted residuals to determine which cases are significant outliers.

Outliers were examined by choosing Options/Casewise Listing of Residuals/Outliers Outside of 2 std. dev. from the logistic regression dialogue box. The Casewise plot in SPSS shows cases where standardized residuals are greater than ±2 standard deviations (Laerd Statistics, 2017). Cases with greater values must be examined to determine why they are outliers,

and if necessary, remove them from the analysis. SPSS does not produce a Casewise plot in the output file if no outliers are detected or after they are successfully removed.

Fitting the Model

The next step in data analysis was to begin fitting the model. A parsimonious model ensures that the variables contribute to explaining variances for the dependent variable (Field, 2018). To ensure the variables could be included in the final model, I introduced predictors to the model following the same procedures of Roden et al. (2016). First, only the control variables were introduced in model one. Next, the control variables and opportunity variables were introduced for model two. Model three introduced pressure variables with the control variables; then, model four introduced the control and rationalization variables. Finally, model five consisted of the control variables along with all opportunity, pressure, and rationalization variables.

The omnibus tests of model coefficients for the five models were reviewed to assess the contribution of each predictor to the model performance, thus ensuring only significant predictors would remain for further analysis. The contribution of the predictor was calculated by subtracting the chi-square of the previous model. If the p-value was less than a .05 significance level, then the contribution was deemed significant (Field, 2018). After determining which variables made a significant contribution to the model, a final model was chosen and then run using the Analyze/Regression/Binary function in SPSS.

Evaluating Statistics

Finally, the last step in the hypothesis testing involved analyzing results from the logistic regression outputs and evaluating statistical significance. The goodness of fit was evaluated by analyzing the chi-square statistic and p values in the omnibus tests of model coefficients. For

example, the difference in the deviance of model one from that of model 0 is the chi-square -2 log-likelihood statistic or -2 *LL*. The log-likelihood statistic measures the observations that a fitted model cannot explain; thus, the greater the log-likelihood, the more observations remain unexplained (Field, 2018). After introducing the predictors to a model, the log-likelihood statistic should fall if the predictor contributes significantly to explaining the observations. Consistent with the research of Roden et al. (2016), pseudo R^2 statistics were reviewed to evaluate the goodness of fit. Chi-squared significance, Cox & Snell R^2, and Nagelkerke R^2 were included in the analysis. Cox & Snell R^2 is limited because it cannot reach a maximum of one. Therefore, Nagelkerke R^2 is used to correct this issue since it can reach a maximum of 1, indicating a perfect fit. Regression coefficients, standard errors, Wald statistics, degrees of freedom, significance, and confidence intervals were also reviewed. The odds of fraud occurring were analyzed and converted into probabilities and confirmed by performing cross-tabulation using the Analyze/Descriptive Statistics/Crosstabs function in SPSS.

Archival Research

Archival research involves collecting and analyzing accounting numbers and content from secondary data sources such as financial statements. Typically, archival research has stronger external validity due to empirical analysis (Smith, 2015). However, this research approach is very time-consuming and may be susceptible to changes in financial reporting (Smith, 2015). The data collected and analyzed for this research study includes financial statements (form 10K) and proxy statements (form DEF 14A). I obtained the fraud violation information and financial data from the Securities and Exchange Commission databases. It was assumed these sources were accurate and reliable.

Validity and Reliability

Validity

Validity in quantitative research refers to how specific measurements can induce valuable, pertinent inferences. Internal validity in a quantitative context refers to the logic and consistency of a research study (Punch, 2014). Internal validity measures how relationships between the variables studied can be interpreted correctly (Punch, 2014, p. 322). Conversely, external validity in a quantitative context refers to the generalizability of the study. Generalizability can include people, population, and ecological validity (Punch, 2014).

The threat to external validity can involve the ability of the researcher to apply their findings in a broader context, making their conclusions useful for a variety of populations and situations (Center for Innovation in Research and Teaching [CIRT], 2018). Latham (2020) explains that researchers must be proactive in identifying potential validity and reliability issues and plan mitigation strategies to address those issues (Latham, 2020). The researcher can mitigate threats to internal validity by considering negative evidence and cross-validation of research findings with other pieces of the data. According to Punch (2014), more complex strategies were established to counter the many threats to internal validity in quantitative research. Eliminating rival hypotheses would be a way to mitigate such threats (Punch, 2014).

The potential risks of poor quantitative research include distributing unreliable information by which individuals will base decisions. Unreliable research would significantly impact not only business but other fields (Punch, 2014). Disseminating poor research findings can have a ripple effect on the research community and society as a whole. Threats to the reliability of a quantitative study must also be considered.

Reliability

Some factors that weaken the strength of a quantitative study may include validity, reliability and repeatability, and generalizability. Reliability is consistently replicating a study, illustrating the ability to rely on the researcher's conclusions (Punch, 2014). Generalizability means that researchers can apply research findings in a broader context, making the findings useful across various populations and situations (CIRT, 2018). Changes can be made pertaining to each factor that would make a stronger quantitative study regarding fraud risk factors.

According to Field (2018), a common measurement for the reliability of a scale would be Cronbach's Alpha. This measurement indicates how consistently a measure should reflect the construct (Field, 2018). Values substantially lower than the suggested .7 to .8 indicate an unreliable scale. However, the literature also noted that values as low as 0.5 would suffice (Field, 2018). Although there are general guidelines to assess if the reliability and validity statistics are acceptable, a researcher should consider what the values mean within the context of the research study (Field, 2018).

Reliability can make the study stronger by exhibiting the ability to repeat a study and get the same outcomes. The reliability of a study can be strengthened by testing and retesting where the measurements are taken at least twice at two different intervals (CIRT, 2018). Reliability can make the study stronger by exhibiting the ability to repeat a study and get the same outcomes. Generalizability can strengthen a quantitative study when a researcher conducts additional experiments with groups with different characteristics, in new settings, or at different times to test the results. In the context of the present study examining fraud risk factors, different years were used to test Roden et al. (2016). The researchers used fraud cases from 2003-2010, whereas the study will extend the research to include post-AU-C 240 fraud cases from 2014-2018.

Measurements

Consistent with the framework presented by Roden et al. (2016), the independent variables included proxy variables to measure the opportunity, pressures, and rationalizations found to be present when fraud occurs. The proxy variables include board tenure, gender, and the CEO acting as chair (CEO duality) to measure opportunity. Tenure is measured as the average amount of time served by the board members at the time of the proxy statement (Tosun & Senbet, 2020). Gender is measured as a percentage of men and women on the board (DeBoskey et al., 2019). To measure the CEO also acting as chair, a dummy variable was be set to one for firms whose CEO was acting as chair and set to zero when they did not have a dual role.

Stock options paid and the one-year change in assets measured the pressures of committing fraud. To determine if stock options were being paid, data was accessed using the SEC EDGAR database. A dummy variable was set to one for when executives were compensated with stock options and was set at zero for when stock options were not paid. Researchers indicated that rapid growth may lead to financial pressures for an executive (Roden et al., 2016). The one-year change in assets measured the pressures of committing fraud. This amount was expressed as a percentage of change in the year before the fraud taking place.

Rationalizations were measured using the proxy variables of insider members and auditor change (AICPA, 2019). Insider members were measured by assessing board member independence, as the percentage of independent board members indicated on proxy statements (SEC, 2019). A dummy variable was set to one if there was an auditor change in the two years before the fraud occurred and zero if no change was made during that time.

Control variables measured the size, leverage, and profitability of the matched sample of non-fraud firms (Beasley, 1996). These variables included total assets, debt ratio, and return on assets (Roden et al., 2016). Total assets were determined by accessing financial information for

the firm from the SEC EDGAR database, controlling for size. The debt ratio, controlling for leverage, was measured using the formula of total liabilities divided by total assets. Return on assets was measured by dividing EBIT by total assets, controlling for profitability (Roden et al., 2016).

Ethical Considerations

Every researcher should consider the ethical risks involved in their research study. The present study does not involve human participants. Instead, I used secondary data, which is publicly accessible. Guidelines prescribed within the *Belmont Report* for protecting human participants were adhered to while conducting the study. The participants of this study are publicly traded US firms (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979).

The dissertation research involved in this study was reviewed and approved by the Capella University Institutional Review Board (IRB). Data accessed used publicly available datasets from Accounting and Auditing Enforcement Release (AAER) Violations and the SEC EDGAR Database. While the study posed a minimal risk, ethical issues were still considered. Ethical considerations regarding sample and data sources were assessed, including the risk of imperfect matching or improper sample size.

To mitigate against imperfect matching a very detailed process was followed to determine the best matches, as prescribed by Roden et al. (2016). SPSS statistical software was used to analyze data for the study, and the sample size was calculated using G*Power 3 software. I also considered the quality and credibility of the data sources used. The fraud violation information and financial data were obtained from databases provided by the Securities and Exchange Commission, which is assumed in the study to be accurate and reliable. As explained

previously, USB drives were used to save this data and will later be destroyed according to the required guidelines.

Summary

This chapter reintroduced the purpose of the study and discussed the research questions and hypotheses. Additionally, the research design, target population and sample, procedures for firm selection, and protection of those firms was discussed. I explained the data collection and analysis process, detailing the methods and procedures used to carry out this logistic regression analysis. Ethical considerations of the study were addressed, and potentials for bias were identified, and mitigation procedures were performed. Next, Chapter 4 presents the results for the statistical analysis of this study.

CHAPTER 4. RESULTS

This section provides the results of data collection and analysis using the procedures explained in Chapter 3. This section describes how using binary logistic regression examined if there is a relationship between the fraud risk factors associated with the fraud triangle and the occurrence of fraud post-implementation of AU-C 240. This chapter offers a background, description of the sample, descriptive statistics, hypothesis testing, and summary of the hypothesis testing results.

Background

Despite regulatory changes, executives are still committing fraud (Bartov et al., 2016; Gupta et al., 2018; Pozner et al., 2018; Roden et al., 2016). According to the ACFE (2020), while non-executives committed fraud more frequently, the greater financial loss was suffered when executives committed the crimes. Regulatory bodies continue to address corporate fraud, looking for ways to prevent and detect it as technology advances the sophistication of modern fraud schemes. According to AU-C 240, fraud risk occurs when the executive is in a position of trust and knows the internal control deficiencies that they can exploit (AICPA, 2019). Likewise, researchers attribute the findings of greater financial loss at the hands of executives to these individuals having easier access to override controls and often greater access to corporate assets (ACFE, 2020).

This quantitative non-experimental correlational research study aimed to apply fraud triangle theory to examine fraud risk factors after implementing AU-C 240. Roden et al. (2016) introduced fraud risk factors present in fraud violations between 2003 and 2010 before implementing auditing standard AU-C 240. However, it is not clear if these fraud risk factors changed since implementing this standard in 2012. The present study extends the research of

Roden et al. (2016), examining risk factors present in AAER fraud violations between 2014 and 2018. Consistent with Roden et al. (2016), I analyzed seven independent variables: tenure, gender, CEO duality, stock options, one-year change in assets, insider members, and auditor change. The present study also included three control variables (total assets, debt ratio, and return on assets) and one dependent variable (fraud occurrence).

Description of the Sample

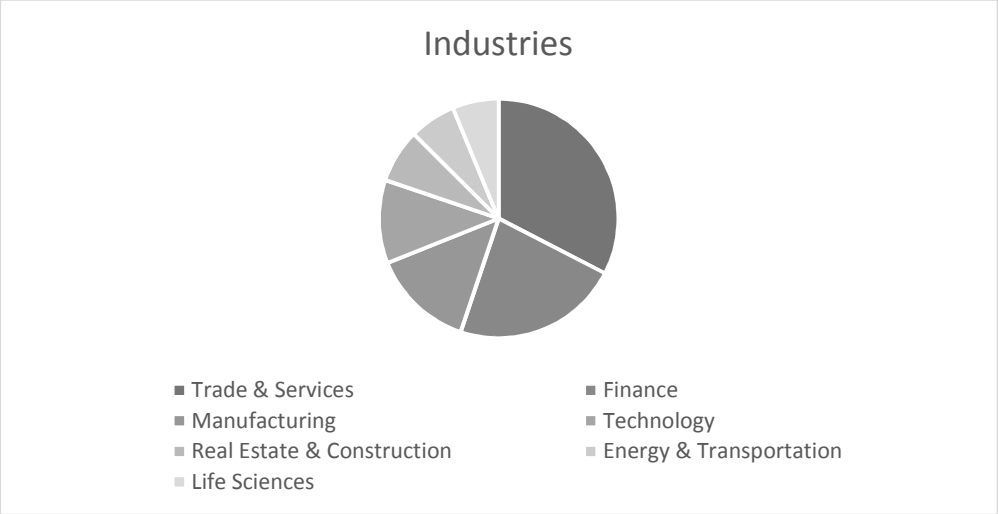
The population of this study included 489 AAER violators listed on the SEC database from 2014 to 2018, of which 349 of these violators were not publicly traded corporations. To be included, (1) the company listed must be a publicly traded U.S. company, (2) have forms 10K and DEF14A available on the SEC Edgar database, and (3) have a matching control firm based on size and industry with financial data available. Privately-owned companies (349), firms outside the U.S. (50), and firms without the necessary financial data (10) were excluded from the study, leaving 80 publicly traded U.S. firms with AAER violations from 2014 to 2018 selected for the study.

Prior fraud risk factor researchers have pointed out the importance of understanding the prevalence of fraud among certain industries (ACFE, 2020; Roden et al., 2016). Having this understanding enables firms to safeguard against these threats and enables anti-fraud practitioners to recognize the fraud risk for that firm. Seven industries were represented in the sample of 80 fraud firms. Respectively, the top three industries included in the fraud firm sample were trade and services (26 firms, 32.5%), finance (18 firms, 22.5%), and manufacturing (11 firms, 13.75%). The remainder of the industries found within the sampled fraud firms included the offices of technology (9 firms, 11.25%), real estate and construction (6 firms, 7.5%), energy

and transportation (5 firms, 6.25%), and life sciences (5 firms, 6.25%). Figure 1 shows the distribution of the sampled fraud firms and their respective industries.

Figure 1

Fraud Firm Industry Distribution



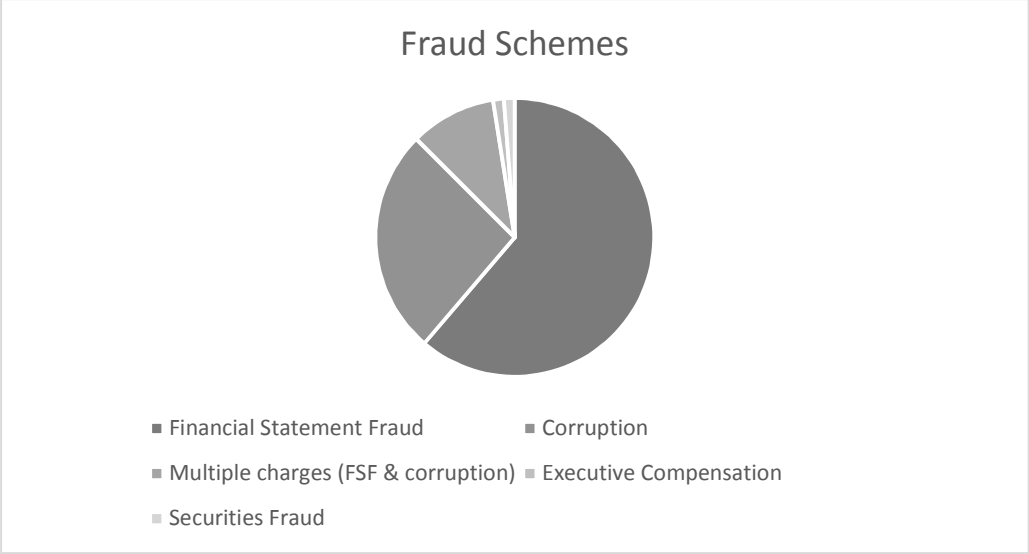
Previous fraud research has pointed out the prevalence of fraud among certain industries and which fraud schemes were used (ACFE, 2020). According to the ACFE *2020 Report to the Nations*, the most common fraud scheme was financial statement fraud, accounting for a $600,000 median loss (ACFE, 2020). Financial statement fraud includes timing differences, fictitious revenues, concealed liabilities and expenses, improper asset valuations, and improper disclosures (ACFE, 2020). These schemes occur predominantly in the industries of construction and manufacturing (ACFE, 2020). The ACFE researchers name poor tone at the top as the primary risk factor in 22% of all financial statement fraud cases (ACFE, 2020). Other executive fraud schemes included corruption which involves bribery, kickbacks, bid-rigging, and economic

extortion. According to the ACFE (2020), these schemes occur mainly in the energy, telecommunications, and transportation industries.

Classified according to these ACFE schemes, five different categories of fraud charges were represented in this sample of 80 fraud firms. As Figure 2 illustrates, the charges included financial statement fraud (FSF), corruption, executive compensation, securities fraud, and multiple charges. Firms in the multiple charges category were charged by the SEC with both FSF and corruption in their AAER violation. According to AAER documents, the top two fraud charges in the sample included financial statement fraud (49 violations, 61.25%) and corruption (21 violations, 26.25%). Other fraud charges cited in AAER violations were executive compensation (1 violation, 1.25%), securities fraud (1 violation, 1.25%), and multiple charges which involved a combination of FSF and corruption (8 violations, 10%).

Figure 2

Fraud Scheme Distribution



Hypothesis Testing

The research questions guiding this study asked to what extent is there a statistically significant relationship between the fraud risk factors of opportunity, pressure, and rationalization and the occurrence of fraud, since the effective date of AU-C 240.

Research Question 1

Research question 1 asked, "To what extent is there a statistically significant relationship between fraud risk factors for opportunity and the occurrence of fraud, since the effective date of AU-C 240?"

$H_{0\,(1)}$ There is no statistically significant relationship between the fraud risk factor of board tenure and the occurrence of fraud, since the effective date of AU-C 240.

$H_{a\,(1)}$ There is a statistically significant relationship between the fraud risk factor of board tenure and the occurrence of fraud, since the effective date of AU-C 240.

$H_{0\,(2)}$ There is no statistically significant relationship between the fraud risk factor of gender of board members and the occurrence of fraud, since the effective date of AU-C 240.

$H_{a\,(2)}$ There is a statistically significant relationship between the fraud risk factor of gender of board members and the occurrence of fraud, since the effective date of AU-C 240.

$H_{0\,(3)}$ There is no statistically significant relationship between the fraud risk factor of CEO duality and the occurrence of fraud since the effective date of AU-C 240.

$H_{a\,(3)}$ There is a statistically significant relationship between the fraud risk factor of CEO duality and the occurrence of fraud since the effective date of AU-C 240.

Research Question 2

Research question 2 asked, "To what extent is there a statistically significant relationship between fraud risk factors for pressure and the occurrence of fraud, since the effective date of AU-C 240?"

$H_{0\,(4)}$ There is no statistically significant relationship between the fraud risk factor of stock options paid and the occurrence of fraud, since the effective date of AU-C 240.

$H_{a\,(4)}$ There is a statistically significant relationship between the fraud risk factor of stock options paid and the occurrence of fraud, since the effective date of AU-C 240.

$H_{0\,(5)}$ There is no statistically significant relationship between the fraud risk factor of change in assets and the occurrence of fraud, since the effective date of AU-C 240.

$H_{a\,(5)}$ There is a statistically significant relationship between the fraud risk factor of change in assets and the occurrence of fraud, since the effective date of AU-C 240.

Research Question 3

Research question 3 asked, "To what extent is there a statistically significant relationship between fraud risk factors for rationalization and the occurrence of fraud, since the effective date of AU-C 240?"

$H_{0\,(6)}$ There is no statistically significant relationship between the fraud risk factor of insider members and the occurrence of fraud, since the effective date of AU-C 240.

$H_{a\,(6)}$ There is a statistically significant relationship between the fraud risk factor of insider members and the occurrence of fraud, since the effective date of AU-C 240.

$H_{0\,(7)}$ There is no statistically significant relationship between the fraud risk factor of auditor change and the occurrence of fraud, since the effective date of AU-C 240.

$H_{a\,(7)}$ There is a statistically significant relationship between the fraud risk factor of auditor change and the occurrence of fraud, since the effective date of AU-C 240.

Testing of Assumptions

There were eight assumptions related to both study design and data for this study. Design assumptions included having a dichotomous dependent variable, having one or more independent variables that are either continuous or nominal, independence of observations, categories of dichotomous variables are mutually exclusive, and meeting the minimum cases per independent variable (Laerd Statistics, 2017). Assumptions related to the data were linearity of logit, multicollinearity, and independence of errors (Field, 2018). I tested these assumptions in SPSS.

Linearity of Logit

According to Field (2018), the linearity of logit assumes a linear relationship exists among continuous predictors and the logit of the outcome variable. This assumption can be tested by creating interaction terms and analyzing the interactions of the continuous variables and their logs. The original continuous independent variable is not linearly related to the logit of the dependent variable if the interaction term is statistically significant (Laerd Statistics, 2017). As shown in Table 2, the significance level for the interaction between the variables and their logs exceeded .05 (Field, 2018). Thus, the linearity assumption for this study was met for all of the continuous independent variables.

Table 2

Linearity of Continuous Independent Variables—Variables in the Equation

	B	S.E.	Wald	*df*	Sig.	Exp(*B*)
LN_Tenure by Tenure	.003	.013	.051	1	.821	1.003
Gender by LN_Gender	-.006	.005	1.966	1	.161	.994
Chg_Assets by LN_ Chg_Assets	.000	.003	.003	1	.955	1.000

	B	S.E.	Wald	*df*	Sig.	Exp(*B*)
Ins_Mem by LN_Ins_Mem	-.003	.003	.860	1	.354	.997
LN_Tot_Assets by Tot_Assets	.000	.000	.150	1	.698	1.000
Debt_Rat by LN_ Debt_Rat	.000	.002	.021	1	.884	1.000
LN_Ret_Assets by Ret_Assets	-.006	.009	.484	1	.487	.994
Constant	2.726	1.987	1.883	1	.170	15.274

Note. Variable(s) entered on step 1: LN_Tenure * Tenure , Gender * LN_Gender , Chg_Assets * LN_ Chg_Assets, Ins_Mem * LN_Ins_Mem, LN_ Tot_Assets * Tot_Assets, Debt_Rat * LN_ Debt_Rat , LN_ Ret_Assets * Ret_Assets.

Multicollinearity

When several predictors in a regression model are highly correlated multicollinearity is suspected (Field, 2018). According to Field (2018), if Pearson correlation coefficients are above .8 that indicates a high correlation between the predictors. Table 3 shows the results of multicollinearity testing. All pairwise Pearson correlation coefficients between the predictors were below .8.

Table 3

Multicollinearity Testing Using Pearson Correlation Coefficients

		CEO Duality	Stock Options	Auditor Change
CEO_Duality	Pearson Correlation	1	.000	.000
	Sig. (2-tailed)		1.000	1.000
	N	160	160	160
Stk_Opt	Pearson Correlation	.000	1	-.024
	Sig. (2-tailed)	1.000		.762
	N	160	160	160
Aud_Chg	Pearson Correlation	.000	-.024	1
	Sig. (2-tailed)	1.000	.762	
	N	160	160	160

Coefficients are confirmed using collinearity diagnostics, such as the tolerance statistic and variance inflation factor (VIF). A VIF greater than 10 or tolerance statistic of less than .1 would indicate serious issues (Field, 2018). Table 4 shows the tolerance statistic and VIF for three possible pairwise combinations of the last three predictors. The results indicate the VIF, and tolerance statistics fall within the recommended range, confirming this assumption has not been violated.

Table 4

Collinearity Statistics

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	*t*	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	.500	.147		3.402	<.001	.210	.790		
	Stk_Opt	.000	.152	.000	.000	1.000	-.299	.299	.999	1.001
	Aud_Chg	.000	.116	.000	.000	1.000	-.229	.229	.999	1.001

Note. Dependent Variable: CEO_Duality

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	*t*	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	.928	.031		30.036	<.001	.867	.989		
	Aud_Chg	-.018	.061	-.024	-.302	.763	-.139	.102	1.000	1.000
	CEO_ Duality	.000	.042	.000	.000	1.000	-.083	.083	1.000	1.000

Note. Dependent Variable: Stk_Opt

Model		Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta	*t*	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	.167	.104		1.602	.111	-.039	.372		
	CEO_ Duality	.000	.055	.000	.000	1.000	-.109	.109	1.000	1.000
	Stk_Opt	-.032	.104	-.024	-.302	.763	-.238	.175	1.000	1.000

Note. Dependent Variable: Aud_Chg

Independence of Errors

The independence assumption means errors in a model are unrelated to one another (Field, 2018). The independence of errors assumption, if violated, can cause overdispersion, making standard errors too small (Field, 2018). This assumption was tested by running pairwise crosstabulations in SPSS. Table 5 shows that independence between the variables in this study was established. Chi-squares did not show significance at the .05 level.

Table 5

Independence Testing

*CEO Duality * Stock Options*

	Value	*df*	Asymptotic Significance (2-sided)
Pearson Chi-Square	.000[a]	1	1.000
Continuity Correction[b]	.000	1	1.000
Likelihood Ratio	.000	1	1.000
Linear-by-Linear Association	.000	1	1.000
N of Valid Cases	160		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.00.

b. Computed only for a 2x2 table

*CEO Duality * Auditor Change*

	Value	*df*	Asymptotic Significance (2-sided)
Pearson Chi-Square	.000[a]	1	1.000
Continuity Correction[b]	.000	1	1.000
Likelihood Ratio	.000	1	1.000
Linear-by-Linear Association	.000	1	1.000
N of Valid Cases	160		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 11.00.

b. Computed only for a 2x2 table

*Auditor Change * Stock Options*

	Value	*df*	Asymptotic Significance (2-sided)
Pearson Chi-Square	.093[a]	1	.760
Continuity Correction[b]	.000	1	1.000
Likelihood Ratio	.088	1	.766
Linear-by-Linear Association	.092	1	.761
N of Valid Cases	160		

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 1.65.

b. Computed only for a 2x2 table

As previously explained, I used casewise diagnostics to examine outliers and determine their removal from the study. The casewise list, shown in Table 6, highlights cases with standardized residuals greater than ±2 (Laerd Statistics, 2017). Cases with these values would be cause for concern, and the researcher would need to assess if they should remove them from the study (Field, 2018). According to case diagnostics, all cases in this study have standardized residuals less than ±2. SPSS does not produce a casewise plot if no significant outliers are detected in logistic regression (Field, 2018; Laerd Statistics, 2017).

Table 6

Casewise Diagnostics to Test for Outliers: Casewise List[a]

a. The casewise plot is not produced because no outliers were found.

Descriptive Statistics

Eighty fraud firms were included in the sample of this study. I compared the characteristics of these firms with their matched non-fraud firms. Descriptive statistics were analyzed using SPSS. The frequencies and percentages for the categorical variables were computed, as well as the totals for the continuous variables.

Descriptive Statistics for Fraud Firms

There were 80 fraud firms included in the sample of this study. I compared the characteristics of these firms with that of their matching non-fraud firms. Tenure on the board, CEO duality, and gender were examined. Tenure ranged from 1.00 to 7.00 (M = 8.36, SD = 5.0) among fraud firms, with a median of 7.00 and a mode of 7. CEO duality ranged from 0.00 to 1.00 (M = .49, SD = .50) among fraud firms, with a median of 0.00 and a mode of 0.00. Gender ranged from 43% to 57% (M = 86.2%, SD = 10.5%) among fraud firms, with a median of 86% and a mode of 100%.

Also examined were if stock options were paid to executives and the one-year change in assets. Stock options ranged from 0.00 to 1.00 (M = .96, SD = .19) among fraud firms, with a median of 1.00 and a mode of 1. Change in assets ranged from -102.63% to 176.63% (M = 3.69%, SD = 20.67%) among fraud firms, with a median of 3.66% and a mode of -9.34%.

The percentage of insider members on the board and the act of changing auditors were also studied. Insider members ranged from 0% – 78% (*M* = 24.59%, *SD* = 18.27%) among fraud firms, with a median of 20% and a mode of 20%. Auditor change ranged from 0.00 -1.00 (*M* = .08, *SD* = .26) among fraud firms, with a median of 0.00 and a mode of 0.

Control variables were used to ensure size, leverage, and profitability, which included total assets, debt ratio, and return on assets (Beasley, 1996; Roden et al., 2016). Total assets are expressed in USD millions. They ranged from $80 to $2,415,608 (*M* = $103,969, *SD* = $42,070) among fraud firms, with a median of $3,008 and a mode of $1,749. Debt ratio ranged from 9.05% to 141.87% (*M* = 61.34%, *SD* = 25.74%) among fraud firms, with a median of 61.48% and a mode of 44.18%. Return on assets ranged from -43.46% to 106% (*M* = 3.05% , *SD* = 11.87%) among fraud firms, with a median of 2.22% and a mode of -0.99%. Descriptive statistics for fraud firms are shown in Table 7.

Table 7

Descriptive Statistics for Fraud Firms

		Tenure	CEO Duality	Gender	Stock Options	Change in Assets
N	Valid	80	80	80	80	80
	Missing	0	0	0	0	0
Mean		8.36	.49	86.20%	.96	3.69%
Median		7.00	.00	86.00%	1.00	3.66%
Mode		7	0	100.00%	1	-9.34%
Std. Deviation		5.00	.50	10.51%	.19	20.67%
Minimum		27	1	43.00%	1	176.63%
Maximum		1	0	57.00%	0	-102.63%

		Insider Members on the Board	Auditor Change	Total Assets	Debt Ratio	Return on Assets
N	Valid	80	80	80	80	80
	Missing	0	0	0	0	0
Mean		24.59%	.08	103,969[a]	61.34%	3.05%
Median		20.00%	.00	3,008	61.48%	2.22%
Mode		20.00%	0	1,749	44.18%	-0.99%
Std. Deviation		18.27%	.26	420,701	25.74%	11.87%
Minimum		78.00%	1	2,415,609	141.87%	106.00%
Maximum		0.00%	0	80	9.05%	-43.46%

a. Total assets expressed in USD millions.

Descriptive Statistics for Non-Fraud Firms

Consistent with the research of Beasley (1996) and Roden et al. (2016), the construct of fraud occurrence was measured using a control sample of matched non-fraud firms (Beasley, 1996; Roden et al., 2016). These non-fraud firms matched the size and industry of their fraud firm counterparts (Roden et al., 2016). Table 8 shows the descriptive statistics for non-fraud firms.

Tenure ranged from 1.00 to 4.08 (M = 6.96, SD = 8.00) among non-fraud firms, with a median of .45 and a mode of 7.00. CEO duality ranged from .50 to 0.00 (M = .51, SD = 1.0) among non-fraud firms, with a median of .05 and a mode of 1.00. Gender ranged from 10.97% to 64% (M = 88.15%, SD = 100%) among non-fraud firms, with a median of 1.22% and a mode of 88%.

I also examined if stock options were paid to executives and their change in assets. Stock options ranged from .31 to 0 (M = .89, SD = 1) among non-fraud firms, with a median of .03 and a mode of 1.00. Change in assets ranged from -722.95% to 272.21% (M = 22.96%, SD = -722.95%) among non-fraud firms, with a median of 30.43% and a mode of 5.45%.

I studied the percentage of insider members on the board and the act of changing auditors. Insider members ranged from 0% to 24.95% (*M* = 33.66%, *SD* = 14.00%) among non-fraud firms, with a median of 2.79% and a mode of 28%. Auditor change ranged from .40 to 0.00 (*M* = .20, *SD* = 0.0) among non-fraud firms, with a median of .04 and a mode of 0.00.

Control variables were used to ensure size, leverage, and profitability between fraud and non-fraud firms. Again, total assets were expressed in USD millions. Total assets ranged from \$64 to \$427,489 (*M* = \$98,463 , *SD* = \$64) among non-fraud firms, with a median of \$48,096 and a mode of \$2,811. Debt ratio ranged from 0.38% to 253.44% (*M* = 95.44%, *SD* = 0.38%) among non-fraud firms, with a median of 28.33% and a mode of 58.06%. Return on assets ranged from -303.60% to 61.74% (*M* = -4.43%, *SD* = -303.60%) among non-fraud firms, with a median of 6.90% and a mode of 2.32%.

Table 8

Descriptive Statistics for Non—Fraud Firms

		Tenure	CEO Duality	Gender	Stock Options	Change in Assets
N	Valid	80	80	80	80	80
	Missing	0	0	0	0	0
Mean		6.96	.51	88.15%	.89	22.96%
Median		.45	.056	1.22%	.03	30.43%
Mode		7.00	1.00	88.00%	1.00	5.45%
Std. Deviation		8	1	100.00%	1	-722.95%[a]
Minimum		4.08	.50	10.97%	.31	272.21%
Maximum		1	0	64.00%	0	-722.95%

		Insider Members on the Board	Auditor Change	Total Assets	Debt Ratio	Return on Assets
N	Valid	80	80	80	80	80
	Missing	0	0	0	0	0
Mean		33.66%	.20	98,463[b]	95.44%	-4.43%
Median		2.79%	.04	48,096	28.33%	6.90%
Mode		28.00%	.00	2,811	58.06%	2.32%
Std. Deviation		14.00%[a]	0	64[a]	0.38%[a]	-303.60%[a]
Minimum		24.95%	.40	427,489	253.44%	61.74%
Maximum		0.00%	0	64	0.38%	-303.60%

a. Multiple modes exist. The smallest value is shown.

b. Total assets expressed in USD millions.

Fitting the Logistic Regression Model

A parsimonious model ensures that the variables contribute to explaining variances for the dependent variable (Field, 2018). Predictors were introduced to the model following the same procedures of Roden et al. (2016) to ensure they could be included in the final model. I ran the binary logistic regression in SPSS once the final model was fitted.

Finding a Parsimonious Model

First, only the control variables were introduced in model one to ensure the matching control sample was valid. The control variables were not statistically significant since the matching control firms were matched by size, leverage, and profitability. The base model (block 1) correctly predicted 100% of fraud firm cases and 0% of non-fraud firm cases, yielding an overall percentage of 50% for correctly predicted cases. Whereas, when the control variables of total assets, debt ratio, and return on assets were introduced in model 1, the overall correctly predicted cases rose to 51.2%. The model correctly predicted 65% of fraud firms and 37.5% of non-fraud firms.

Next, the control variables and opportunity variables were introduced for model two. These variables included tenure, CEO duality, and gender composition on the board of directors. The model correctly predicted 65% of fraud firm cases and 52.5% of non-fraud firm cases. The overall percentage of correctly predicted cases increased to 58.8%. Model three introduced pressure variables with the control variables. When stock options and change in assets were introduced, the model correctly predicted 68.8% of fraud firm cases and 47.5% of non-fraud firm cases, the overall percentage of correctly predicted cases was 58.1%.

Model four added the rationalization variables with the control variables. Rationalization variables included insider members and auditor change. After introducing these predictors to the model, overall performance increased to 63.1%, with 73.8% of fraud cases being correctly predicted and 47.5% of non-fraud cases. Model five consisted of the control variables along with all other opportunity, pressure, and rationalization variables. After introducing all of the variables representing the three fraud triangle elements to the model overall performance of the model increased to 63.1%, compared to the base model. The model predicted 73.8% of fraud cases correctly and 47.5% of non-fraud cases.

I reviewed the omnibus tests of model coefficients for the five models to assess the contribution of each predictor to the model performance. This process ensured only the independent variables that significantly contributed to the model and the control variables would remain for further analysis. The contribution of the predictor was calculated by subtracting the chi-square of the previous model. The contribution was deemed significant if the p-value was less than a .05 significance level (Field, 2018).

Table 9 shows omnibus test coefficients for the five models. The block chi-square had an initial value of 6.358, then decreased to 3.473 in model 2, decreased again to 2.453 in model 3,

and increased to 8.237 in model 4. Introduced in model 4, Aud_Chg made the most significant contribution to the model. The block chi-square for model 4 (p = 0.01) was statistically significant since the p-value was less than .05 significance.

Table 9

Searching for Parsimonious Model—Omnibus Tests of Model Coefficients

		Chi-square	*df*	Significance
		Model 1		
Step 1	Step	6.358	3	0.095
	Block	6.358	3	0.095
	Model	6.358	3	0.095
		Model 2		
Step 1	Step	3.473	3	0.324
	Block	3.473	3	0.324
	Model	9.831	6	0.132
		Model 3		
Step 1	Step	2.453	2	0.293
	Block	2.453	2	0.293
	Model	12.284	8	0.139
		Model 4		
Step 1	Step	8.237	2	0.016
	Block	8.237	2	0.016
	Model	20.521	10	0.025
		Model 5		
Step 1	Model	20.521	10	0.025

As shown in Table 10, Aud_Chg (p = .043) was a statistically significant predictor at the .05 level in model 4. Tenure, CEO Duality, Gender, Stk_Opt, and Chg_Assets were not statistically significant and were excluded from the remaining analysis. Ins_Mem had a p-value

of .057 in model 4. However, after removing Tenure, CEO Duality, Gender, Stk_Opt, and Chg_Assets from the model, the p-value for insider members changed to statistically significant in the final model. Aud_Chg and Ins_Mem were included for further analysis.

Table 10

Searching for Parsimonious Model—Variables in the Equation

							95% C.I. for EXP(B)	
		B	S.E.	Wald	*df*	Sig.	Exp(*B*)	Lower	Upper
Step 1[a]	Tot_Assets	.000	.000	.035	1	.852	1.000	1.000	1.000
	Debt_Rat	-.002	.003	.478	1	.489	.998	.991	1.004
	Ret_Assets	.014	.010	1.953	1	.162	1.014	.995	1.033
	Tenure	.042	.039	1.196	1	.274	1.043	.967	1.125
	CEO_Duality (1)	-.156	.349	.200	1	.654	.855	.432	1.695
	Gender	-.006	.017	.132	1	.717	.994	.962	1.027
	Stk_Opt(1)	1.074	.732	2.152	1	.142	2.926	.697	12.280
	Chg_Assets	.000	.003	.000	1	.993	1.000	.994	1.006
	Ins_Mem	-.016	.009	3.625	1	.057	.984	.967	1.000
	Aud_Chg(1)	-1.098	.542	4.113	1	.043	.333	.115	.964
	Constant	.044	1.682	.001	1	.979	1.045		

Note. Variable(s) entered on step 1: Tot_Assets, Deb_Rat, Ret_Assets, Tenure, CEO_Duality , Gender, Stk_Opt, Chg_Assets, Ins_Mem, Aud_Chg.

Final Fitted Logistic Regression Model

Model 4 was determined to best contribute to the research. A binary logistic regression analysis was performed in SPSS. The classification table in step 0, not including predictors, is shown in Table 11.

Table 11

Final Fitted Logistic Regression Model—Classification Table for Step 0

			Predicted		
			Fraud		
	Observed		No	Yes	Percentage Correct
Step 0	Fraud	No	0	80	.0
		Yes	0	80	100.0
	Overall Percentage				50.0

a. Constant is included in the model.

b. The cut value is .500

The omnibus tests of model coefficients introducing the Aud_Chg and Ins_Mem predictors are shown in Table 12. The final model was a significant fit, showing its chi-square had a significance of .006, lower than the .05 level of significance required. The chi-square is the deviance (- 2log - likelihood statistic, or -2 *LL*) of model 1 subtracted from model 0.

Table 12

Final Fitted Logistic Regression Model—Omnibus Tests of Model Coefficients

		Chi-square	*df*	Sig.
Step 1	Step	16.332	5	.006
	Block	16.332	5	.006
	Model	16.332	5	.006

The Cox and Snell *R* Square is a pseudo R^2 statistic that can assess the goodness of fit (Field, 2018). However, this statistic is limited in that it can only reach below a maximum of 1.

Nagelkerke R Square is preferred to correct this limitation since it reaches a maximum of 1. This maximum indicates a perfect fit model. The Nagelkerke R Square statistic shows that the fitted model explains a 12.9% variation in the outcome variable and is the effect size of the model. Table 13 shows the Pseudo R^2 statistics and results of the Hosmer and Lemeshow Test. The Hosmer and Lemeshow test is an additional measure for goodness of fit (Hosmer et al., 2013). This test requires a non-significant chi-square result, otherwise it would indicate you have a poor model fit. The results show .742, which means the data fit the model well.

Table 13

Final Fitted Logistic Regression Model—Model Summary and Hosmer and Lemeshow Test

Step	-2 Log likelihood	Cox & Snell *R* Square	Nagelkerke *R* Square
1	205.475[a]	.097	.129

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Hosmer and Lemeshow Test

Step	Chi-square	*df*	Sig.
1	5.141	8	.742

The classification of the model is shown in Table 14. The table shows that the classification performance increased 50.0% to 62.5% after introducing the two predictors. 75% percent of fraud cases were predicted correctly. The non-fraud firm cases were correctly predicted at 50.0% percent.

Table 14

Final Fitted Logistic Regression Model—Classification Table[a]

			Predicted		
			Fraud		
	Observed		No	Yes	Percentage Correct
Step 1	Fraud	No	40	40	50.0
		Yes	20	60	75.0
	Overall Percentage				62.5

Note. The cut value is .500

Table 15 presents the variables in the equation for the final fitted logistic regression model. According to Field (2018), the coefficients, B, measure the change in the logit for the outcome variable when there is a unit change for a predictor. The Wald statistic assesses if a coefficient of a predictor is statistically different from zero, indicating the predictor makes a significant impact on predicting the outcome variable (Field, 2018). The Wald statistic has a significance of .032 and .033 for the predictors of Ins_Mem and Aud_Chg, respectively. These are statistically significant values. Thus, the null hypothesis that there is no statistically significant relationship between the fraud risk factor of insider members and the occurrence of fraud since the effective date of AU-C 240 can be rejected. Likewise, I can also reject the null hypothesis that there is no statistically significant relationship between the fraud risk factor of auditor change and the occurrence of fraud since the effective date of AU-C 240. The control variables were included in the final model to ensure the matching control sample was valid. The control variables were not statistically significant since the control firms were matched by size, leverage, and profitability.

Table 15

Final Fitted Logistic Regression Model—Variables in the Equation

								95% C.I.for EXP(B)	
		B	S.E.	Wald	*df*	Sig.	Exp(*B*)	Lower	Upper
Step 1[a]	Ins_Mem	-.018	.008	4.599	1	.032	.983	.967	.998
	Aud_Chg (1)	-1.117	.524	4.536	1	.033	.327	.117	.915
	Tot_Assets	.000	.000	.023	1	.878	1.000	1.000	1.000
	Debt_Rat	-.003	.002	1.608	1	.205	.997	.993	1.002
	Ret_Assets	.013	.009	2.073	1	.150	1.013	.995	1.032
	Constant	.838	.312	7.211	1	.007	2.312		

Note. Variable(s) entered on step 1: Insider Members on the Board, Auditor Change, Total Assets, Debt Ratio, Return on Assets.

The Aud_Chg predictor showed a negative coefficient (-.033), indicating a linear inverse relationship between changing auditors and the logit of the outcome variable of fraud occurrence. This is consistent with the size of the value in the Exp(*b*) column, where the logistic regression coefficients were transformed into an odds ratio using the following equation:

$$E^{coefficient} = odd\ ratio = Probability(fraud) \,/\, Probability(not\ fraud) \qquad (2)$$

In this case, the odds of fraud occurring decrease when the firm changes auditors. Field (2018) explains that when an odds ratio falls below one, then the relationship between the variable is inverse. According to Table 15, the odds ratio for auditor change is. 327. The confidence level is below 1, confirming the inverse linear relationship.

The Ins_Mem predictor also showed a negative coefficient (-.032), indicating a linear inverse relationship between changing auditors and the logit of the outcome variable of fraud occurrence. Table 15 shows the odds ratio for insider members is. 983. The confidence level is

below 1, confirming the relationship. These odds ratios were converted into probabilities using the equation:

$$\hat{y} = odds\ ratio\ /\ (1 + odds\ ratio) \quad (3)$$

Thus, the odds of fraud occurrence decreased by 49.5% when the firm has more insider members serving on the board of directors. The odds of fraud occurring decrease by 24.6% when the firm has a recent auditor change. The conclusion is that when a firm has more insider members on their board and a recent auditor change, they are less likely to commit fraud. The next section provides a summary of the hypothesis testing.

Summary of Hypothesis Testing

The research questions guiding this study asked to what extent is there a statistically significant relationship between the fraud risk factors of opportunity, pressure, and rationalization and the occurrence of fraud, since the effective date of AU-C 240. The corresponding hypotheses for the research questions, and their results, are shown in Table 16.

Table 16

Summary of Hypothesis Testing

Null Hypothesis	Decision
Opportunity	
$H_{0\,(1)}$ There is no statistically significant relationship between the fraud risk factor of board tenure and the occurrence of fraud since the effective date of AU-C 240.	Accepted
$H_{0\,(2)}$ There is no statistically significant relationship between the fraud risk factor of gender of board members and the occurrence of fraud since the effective date of AU-C 240.	Accepted
$H_{0\,(3)}$ There is no statistically significant relationship between the fraud risk factor of CEO duality of board members and the occurrence of fraud since the effective date of AU-C 240.	Accepted
Pressure	

Null Hypothesis	Decision
$H_{0\,(4)}$ There is no statistically significant relationship between the fraud risk factor of stock options paid and the occurrence of fraud since the effective date of AU-C 240.	Accepted
$H_{0\,(5)}$ There is no statistically significant relationship between the fraud risk factor of change in assets and the occurrence of fraud since the effective date of AU-C 240.	Accepted
Rationalization	
$H_{0\,(6)}$ There is no statistically significant relationship between the fraud risk factor of insider members and the occurrence of fraud since the effective date of AU-C 240.	Rejected
$H_{0\,(7)}$ There is no statistically significant relationship between the fraud risk factor of auditor change and the occurrence of fraud since the effective date of AU-C 240.	Rejected

Opportunity

Results indicated the null hypotheses could not be rejected for the following because there was no statistically significant relationship at the 5% significance level between the fraud risk factors for opportunity and the occurrence of fraud:

$H_{0\,(1)}$ There is no statistically significant relationship between the fraud risk factor of board tenure and the occurrence of fraud, since the effective date of AU-C 240.

$H_{a\,(1)}$ There is a statistically significant relationship between the fraud risk factor of board tenure and the occurrence of fraud, since the effective date of AU-C 240.

$H_{0\,(2)}$ There is no statistically significant relationship between the fraud risk factor of gender of board members and the occurrence of fraud, since the effective date of AU-C 240.

$H_{a\,(2)}$ There is a statistically significant relationship between the fraud risk factor of gender of board members and the occurrence of fraud, since the effective date of AU-C 240.

$H_{0\,(3)}$ There is no statistically significant relationship between the fraud risk factor of CEO duality and the occurrence of fraud since the effective date of AU-C 240.

$H_{a\,(3)}$ There is a statistically significant relationship between the fraud risk factor of CEO duality and the occurrence of fraud since the effective date of AU-C 240.

Pressure

Results indicated the null hypotheses could not be rejected for the following because there was no statistically significant relationship at the 5% significance level between the fraud risk factors for pressure and the occurrence of fraud:

$H_{0\,(4)}$ There is no statistically significant relationship between the fraud risk factor of stock options paid and the occurrence of fraud, since the effective date of AU-C 240.

$H_{a\,(4)}$ There is a statistically significant relationship between the fraud risk factor of stock options paid and the occurrence of fraud, since the effective date of AU-C 240.

$H_{0\,(5)}$ There is no statistically significant relationship between the fraud risk factor of change in assets and the occurrence of fraud, since the effective date of AU-C 240.

$H_{a\,(5)}$ There is a statistically significant relationship between the fraud risk factor of change in assets and the occurrence of fraud, since the effective date of AU-C 240.

Rationalization

Results indicated the null hypotheses could be rejected for the following because there was a statistically significant relationship at the 5% significance level between the fraud risk factors for rationalization and the occurrence of fraud:

$H_{0\,(6)}$ There is no statistically significant relationship between the fraud risk factor of insider members and the occurrence of fraud, since the effective date of AU-C 240.

$H_{a\,(6)}$ There is a statistically significant relationship between the fraud risk factor of insider members and the occurrence of fraud, since the effective date of AU-C 240.

$H_{0\,(7)}$ There is no statistically significant relationship between the fraud risk factor of auditor change and the occurrence of fraud, since the effective date of AU-C 240.

$H_{a\,(7)}$ There is a statistically significant relationship between the fraud risk factor of auditor change and the occurrence of fraud, since the effective date of AU-C 240.

In the present study, no variables representing the opportunity and pressure elements of the fraud triangle were statistically significant predictors of fraud. Conversely, the rationalization variables showed different results. The result of this analysis showed that auditor change (.033) and insider members (.032) had a statistically significant relationship regarding the occurrence of fraud. Their effect was negative, indicating that the odds probability for fraud to occur decreases when there are more insider members on the board and when the firm changes auditors.

Summary

The sample of fraud firms included in this research represented seven industries and 13 different types of AAER fraud violations. In this study, the most common industries with fraud violations were trade and services and the finance sectors. Financial statement fraud committed by executives was the most common fraud scheme. I used binary logistic regression to examine how fraud risk factors of opportunity, pressure, and rationalization can predict fraud. No variables representing the opportunity (tenure, gender, CEO duality) and pressure elements (stock options paid to executives and one-year change in assets) of the fraud triangle were statistically significant predictors of fraud. However, the variables associated with the

rationalization element of the fraud triangle showed different results. This analysis showed that auditor change had a statistically significant negative relationship (.033) regarding the occurrence of fraud. Also, insider members showed a statistically significant negative relationship (.032). The next chapter discusses these results, implications for practice, and recommendations for future research.

CHAPTER 5. DISCUSSION, IMPLICATIONS, RECOMMENDATIONS

Previous researchers used the fraud risk factors associated with the fraud triangle as predictors to examine the likelihood of fraud (Roden et al., 2016; Schnatterly et al., 2018; Shaio et al., 2017). There is an abundance of research for the components of opportunity and pressures, but the rationalizations of executives committing fraud are under-researched (Free, 2015; Hogan et al., 2008; Schnatterly et al., 2018). Given this gap in previous fraud literature, I used logistic regression to examine whether there is a statistically significant relationship between fraud risk factors and fraud occurrence post-implementation of auditing standard AU-C 240. This chapter provides a summary and discussion of the results for this study, offers conclusions based on the results, discusses limitations and implications for practice, and provides recommendations for further research.

Summary of the Results

Extending the research of Roden et al. (2016), I used logistic regression to examine the fraud risk factors present when fraud occurs. I sought to answer if there is a statistically significant relationship between fraud risk factors and the occurrence of fraud after the implementation of auditing standard AU-C 240. Answering this question was necessary to determine if the fraud risk factors presented by Roden et al. (2016) are applicable post-AU-C 240. Understanding these fraud risk factors can determine the internal controls needed by an organization to establish a strategy to safeguard against fraud (Tiffen, 2015) appropriately.

The tests indicated that the likelihood of fraud being committed decreased when more insider members served on the board of directors. The odds of fraud occurring also reduced when the firm had a recent change in auditors. I rejected the null hypotheses in favor of the alternatives, based on test results revealing the inverse linear relationships between the predictor

variables, Aud_Chg and Ins_Mem, and the logit of the outcome variable, fraud occurrence. The next section discusses these results.

Discussion of the Results

This part of chapter 5 discusses the practical and theoretical meaning of the results presented in the previous chapter. I examined the relationships between the opportunity, pressure, and rationalization elements of the fraud triangle with the occurrence of fraud. The overarching research question asked if the fraud risk factors for opportunity, pressure, and rationalization have a statistically significant relationship to the occurrence of fraud after implementing AU-C 240. The first research sub question addressed opportunity risk factors, the second addressed the pressure risk factors, and the final sub question addressed the rationalization risk factors of fraud. As previously reported in Chapter 4, both opportunity and pressure fraud risk factors were not significant. However, all of the rationalization risk factors showed a negative statistical significance.

From a practical perspective, the findings suggested that the particular fraud risk factors of board tenure, CEO duality, gender, stock options, and one-year change in assets do not support fraudulent behaviors by executives. The lack of their significance is possibly linked to increased internal controls and updated corporate governance. Additionally, since AU-C 240, practitioners have been made aware of these risk factors and how to address them (AICPA, 2019).

Accounting regulators and researchers have aimed to provide practitioners with fraud prevention and detection techniques since landmark fraud cases erupted in the early 2000s. Auditing standard AU-C 240 provides auditors with best practices for recognizing fraud risk factors during financial statement audits (SEC, 2019). Citing fraud triangle theory, appendix A of

AU-C 240 provides specific examples of fraud risk factors related to the opportunities, pressures, and rationalizations present when fraud exists (AICPA, 2019). This standard states the significance of understanding these risk factors to recognize the likelihood of fraudulent activity (AICPA, 2019).

The failure to find statistically significant relationships for these fraud risk factors was unexpected from a theoretical perspective. According to the fraud triangle theory, Cressey (1950,1952) assumes that perceived opportunities, motivations/pressures, and rationalizations are present when someone commits a fraudulent act. The findings of this study did not support the theoretical assumption that opportunity and pressure are predictors of fraudulent activity. These findings suggest the need for future research to address these two components of the fraud triangle in the context of modern-day advanced and sophisticated fraud schemes.

I also examined the relationship between rationalization fraud risk factors and the occurrence of fraud. A significant association between insider members and auditor change as predictors of fraud was found. From a practical standpoint, the findings showed that as the percentage of insider members on the board of directors increased, firms became less likely to commit fraud. Theoretically, these findings meant that having a board of directors familiar with the firm contributed to better oversight due to their experience.

The results also indicated that firms became less likely to commit fraud when there were recent auditor changes. AU-C 240 provides auditors with specific fraud risk factors regarding rationalization. Before accepting an engagement, new auditing firms must communicate with the predecessor firm about the prospective client (PCAOB, 2021). Theoretically, these findings meant that the existing policies and procedures of the firm were closely scrutinized when they changed auditors.

Conclusions Based on the Results

This section of Chapter 5 provides two areas to present the conclusions based on results. First is a comparison of the findings with the theoretical framework and previous literature. Next, an interpretation of these findings is provided.

Comparison of the Findings With the Theoretical Framework and Previous Literature

The theoretical framework used for the present study is fraud triangle theory. Cressey (1950) was the first to present opportunities, pressures, and rationalizations in his landmark study examining financial mistrust. Opportunity is a perceived chance to override internal controls for personal gain (Cressey, 1950) by individuals in a position of power or who know of internal control deficiencies (AICPA, 2019). Pressure is an incentive to commit fraud due to internal or external factors (AICPA, 2019). Whereas rationalization is when an individual commits fraud then defends their actions in a way that makes them feel justified (Cressey, 1950).

I extended the study of Roden et al. (2016) to evaluate the relationships between fraud risk factors and the occurrence of fraud. Roden et al. (2016) identified proxy variables representing each component of the fraud triangle. This study utilized fraud risk factors presented by Roden et al. (2016), classifying these predictors as opportunity, rationalization, and pressure variables. These variables directly relate to the theoretical framework of the fraud triangle theory presented by Cressey (1950).

Tenure, CEO duality, and gender were the fraud risk factors used to measure opportunity present among the fraud sample. While this study showed no significance for these predictors, Roden et al. (2016) found all of their opportunity risk factors to have a positive significance in predicting fraud. Other previous researchers claim the length of time a director spends on the

board can impact board effectiveness (Roden et al., 2016). In recent accounting literature, researchers suggest that having women on the board of directors can influence the effectiveness of corporate boards (Guerrero-Villegas et al., 2018; Wahid, 2019). Researchers also suggest that the chief executive officer and chair of the board of directors' roles be separated to ensure board effectiveness (Roden et al., 2016). Unlike this previous research, the present study is limited in scope from excluding non-U.S. firms from the fraud sample. Additional research is needed to explain the unexpected results in this study for opportunity risk factors to ascertain if these variables differ between U.S. firms and fraud firms in different countries.

The present study used the risk factors of stock options paid and one-year change in assets to measure pressure. Contrary to the results of Roden et al. (2016), the present study showed no significance found for stock options paid. Roden et al. (2016) discovered a positive significance in predicting fraud for stock options. Other accounting researchers addressing the relationship between fraud and stock option compensation indicated that the desire to increase stock options value gives executives an incentive to manipulate accounting records (AICPA, 2019; Burns & Kedia, 2006). The difference in results for stock options paid is likely from the updated regulations regarding stock options backdating. Roden et al. (2016) examined AAER violations from 2003 to 2010 before these updates. Previous researchers claim rapid growth of a firm may lead to financial pressures for an executive (Roden et al., 2016). However, consistent with the results of Roden et al. (2016), the present study found no significance for the rapid growth of a firm predicting fraud.

The risk factors of insider members on the board and recent auditor changes measured rationalization. Consistent with Roden et al. (2016), I found a significant relationship between these variables and committing fraud. An unexpected result was that the present study found an

inverse relationship, while Roden et al. (2016) found a direct relationship for these fraud risk factors. Other previous researchers defined board member independence as when members monitor the actions of executive directors, intending to prevent opportunism (Guerrero-Villegas et al., 2018). The negative results of the present study indicate that as the number of insider members and auditor changes increases, the likelihood of fraud decreases. More research is necessary to determine if the implementation of AU-C 240 has played a role in the trajectory of these relationships.

Interpretation of the Findings

According to Roden et al. (2016), opportunity, pressure, and rationalization risk factors were all found to be significant predictors of fraud. However, as previously discussed, some results of the present study differed from their research. This study shows only rationalization variables are statistically significant since implementing auditing standard AU-C 240. This finding is important because previous researchers specifically suggest more empirical studies for the rationalizations of executives committing fraud are needed.

Results from the present study regarding opportunity risk factors as predictors of fraud conflict with the findings of DeBoskey et al. (2019), Roden et al. (2016), and Schnatterly et al. (2018). There is a plausible explanation for the difference in results from these previous studies. Researchers posit longer tenure (Libit & Freier, 2015), CEO duality, and women in executive roles (Liu et al., 2016) could be more likely to exhibit enhanced decision making and valuable insight. Likewise, improved internal controls within the sampled firms may have contributed to the findings. An employee's aptitude to commit a fraudulent act against an organization depends on exploiting the opportunities in the control environment (Dorminey et al., 2012).

In addition, the results regarding pressure risk factors conflict with the results presented by Altman (1968), Izhakian and Yermack (2017), and Roden et al. (2016). There are several possible explanations for the disagreement between previous studies and the results of this study. First, stock options being paid to executives could have presented a different result because the fraud cases in the present study were more recent than other studies. Roden et al. (2016) chose to use AAER violations from 2003-2010. However, in 2006 hundreds of investigations regarding stock options backdating took place after Lie (2005) urged researchers to examine this phenomenon in future studies. After these investigations, regulatory updates were made, such as Sarbanes-Oxley and FASB 123(R), attempting to safeguard against options backdating fraud. Second, increased fraud awareness is known to decrease the occurrence of fraud (Peltier-Rivest & Lanoue, 2018). The firms in the sample could have implemented better ethics training or fraud awareness programs. Doing so can increase the awareness of the internal controls used by an organization. Fraud awareness programs increase the perception of fraud detection, thus reducing fraudulent behaviors (Peltier-Rivest, 2018).

Like Roden et al. (2016) and Ghafoor et al. (2019), the present study finds a significant relationship between the fraud risk factors for rationalization and the occurrence of fraud. While the results were statistically significant, the current study indicated a negative relationship was present. Conversely, Roden et al. (2016) found the relationships to be positive. These results are possible considering the implementation of AU-C 240 took place after the AAER violations used in the Roden et al. (2016) study was issued. As explained earlier, AU-C 240 provides specific examples of fraud risk factors associated with the fraud triangle (SEC, 2019). This auditing standard provides best practices to auditors for recognizing risk factors about rationalization. With this standard implemented, auditors are more likely to detect when fraud is occurring.

Limitations

Research may be susceptible to weaknesses in design, influencing the conclusions of the researcher. Likewise, a researcher may consciously make decisions that narrow the extent of their study (Ross & Zaidi, 2019). This section discusses the design limitations and delimitations for the research study.

Control Sample

I used a sample of fraud firms and matched them to a controlling sample of non-fraud firms to examine the fraud risk factors present when fraud occurred. The control sample of non-fraud firms matched the size and industry of the fraud firms selected for this research (Beasley, 1996; Roden et al., 2016). To mitigate against imperfect matching, I followed a very detailed process to determine the best matches for the control sample. I used the criteria of constructing a matched sample of non-fraud firms presented by Roden et al. (2016) and Beasley (1996). While every effort was exhausted to ensure perfect matching, the control sample of non-fraud firms in this study could have included firms who indeed committed fraud during the years examined. These firms could have committed fraud which is still undetected.

Proxies Variables for Opportunity and Pressure

Based on previous studies, I chose proxy variables for the fraud triangle elements of opportunity, pressure, and rationalization. I extended the study of Roden et al. (2016) to include fraud years of 2014-2018. Thus, the variables chosen for this study came from the Roden et al. (2016) research. This choice limits the results to only these proxy variables, whereas other studies could have offered different fraud risk factors for opportunity and pressure.

The fraud risk factors for rationalization were the only predictors in this study to show a significant relationship. This research found no statistically significant relationship between the

opportunity and pressure variables examined and the occurrence of fraud. However, different proxy variables used in other studies regarding opportunity and pressure may have yielded different results.

Delimitations

I included only U.S. firms charged with AAER violations from 2014 to 2018 for the sample of fraud firms. This decision to include only U.S. firms limited the scope of the study to a certain geographical area rather than broadening the sample to include global fraud cases. Researchers have used reports published by the Association of Certified Fraud Examiners to understand how fraud cases evolve globally. In their most recent *2020 Report to the Nations*, researchers examined over 2500 cases of fraud, spanning 125 countries (ACFE, 2020). These reports have revealed that fraud imposes tremendous costs on corporations throughout the globe (ACFE, 2020). To broaden the scope of future studies to encompass these global findings, researchers can include fraud firms from other countries.

Implications for Practice

This examination of the fraud risk factors associated with the occurrence of fraud was built upon fraud theory framework. I examined seminal and current accounting literature, fraud case data, and pertinent accounting regulations and standards. Doing so provided information that can be used for future fraud research, and prevention and detection guidance. This section discusses how this information is pertinent to both scholars and practitioners.

Scholarly Research

According to the fraud triangle theory, Cressey (1950,1952) assumes that perceived opportunities, motivations/pressures, and rationalizations are present when someone commits a fraudulent act. Aligning these foundational theoretical elements with fraud risk factors adds to

existing knowledge of fraud theory by examining relationships among these variables since auditing standard AU-C 240. This study utilized fraud risk factors presented by Roden et al. (2016), classifying these factors as opportunity, rationalization, and pressure variables. These variables directly relate to the theoretical framework of fraud theory.

This study answers the calls for future studies from previous scholars regarding the under-researched rationalizations component of the fraud triangle (Murphy, 2012). Updated information is provided regarding the rationalization component of fraud triangle theory. Through the results of this research, a significant relationship is shown between the rationalization variables and the occurrence of fraud.

Practitioners

While Roden et al. (2016) address AU-C 240 in their study, the fraud cases chosen for their research took place before implementing this standard. Extending their study to include fraud cases that occurred after the implementation of AU-C 240 offers accounting practitioners, regulators, and educators a perspective on how this guidance applies to current fraud detection practices. This study provides anti-fraud practitioners updated information for future fraud prevention and detection techniques, particularly surrounding the rationalization component of the fraud triangle.

This study revealed a statistically significant relationship between fraud occurrence and insider members on the board. Likewise, a recent change in auditors has a statistically significant relationship to fraud. Fraud examiners are provided with information in this study that can help identify red flags and expand techniques for fraud prevention. Likewise, firms can gain insight from this study to develop or enhance their internal control practices.

Recommendations for Further Research

Suggestions for future studies about fraud risk factors based on the limitations and results of this research are recommended. The first recommendation is in response to the delimitation of only including U.S. firms. Considering the global impact fraud has on firms worldwide, scholars interested in investigating fraud risk factors could include firms from outside of the United States. This approach would broaden the scope of the research. Likewise, including international firms would also increase the sample size of AAERs to include in a study.

Another recommendation is to consider using additional proxy variables to represent the opportunity and pressure elements of the fraud triangle. As discussed previously, fraud risk factors for rationalization were the only predictors in this study to show a significant relationship. This research found no statistically significant relationship between any of the opportunity and pressure variables examined and the occurrence of fraud. Perhaps including different risk factors would provide further insight into these two areas of the fraud triangle and how they have changed since AU-C 240. However, the opportunity and pressure components of the fraud triangle are heavily researched (Abdullahi & Mansor, 2015).

Scholars have specifically called for future research to address why CEOs commit fraud (Schnatterly et al., 2018) and the rationalizations involved (Abdullahi & Mansor, 2015; Free, 2015; Hogan et al., 2008). While this study addressed these calls for future research, a recommendation would be to explore the rationalization risk factors deeper by performing qualitative analysis. Interviews with executives who have committed fraud would allow for more information regarding the significant risk factors in this study. This research found the fraud risk factors for rationalization, insider members and recent auditor change, to have a statistically significant negative relationship to fraud occurrence. However, other researchers found positive

relationships for these factors. Taking a qualitative approach to examine these factors would provide additional insight into the relationships between these two factors and executive fraud.

Conclusion

The fraud triangle has become the mainstream theory used by researchers to examine fraud risk factors. An area under-researched in accounting literature focuses on the rationalizations present when executives commit fraud. Through this quantitative study, I examined if a statistically significant relationship between fraud risk factors and the occurrence of fraud exists after implementing auditing standard AU-C 240. The factors investigated were the average tenure, gender distribution, and CEO duality on the board of directors, all proxy variables representing the opportunity component of the fraud triangle. The factors investigated for the pressure component were if stock options were paid to executives and the one-year change in assets. I also studied the percentage of insider members on the board and recent change in auditors, to proxy for rationalization. Financial and board of director data was extracted from the SEC Edgar database, while fraud violation data was extracted from the SEC AAER database. Binary logistic regression analysis results showed the likelihood of fraud being committed decreased when more insider members were serving on the board of directors and when the firm had a recent change in auditors.

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