REVENUE ACCRUAL QUALITY AS AN INDICATOR

OF FINANCIAL STATEMENT FRAUD

by

Meredith P. Jackson

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Business Administration

Liberty University

August 2017

Abstract

This study was conducted to address the need for additional financial statement fraud detection techniques. Accruals were chosen as the focus of this study due to the high likelihood of financial statement manipulation using accruals. Using the Dechow/Dichev accrual quality model, this study tested whether or not accrual quality can be used as an indicator of financial statement fraud. The study concluded that the Dechow/Dichev model found non-fraudulent financial statements to have higher quality accruals than fraudulent financial statements. In addition, accrual quality of non-fraudulent financial statements was found to be significantly different from the accrual quality of fraudulent financial statements. Therefore, accrual quality may be considered an indicator of fraudulent financial statement activity.

REVENUE ACCRUAL QUALITY AS AN INDICATOR

OF FINANCIAL STATEMENT FRAUD

by

Meredith P. Jackson

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Business Administration

Liberty University

August 2017

_____

Dr. Gene Sullivan, Dissertation Chair

_____

Dr. Melanie Hicks, Dissertation Committee Member

_____

Dr. Gene Sullivan, DBA Program Director

_____

Dr. David Calland, Interim Dean of the Liberty University School of Business

Dedication

This applied doctoral research project is dedicated to God and my family who have supported me throughout this long and challenging process. My husband, Chris, for providing unconditional love and unending encouragement. My children, Katelyn and Parker, for their patience, love, and understanding for my many hours in front of the computer. For my mother, Martha, thank you for teaching me the values of humility, kindness, and work ethic – I am proud to be your daughter. For my sister, Kelly - your love, support, and laughter made this journey less stressful. Being a working mom is *hard* with help; being a working mom and a doctoral student is *impossible* without help. I am thankful for all of the support from my family, especially Ginny, Sid, Mel, Pat, and Joann, who stepped in many times to transport, feed, or tend to my kids. Finally, for Michelle (the world's best godmother) who helped with my young children during this very time-intensive process and provided me with love, support, and encouragement at just the right times.

Table of Contents

List of Figures

Section 1: Foundation of the Study

Accruals are a normal part of business; however, the subjective nature of many accrual transactions provides an opportunity for overstatement of revenues that will never be realized. Because accruals are easily manipulated, this study focuses on accruals as an indicator of financial statement fraud. The results add to the literature on fraud detection techniques that can be used by all stakeholders who analyze financial statements.

Background of the Problem

After several notorious accounting scandals in the early 2000s, the Sarbanes-Oxley Act of 2002 was enacted to increase public confidence in corporate financial statements. Regardless of the increased requirements for executives and auditors, headlines involving corporate fraud and material financial misstatements continue to be reported (Abassi, Albrecht, Vance, & Hansen, 2012). Financial statement fraud makes up only 10% of all occupational fraud; however, it is the costliest of all types of fraud in the workplace (ACFE, 2016). Because of the significance of accounting improprieties, increased pressure is on auditors to detect financial statement fraud (Dorminey, Fleming, Kranacher, & Riley, 2012; Murphy & Dacin, 2011).

Users of financial statements include, among others, investors, analysts, auditors, and regulators. The capital markets rely on the financial information provided by companies and additional fraud detection techniques may help aid in the exposure of inaccurate reporting. Just as fraud perpetrators are continually finding new ways to commit fraud, corporate stakeholders must continue to explore ways to detect it. Auditors are required to assess the risk of material misstatement through analytical procedures (PCAOB, 2010). Management and investors also have an interest in the likelihood of corporate fraud and use internal controls as well as analytical procedures to aid in the detection process (Mangala & Kumari, 2015). This study adds to the

literature regarding fraud detection by assessing the likelihood that accrual quality can be used as an indicator of fraudulent financial statement activity.

Accrued revenues result from timing issues between the earning of revenue and the receipt of cash. Accruals are a normal part of business; however, the subjective nature of many accrual transactions provides an opportunity for overstatement of revenues that will never be realized. Income-increasing accruals that are never fully realized must be corrected or reversed in later years; however, managers may result to fraudulent transactions to offset the reversals in order to avoid the negative effects on income (Perols & Lougee, 2011). The high likelihood of fraudulent misstatements involving accruals necessitates an effective detection technique to assess the risk created by the accruals (Dechow, Ge, Larson, & Sloan, 2011; Mangala & Kumari, 2015; Perols & Lougee, 2011).

Corporate fraud research is continually developing to include more advanced ways of detecting fraud, including data mining techniques as analytical tools (Mangala & Kumari, 2015; Bolton & Hand, 2002; Bian, Cheng, Yang, Yuan, & Li, 2016; Sharma & Panigrahi, 2012). The most recent literature on specific fraud detection techniques explores income tax expense (Killen, 2016), price-earnings ratio (Weske & Benuto, 2015), and cash flows (Scott, 2012) as indicators of fraud. Other recent studies that are broader in scope evaluate the relationships between firm life cycle and fraud (Chang, 2015) as well as corporate culture and fraud risk (Wang & Fargher, 2015). Interestingly, one study created a language-recognition tool to identify the likelihood of fraud based on words in financial reports (Purda & Skillicorn, 2015) and another explored digital analysis to predict fraud (Roxas, 2011). Despite the variety of fraud detection literature, a gap exists regarding the detection of fraudulent financial reporting related specifically to revenue accrual misstatements.

Problem Statement

The problem addressed is the lack of fraud detection techniques available to corporate stakeholders to assess the risk of fraudulent financial statements associated with revenue accruals. Accruals have been found to be high in years of fraudulent financial statements (Dechow et al., 2011). In addition, Perols and Lougee (2011) also found a relationship between accruals and fraudulent financial statements. After reviewing the literature related to corporate fraud prevention, Mangala and Kumari (2015) as well as Sharma and Panigrahi (2012) recognized the need for additional research in the area of fraud indicators.

Purpose Statement

The purpose of this quantitative, correlational study is to examine the relationship between accrual quality and financial statement fraud. Prior research has found that companies with excessive accruals are more likely to produce fraudulent financial statements (Perols & Lougee, 2011; Jones, Krishnan, & Melendrez, 2008). Although most companies will have revenue accruals as a normal part of business, this study attempted to determine if accrual quality may be an appropriate detection measure for financial statement fraud.

Nature of Study

Method

Quantitative research is an approach for "testing objective theories by examining the relationship among variables" (Creswell, 2014, p. 4). Stake (2010) related quantitative research to "linear attributes, measurements, and statistical analysis" (p. 11). Through statistical measures, quantitative research allows the researcher to declare a certain level of confidence that a finding is statistically significant (Stake, 2010). The use of the quantitative approach involves the statistical analysis of a large sample size. The conclusions reached will be concluded from a

pattern in the data (Creswell, 2014). The quantitative method was chosen for this study because it involves the use of mathematically-based methods to determine the relationship between accruals quality and fraudulent financial statement activity. Specifically related to accounting research, quantitative methods have been found to be useful by providing data to which our "theoretical generalization must be applied to be of any practical use" (Richardson, 2015, p. 74).

Qualitative research attempts to explain a situation or phenomenon that occurs (Creswell, 2014, p. 4) and relates to "human perception and understanding" (Stake, 2010, p. 11). Qualitative research is interpretive, subjective, and situational (Stake, 2010). If a qualitative method was chosen for this study, the conclusions reached would be greatly limited due to the small, situational sample size (Stake, 2010). While the qualitative method is often used in accounting research (Richardson, 2015), it was not chosen for this study because the focus is not on one particular instance of accounting fraud but on an overall financial statement fraud detection technique involving revenue accruals quality.

The mixed method merges the quantitative and qualitative methods together by including elements of each. Although results of a mixed-method study are usually considered very strong, the complexity of the design is very time-intensive and calls for "clear, visual models to understand the details and the flow" as well as extensive data collection (Creswell, 2014, p. 219). The mixed method was not practical for this research because the study tested the null hypothesis that there is no relationship between accrual quality and financial statement fraud (Creswell, 2014, p. 3).

Design

This study has a correlational design which describes the relationship between variables (Vogt, Vogt, Gardner, & Haeffele, 2014) as well as the nature and magnitude of the relationship

between variables (Salkind, 2010). The correlational design achieved the purpose of this study which was to examine the relationship between accrual quality and financial statement fraud. The comparison of the revenue accrual quality of *fraudulent* financial statements to revenue accrual quality of *non-fraudulent* financial statements determined if accrual quality can be used (and if so, with what certainty) as a financial statement fraud detection technique.

Other quantitative research designs, which were not appropriate for this study, include experimental and descriptive designs. The experimental and quasi-experimental designs of quantitative research were not appropriate for this study because there is no intervention with pre-tests and post-tests (Edmonds & Kennedy, 2017). These designs call for independent, dependent, and control variables as well as a control procedure with the intention of identifying a cause and effect relationship (Salkind, 2010). This study compared historical data from financial statements with no new intervention or procedure to the data.

The descriptive, or survey, approach calls for the administration of a survey to a random sample of a population or an entire population (Edmonds & Kennedy, 2017). Surveys are used to "observe trends, attitudes, or opinions of the population of interest" (Edmonds & Kennedy, 2017, p. 133). This study compared historical data (retrospective analysis) to determine the relationship between variables.

Research Question

This study examined the relationship between revenue accruals quality and financial statement fraud. Prior research found that companies with excessive, or poor quality, accruals are more likely to produce fraudulent financial statements (Perols & Lougee, 2011; Jones et al., 2008). In order to evaluate the usefulness of an accruals quality ratio to detect fraud, the following research question was developed:

Q1: To what extent does revenue accruals quality differ for public companies with detected financial statement fraud compared to public companies with no detected financial statement fraud?

Hypotheses

The following hypotheses was tested:

$H1_0$: There is no statistically significant difference in revenue accruals quality for companies with detected financial statement fraud and similar companies without detected financial statement fraud.

$H1_a$: There is a statistically significant difference in revenue accruals quality for companies with detected financial statement fraud and similar companies without detected financial statement fraud.

To test this hypothesis, the financial statements of fraudulent and non-fraudulent firms were analyzed to determine the accrual quality of each firm. Once calculated, the results were compared to determine if there was a statistically significant difference. It was expected that the accrual quality of fraudulent firms would be significantly worse than the accrual quality of non-fraudulent firms. In addition, an independent t-test was used to determine if there was a statistically significant relationship between accrual quality and financial statement fraud. It was expected that the accrual quality of fraudulent financial statements would be lower than the accrual quality of non-fraudulent financial statements.

Theoretical Framework

The far-reaching consequences of financial statement fraud make the identification of fraud detection techniques an ongoing concern for academic researchers, regulators, and practitioners (D'Amico & Mafrolla, 2013; Bolton & Hand, 2002; Sharma & Panigrahi, 2012;

Abassi et al., 2012). The most basic and widespread fraud theory, the fraud triangle, is a central

theory for this study and is discussed first in this section. Next, theories specifically related to

financial statement fraud and accrual-related fraud are examined. All of these philosophies

provide the theoretical basis for the development of this study.

The Fraud Triangle

Originally developed in 1953 by Donald Cressey, the fraud triangle includes three

characteristics that are present when someone commits a fraudulent act: pressure, opportunity,

and rationalization (Cressey, 1953). This theory has been widely adopted by accounting

regulators and is included in the authoritative literature in the *Statement on Auditing Standard*

(SAS) No. 99: Consideration of Fraud in a Financial Statement Audit (AICPA, 2002). SAS No.

99 includes an appendix that explains the three characteristics of the fraud triangle and lists risk

factors for each. This section discusses the original three parts of the fraud triangle and

concludes with the evolution of the fraud triangle to include more characteristics.

Pressure. Pressure is one of the incentives that motivates an individual to commit fraud

(Cressey, 1953). The pressure can come from one or more sources. Financial pressure may be

related to personal financial disaster due to bankruptcy, gambling, or addiction (Dellaportas,

2013). Organizational financial disaster may be a result of poor financial performance or

ambitious earnings targets (Lokanan, 2015; Roden, Cox, & Kim, 2016). Social pressures include

the appearance of success and egotistical attributes that motivate fraudulent behavior in order to

influence or impress others (Dellaportas, 2013).

Opportunity. Opportunity must exist in order for fraud to be committed (Cressey,

1953). In many cases, executives and managers are in the position to override controls giving

them the opportunity to alter financial reports (Dellaportas, 2013). Staff-level accountants may

experience a lack of controls that provides an opportunity for embezzlement or misappropriation of funds (Murphy & Dacin, 2011). Accountants and auditors are generally seen as honorable and trustworthy individuals; therefore, stakeholders may take their words and reports as given with no questions asked (Dellaportas, 2013). Others may just not understand the complex accounting rules and processes and choose to not investigate or ask questions. This lack of checks-and-balances provides the perfect opportunity for those in trustworthy positions to conduct fraudulent activity.

Rationalization. The final item that must be present for fraud to occur is rationalization (Cressey, 1953). By telling themselves "they won't get caught" or "everyone does it," fraudsters make themselves believe that their actions are acceptable and are then able to commit the act while remaining in their moral comfort zone (Cressey, 1953; Lokanan, 2015; Dellaportas, 2013). Additionally, the manager may weigh the cost and benefit of the action and realize that the "big" outcome is worth the "small" risk (Murphy & Dacin, 2011).

Evolution of the fraud triangle. Accounting fraud has certainly grown in complexity since Cressey's original observations in 1953 (Dorminey et al., 2012; McMahon, Pence, Bressler, & Bressler, 2016). Numerous studies on the fraud triangle as it relates to accounting fraud has led to the addition of behavioral-based characteristics including capability, ideology, arrogance/ego/entitlement, and coercion (Dorminey et al., 2012; Wolfe & Hermanson, 2004). Although these additional characteristics are not unanimously adopted and included in the regulatory accounting standards, they have been proven to be related to accounting fraud (Soltani, 2014).

In addition to behavioral considerations, Lokanan (2015) argued that institutional practices and societal pressures influence fraud just as much as the original three fraud triangle

characteristics. His research on the socio-political influences on fraud found that these additional characteristics should also be considered as financial fraud risk factors (Lokanan, 2015). Dorminey et al. (2012) suggested ongoing research related to the causes of accounting fraud in order to strengthen the audit risk and detection process.

Financial Statement Fraud Theories

General fraud theories that relate specifically to financial statement fraud include *agency theory* (acting in self-interest), *prospect theory* (focus on earnings), and *motivated-reasoning theory* (hidden bias; Murphy & Dacin, 2011). Agency theory adds to the discussion of financial statement fraud by explaining the motivation behind the fraud and explaining the relationship between the employer/company (the principal) and the employee/manager (the agent). The theory recognizes that the principal and agent will each have different attitudes toward risk and each will act in their own self-interest (Eisenhardt, 1989). Regarding financial statement fraud, the contract between the principal and agent (employment contract) may provide an incentive for the manager to commit fraud in order to further their own self-interest (i.e., salary bonus for meeting an earnings target; Salterio & Webb, 2006). Although individuals may act more honestly than the agency theory suggests (Salterio & Webb, 2006), company stakeholders should be aware of the conflicts involved in the employer/employee relationship.

Prospect theory was introduced by Kahneman and Tversky (1979) as a descriptive model of decision making while under risk. Although originally applied to gambling and insurance, the prospect theory also adds to the discussion of financial statement fraud because it suggests decision makers (managers) will act in a way that will meet a goal/prospect (i.e., earnings target). According to the prospect theory, decision makers may be risk averse or risk seeking depending on their previous experience (Kahneman & Tversky, 1979; Abdel-Khalik, 2014). If a previous

risk resulted in a gain, the decision maker will be more cautious with future decisions in an attempt to secure the increase in wealth; if a risk resulted in a loss, the decision maker will take more risks in hopes of making up for the lost wealth (Abdel-Khalik, 2014). These actions go against the rational choice theory that, after a risk pay off, the risk would be repeated (or if the risk cost them wealth, the risk would be avoided).

The motivated reasoning theory suggests that specific goals affect one's decision making (Kunda, 1990). In other words, the motivation to meet a goal (i.e., earnings target) enhances the use of strategies that are most likely to achieve the goal, including risky strategies (i.e., financial statement fraud). Kunda (1990) concluded that motivations for decision making come from either the desire to be accurate (accurate conclusion) or the desire to achieve a goal (directional conclusion). In the case of financial statement fraud, both conclusions apply because financial statements must be accurate *and* goal-oriented. Other justifications for committing financial statement fraud may be monetary gain, improved social status (successfulness), or moral justification (more people will be helped than hurt; Murphy & Dacin, 2011).

Accrual-Related Fraud Theories

The fraud triangle explains why people commit all types of fraud, not just financial statement fraud. Therefore, the fraud triangle must be taken a step further to merge with accounting- and accrual-related fraud theories in order to have a better understanding of why people commit financial statement fraud. Using results from various research studies, Koch and Wall (2000) developed four models that explain the use of excessive discretionary accruals to commit financial statement fraud: (a) the occasional big bath theory, (b) the smooth income theory, (c) the live for today theory, and (d) the maximize variability theory. These theories

support the current study by explaining the reasoning behind accrual-related fraud and are explained and tied back to the fraud triangle discussion in the following paragraphs.

The *occasional big-bath theory* describes the motivation of a manager to use discretionary accruals inappropriately in order to achieve quarterly earnings targets (Koch & Wall, 2000). While every quarter's target may not be reached, an occasional windfall created by a fabulous quarter can provide job security and financial benefits for the manager. This model is applicable to the pressure dimension of the fraud triangle.

Under the *smooth income theory*, managers use earnings management techniques to alter accruals in order to provide a more stable earnings timeline (Koch & Wall, 2000). If actual earnings exceed the target, the manager will reduce reported earnings. If actual earnings are less than the target, the manager will increase reported earnings. Generally, these actions are taken when there is a financial penalty for earnings not being on target or if the manager thinks that stakeholders appreciate stability (Zhang, 2016; Koch & Wall, 2000). This theory is related to the rationalization characteristic of the fraud triangle.

The *live for today theory* explains why managers participate in earnings management by always minimizing discretionary accruals and, therefore, always maximizing net income (Koch & Wall, 2000). Perhaps the individual is planning to retire or leave the company and chooses to maximize current period earnings. This shortsightedness effect could also be a result of reaching earnings targets in order to keep his/her job. This action would fall under the pressure and rationalization dimensions of the fraud triangle.

Finally, the *maximize variability theory* is used when managers manipulate discretionary accruals to move further away from their earnings target (Koch & Wall, 2000). This risky move would be taken by a manager in order to prepare for a stellar performance in a future quarter. By

manipulating accruals to under-report their current earnings, future earnings that may actually be mediocre will appear to be much higher than expected. This method falls under the rationalization and pressure realms of the fraud triangle.

This study tested the usefulness of a revenue accrual quality ratio as an indication of financial statement fraud. The theoretical basis for the development of this study is explained by combining the concepts of the fraud triangle with specific accrual-related fraud theories. Understanding the characteristics of fraud combined with the psychology of why people commit financial statement fraud creates a theoretical framework for this study.

Definition of Terms

Accrual quality: the measure of the extent to which working capital accruals are realized in future cash flows. If cash flows are not eventually realized, the quality of the recorded accruals was low. If cash flows are subsequently realized, the quality of the previously recorded accruals was high (Dechow & Dichev, 2002).

Discretionary accrual: an accrual that is not imperative to the main function of the business and may or may not eventually be realized. An example would be estimated upcoming executive bonuses. The dollar amounts of discretionary accruals are subjective, estimated, and provide an opportunity for fraudulent manipulations (Ghosh & Olsen, 2009).

Earnings management: management's use of judgement in financial reporting (or structuring of transactions) to mislead or influence stakeholders of the company. Generally, earnings management is used when the firm's performance is poor or to meet contractual requirements (Healy & Wahlen, 1999). Earnings management is not necessarily fraudulent; the use of earnings management to mislead users of the financial statements is fraudulent. Accrual-

based earnings management may include the under-accruing of expenses, delaying an asset write-down, or recognizing revenue prematurely (Bartov & Cohen, 2009).

Financial statement fraud: occurs when firms intentionally violate accounting rules and regulations to create incorrect financial statements (Roxas, 2011). Financial statement fraud may also be referred to as misstated financial statements or fraudulent financial statements.

Material misstatement: a significant error, either intentional or accidental, in the financial statements of a company. The materiality threshold changes depending on the size of the company, among other things. Intentional material misstatements are considered fraud (Gupta & Gill, 2012).

Nondiscretionary accrual: an accrual that is caused by the operations of the business (Ayers, Jiang, & Yeung, 2006). The firm is obligated to pay the expense. An example is an electric bill received but not paid. The amount is specific and exact and can be verified.

Revenue accruals: revenue that is reported on the income statement but cash has not been received (Ghosh & Olsen, 2009). Instead of receiving cash, the firm creates a receivable due from the customer to the company. The receivable is expected to be collected in a future period.

Assumptions, Limitations, and Delimitations

Assumptions

This study used information obtained through the Security and Exchange Commission's (SEC) Accounting and Auditing Enforcement Release (AAER) database. Because enforcement actions are issued with significant investigation, information within the AAERs is assumed accurate and complete. Once a company was identified for this study, additional research was conducted to make sure the information provided by the AAER database was up-to-date and the investigation was considered ongoing or concluded. Because the sample for this study included

companies with fraudulent financial statements, the additional research mitigated the risk that the investigation by the SEC was dropped, but not updated in the AAER database.

Limitations

The sample was limited to AAERs issued in the years of 2015 and 2016. Only those companies identified by the SEC and issued an AAER during those years were included in the sample. Another limitation of this study is that it attempted to identify the relationship between accrual quality and financial statement fraud, but did not attempt to determine causation.

Delimitations

The sample of this study was limited to AAERs issued during the years of 2015 and 2016 only. The SEC issues AAERs to any publicly traded U.S company that has been identified and investigated for committing fraud (Perols & Lougee, 2011); therefore, this study only investigated the relationship between revenue accruals and intentional fraudulent activity. In addition, this study was based only on public company information. No privately held companies or governmental agencies were included in the selected sample. The conclusions reached by this research are limited in scope concerning fraud detection by revenue accrual quality only. Other fraud detection techniques were not considered in this study.

<div align="center">

Significance of Study

</div>

Reduction in Gaps

This study adds to the literature on detecting fraudulent financial statement activity by using an accruals-related analytical procedure. Although there are many ways to detect financial statement fraud, this study adds to the current literature available on fraud detection techniques by providing evidence of the usefulness (or uselessness) of using accrual quality to detect financial statement fraud. Firms are constantly finding more creative ways to commit fraud;

therefore, fraud researchers must also continually revise their detection techniques (Mangala &

Kumari, 2015; Abassi et al., 2012; Bian et al., 2016).

Implications for Biblical Integration

Just as Christians have rules and examples to follow given by our Lord, businesses have

rules and regulations to follow in the conduct and reporting of their operations. Governing

authorities (the FASB, SEC, etc.) issue business rules and we are instructed to follow the laws

and rules provided by these authorities (Romans 13:1-2). However, Biblical concepts may also

be applied to business situations so that the tough ethical questions have clear answers

(Chewning, Eby, & Roels, 1990). Unfortunately, the Bible does not specifically address many of

the issues that we encounter in today's business world. However, the mention of integrity and

honesty throughout the Bible (just a few examples include Matthew 5:8, Proverbs 21:3, Psalm

25:21, Psalm 112, NIV) give instructions on how to live Christ-like lives and run businesses in a

Christian way. How wonderful would it be if all businesses would merge the Biblical principles

of integrity and honesty with the accounting regulations set forth for them to follow?

Businesspeople face ethical issues of all kinds including dishonesty, corruption,

embezzlement, fraud, and pay inequality (Gill & Erisman, 2016). For this study, which focuses

specifically on the ethical issue of fraud, the application of Biblical principles to the fraud

triangle characteristics of pressure and rationalization provide insight on ways that Christians can

overcome this unethical behavior. Pressure can come from a variety of sources including

financial pressures and social pressures (Dellaportas, 2013). The Bible provides direction on

how to properly manage our finances in order to avoid personal financial disaster (Proverbs 3:9-

10) as well as how to define success in order to avoid social pressures (Matthew 16:26). Each of

these passages provides an understanding of what God intends for us to do with our money and

God's definition of success (Idleman, 2013). Success should not be measured by the acquisition

of monetary wealth but by the acquisition of eternal life (Luke 18:18-30).

In addition to pressure, rationalization is also present when fraud occurs (Cressey, 1953;

Lokanan, 2015; Dellaportas, 2013). The act of rationalization involves the weighing of the costs

and benefits prior to committing the fraud and concluding that the benefits of the illegal action

are worth the risk (Murphy & Dacin, 2011). Jesus said, "For what will it profit a man if he gains

the whole world and forfeits his soul?" (Matthew 16:26). This passage is a reminder of the true

costs of unethical behavior and reverses the justification for the fraudulent act. Putting God first

and removing the idolatry of monetary and social success reduces the pressure and

rationalization present during the fraudulent activity (Albertson, 2016).

Christianity is a lived experience that extends far past the walls of a church. We are

called to "always strive to do what is good for each other and for everyone else" in all parts of

our lives (1 Thessalonians 5:15). Christians in business are called to serve God by enabling their

communities to flourish (Van Duzer, 2010) and this study aids authorities, auditors, and

management in the detection of fraud. By detecting misstatements in financial statements, we

are adhering to this calling by making the information more useful and accurate for all

stakeholders' decision making.

Relationship to Field of Study

Accounting is commonly known as the language of business because every organization

has financial transactions. The manipulation of financial statements is the costliest type of fraud

in the workplace (ACFE, 2016). In order for financial statements to be informative to

stakeholders, they must be accurate. This study is directly related to the accounting cognate

because it is the analysis of financial statements (accruals quality in particular) to detect fraudulent activity.

A Review of the Professional and Academic Literature

This literature review covers the most important topics that support this study of using revenue accruals quality as an indicator of financial statement fraud. To begin, accrual- and auditing-related accounting standards are examined as set forth in professional and practitioner materials. Following the discussion of professional literature, academic literature is reviewed. Because the accounting profession is subject to oversight by governing agencies, it is imperative to mention the regulations and standards that accountants and auditors must follow prior to evaluating fraud theory and the most recent research studies in the academic literature. Included in the review of academic literature are topics of (a) financial statement fraud, (b) accruals and earnings management, (c) theoretical framework, (d) the use of accruals in accounting research, and (e) the use of accruals to detect financial statement fraud (including research variables and accrual ratios). Figure 1 below summarizes the topics of this literature review in graphic form.
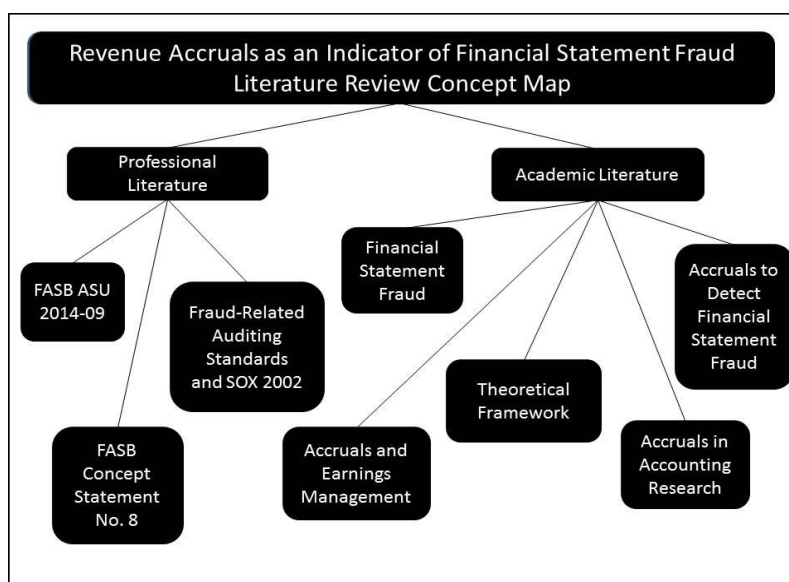
Figure 1: Literature Review Concept Map.

Professional Literature

Accounting professionals are required to adhere to principles set forth by several organizations including the Financial Accounting Standards Board (FASB), the Public Company Accounting Oversight Board (PCAOB), and the American Institute of Certified Public Accountants (AICPA; Johnstone, Gramling, & Rittenberg, 2016; Kassem & Higson, 2012; Dorminey et al., 2012). Therefore, accounting standards and regulations must be acknowledged in any study related to financial reporting. Particularly related to this study are the FASB's Accounting Standards Update (ASU) 2014-09, the FASB's Statement of Financial Accounting Concept No. 8, the PCAOB's Auditing Standard 2110, and the AICPA's guidance on the Statement on Auditing Standard (SAS) No. 99. The most significant guidance available in the professional and practitioner literature is discussed in the next paragraphs.

FASB ASU 2014-09. On May 28, 2014, the FASB issued ASU 2014-09, *Revenue from Contracts with Customers (Topic 606)*. This standard update is a result of a joint effort between the FASB and the International Accounting Standards Board (IASB) to clarify and harmonize the principles for revenue recognition using United States Generally Accepted Accounting Principles (U.S. GAAP) and International Financial Reporting Standards (IFRS). ASU 2014-09 provides a principle-based approach for revenue recognition and eliminates various industry- and transaction-specific rules making revenue recognition uniform for all reporting entities. In addition, enhanced disclosures are required to provide further analysis of reported revenue (FASB, 2014). As a result, U.S. GAAP and IFRS are now closely aligned to allow a fair comparison of company revenues regardless of industry or transaction type.

The key concept of ASU 2014-09 is that an entity should "recognize revenue when (or as) it satisfies *a performance obligation* by transferring a promised good or service to a

customer" (FASB, 2014, p. 5). If a contract contains many different performance obligations, each should be separated with an appropriate monetary value. Revenue should be recognized as each performance obligation is completed rather than based on the completion percentage of the entire contract.

This basic accrual principle is the framework for revenue reporting; however, ASU 2014-09 clarifies and simplifies the revenue recognition process to provide comparability of revenues from a variety of industries and capital markets (FASB, 2014). Accrual accounting is an integral part of the current study; therefore, an understanding of this updated revenue recognition standard is an imperative part of the literature review. However, this new standard does not affect this study because early adoption of ASU 2014-09 is not permitted for public entities. Historical company data (prior to 2017) was analyzed in this study (Rosenhouse, 2014).

FASB SFAC No. 8. FASB Concept Statement No. 8 defines accrual accounting and explains the justification for using accrual accounting when reporting the performance of an organization. It states that accrual accounting provides better information on the economic activity of the business than the cash-basis accounting method (FASB, 2010). Cash-basis accounting relies on inflow of cash to record revenue and an outflow of cash to record an expense. However, revenue may actually be earned without cash being received in the current period and expenses incurred without cash being paid in the current period. This timing problem is mitigated by using the accrual basis where revenues are booked when earned and expenses are booked when incurred (Dechow, 1994). There is a trade-off, however, in using the accrual basis rather than the easy-to-prove cash basis because managers have some discretion over the accrued amounts (Dechow, 1994; Healy & Wahlen, 1999). Therefore, even though the accrual basis may provide a more accurate picture of the business's activity, it also provides an opportunity for

fraudulent financial statement activity through subjective estimates of discretionary accruals

(Perols & Lougee, 2011; Dechow, 1994; Healy & Wahlan, 1999). Nonetheless, standard setters

agree that the accrual basis more accurately reports a firm's performance because accruals must

be "objective and verifiable" which limits management's discretion when reporting accruals

(Dechow, 1994, p. 8).

FASB Concept Statement No. 8 relates directly to this study because it defines the

purpose of financial reporting as providing "financial information about the reporting entity that

is useful to (stakeholders) in making decisions about providing resources to the entity" (FASB,

2010, p. 1). Stakeholders are identified as investors, lenders, creditors, and regulators and the

importance of accurate and useable information is implied throughout this statement (FASB,

2010). This concept statement highlights the importance of accurate financial statements and,

therefore, the need for tools to aid in the detection of fraudulent financial statement activity.

Fraud-related auditing standards and the Sarbanes-Oxley Act of 2002. The PCAOB

and the AICPA are the main governing agencies for audit procedures. The PCAOB was created

as part of the Sarbanes-Oxley Act of 2002 (SOX) to help improve investor confidence in

corporations. The PCAOB's primary purpose is to oversee public accounting firms that audit

publicly-traded corporations. The PCAOB establishes and enforces rules on auditing, quality

control, ethics, and independence (Sarbanes-Oxley Act, 2002). The PCAOB's Auditing

Standard No. 2110 provides guidance related to identifying and assessing risk of material

misstatements. Under this standard, auditors are required to perform analytical procedures in

order to identify unusual relationships involving revenue accounts (PCAOB, 2010). The

identification of unexpected account relationships might indicate a material misstatement,

including material misstatement due to fraud (PCAOB, 2010). This study of accruals as an

indicator of financial statement fraud adds to the literature on analytical procedures and the risk assessment process.

Statement on Auditing Standards No. 99 (SAS 99), issued by the AICPA's Auditing Standards Board (ASB), describes fraud and sets documentation and engagement requirements for the auditing team. In addition, risk assessment, communication, and controls are addressed as they relate to audit procedures. The AICPA's guidance on SAS No. 99 provides criteria for auditors' fieldwork related to assessing the likelihood of fraud (Dorminey et al., 2012). Fraud risk is defined as "the risk that the client and its management would intentionally cause the financial statements to be materially misstated" (Hammersley, Johnstone, & Kadous, 2011, p. 86). Auditors are required to conduct a preliminary fraud risk assessment in the planning stage of the audit because thorough planning increases the likelihood of a high quality audit (Power, 2013; Raslan, Hegazy, & Eldawla, 2016; Mangala & Kumari, 2015). AU §316.28 provides examples of analytical procedures that may be red flags that are helpful in identifying unusual activity (AICPA, 2007). For example, the comparison of sales volume (as determined from recorded revenue amounts) with production capacity is useful since excess sales volume over production capacity may be indicative of recording fictitious sales. Another example provided involves a trend analysis of monthly revenues and monthly sales returns during and shortly after the reporting period. This procedure may indicate the existence of undisclosed side agreements with customers to return goods that would affect revenue recognition (AICPA, 2007). It must be noted that the presence of a red flag merely indicates the potential for financial statement fraud and does not "ensure the presence of fraud" (Mangala & Kumari, 2015, p. 54). The current study examines accruals quality as an indicator of financial statement fraud and adds to the literature on analytical procedures that may help detect financial statement fraud.

In addition to creating the PCAOB to oversee the audit process, the SOX Act of 2002 brought attention to the act of financial statement fraud by increasing criminal and civil penalties for white-collar crime, increasing the requirements for disclosures, and specifying responsible parties (corporate responsibility). Many studies have compared earnings management prior to SOX and after SOX. Some studies indicate that earnings management increased significantly after the implementation of SOX (Cohen, Dey, & Lys, 2008; Bartov & Cohen, 2009) while other studies suggest SOX resulted in very few changes in earnings management (Ghosh, Marra, & Moon, 2010). A study by Cohen et al. (2008) suggested that real earnings management, as opposed to accrual-based earnings management, increased after the passage of SOX. Bartov and Cohen (2009) found similar results when they examined over 10,000 firm-quarter observations ranging from 1987 through 2006 and applied a modified cross-sectional Jones model (Jones, 1991) to compare earnings management in pre-SOX years and post-SOX years. Although the SOX's oversight rules, stricter penalties, and increased regulations on financial reporting should have deterred management from fraudulent financial reporting, Bartov and Cohen (2009) found that earnings management actually increased in the post-SOX period.

On the other hand, Ghosh et al. (2010) examined over 9,000 observations from US publicly traded firms between 1998 and 2005 and found "no evidence to suggest that the overall level of earnings management declined following SOX" (p. 1145). Gavious and Rosenboim (2013) evaluated the relationship between earnings quality, market conditions (stock price), and government regulation (SOX). They found an increase in earnings quality (reduction in abnormal accruals) just prior to the passage of SOX. Therefore, they concluded that the reduced earnings management was due to the exposure of the many accounting scandals and an increase in investor awareness rather than due to the passage of SOX (Gavious & Rosenboim, 2013).

More recently, Jordan, Clark, and Pate (2015) examined the third decimal digit in EPS and, prior to SOX, found a significant number of instances of earnings manipulation so that EPS could be rounded up to the next penny. For periods after SOX, this form of earnings management was practically eliminated (Jordan et al., 2015). The current study focused on accrual-based earnings manipulation; these former studies show the inconsistencies in research findings regarding earnings management and, therefore, the importance of more research in this area.

"SOX's impact on earnings management appears inconclusive at this point and further research in the area is warranted" (Jordan et al., p. 154). Regardless of the existing guidance available to auditors and the increased literature provided after the passage of SOX, Kassem and Higson (2012) found that even more guidance related to fraud risk assessment is needed from standard setters. They reviewed academic research studies to explore the reasons for the audit expectation gap and to measure the efforts of standards setters to narrow the gap (Kassem & Higson, 2012). They proposed that standard setters and external auditors are not doing enough to detect financial statement fraud and there is, therefore, a gap that needs to be narrowed. Because of the evidence of recent increases in earnings management and the difficulty in detecting it, more earnings management research is warranted. This study adds to the fraud detection and risk assessment literature by evaluating the relationship between accrual quality and financial statement fraud.

Academic Literature

Although the professional/practitioner literature provides regulations and guidance for accrual accounting and auditing accrued revenues, a review of the academic literature aids in the practical implementation of the standards and procedures accountants and auditors are required

to follow. This section of the literature review evaluates, defines, and discusses the following topics: (a) financial statement fraud (including detection techniques and risk assessment), (b) accruals and earnings management, (c) theoretical framework, (d) accruals in accounting research, and (e) accruals to detect financial statement fraud (including research variables and accrual ratios).

Financial statement fraud. Financial statement fraud is an ongoing problem; therefore, the definition and evaluation of financial statement fraud has been part of academic literature for decades. In fact, the Association of Certified Fraud Examiners (ACFE) estimates that, of all occupational fraud types, the largest median losses result from financial statement fraud (ACFE, 2016). Roxas (2011) defined financial statement fraud as the intentional violation of GAAP through the manipulation of earnings. Gupta and Gill (2012) defined financial statement fraud as "a deliberate misstatement of material facts by management in the books of account of a company with the aim of deceiving investors and creditors" (p. 150). Fraud involves an intentional act; therefore, it is important to prove that the misstatements were intentional rather than accidental (Kim, Baik, & Cho, 2016). Accidental misstatements are usually smaller and less significant errors than fraudulent misstatements that can cause drastic problems in the financial markets (Kim et al., 2016).

Mangala and Kumari (2015) reviewed research from 1984 through 2014 and found that a variety of fraud detection techniques are necessary to curb fraud effectively and more research is needed regarding corporate financial reporting fraud. Many studies have attempted to improve the fraud detection process including using techniques such as digital analysis (Roxas, 2011), annual report word choice (Purda & Skillicorn, 2015), and data mining (Gupta & Gill, 2012). In addition, data mining is becoming more popular as a fraud detection technique because of the

ability to handle large, complex quantities of financial data (Sharma & Panigrahi, 2012).

Nonetheless, numerous researchers emphasize the importance of new detection techniques that

can keep up with the constantly changing fraudulent activity and can warn stakeholders of the

potential of fraud (Abassi et al., 2012; Bolton & Hand, 2002; Golden, Meyerson, Brockett, &

Wortham, 2013; McMahon et al., 2016; Bian et al., 2016).

As discussed earlier in the professional literature section, auditors must assess the risk of

fraud as part of their audit procedures. One part of the fraud risk assessment is an evaluation of

accruals. While abnormal accruals may not be the most important red flag for the detection of

financial statement fraud, they are certainly one of many areas that should be considered

(Gullkvist & Jokipii, 2013). Bradshaw, Richardson, and Sloan (2001) found that auditors do not

consider high accruals as an indicator of future earnings problems. They contend that auditors

may think that it is not their responsibility to alert investors of *possible future* financial statement

fraud or maybe they lack the sophisticated detection techniques to signal such earnings

management (Bradshaw et al., 2001). Nonetheless, additional research is warranted regarding

audit procedures to detect fraud as well as the responsibility of auditors to alert investors of the

potential for future financial statement fraud (Bradshaw et al., 2001; Sharma & Panigrahi, 2012).

Accruals and earnings management. A firm's revenues are made up of (1) income that

has been earned and cash received (cash flows) and (2) income that has been earned but cash has

not yet been received (accrued revenues; Ghosh & Olsen, 2009). The quality of earnings is

generally defined as the "magnitude of estimation errors in accruals" (McNichols, 2002, p. 61;

Dichow & Dichev, 2002). The estimation error is defined as the "difference between the amount

accrued and the amount realized" through cash flows (McNichols, 2002, p. 62). Although the

recording of accrued transactions is allowed by GAAP and a common practice, this procedure

can easily turn into fraudulent earnings management if used to mislead the users of financial statements (Ayers et al., 2006; Badertscher, Collins, & Lys, 2012; D'Amico & Mafrolla, 2013; Dechow, Hutton, Kim, & Sloan, 2012; Perols & Lougee, 2011; Healy & Wahlen, 1999; Dechow, 1994; Foster & Shastri, 2013; Gerakos, 2012). The fraudulent use of accruals results in accruals that do not reverse in future periods while the correct use of accruals will result in the realization (or reversal) of the accrued amounts (Perols & Lougee, 2011).

Accounting crime investigators stress the importance of fraud indicators related to financial statement fraud more than those related to internal control weaknesses (Gullkvist & Jokipii, 2013). While the ambiguity of accruals may make them difficult to use as variables in the detection of financial statement fraud (Ball, 2013) and some doubt that accruals are useful in detecting fraud because they are already heavily examined by auditors (Raslan et al., 2016), accruals are nonetheless a main avenue for financial reporting manipulation and should continue to be a topic of discussion and research.

Theoretical framework. Fraud theory is a broad subject that explains the characteristics of fraudsters and the environment in which fraud occurs (Dorminey et al., 2012). A clear understanding of the reasoning and psychology of those who commit (or are likely to commit) fraud is important in identifying and reducing financial statement fraud risk (Murphy & Dacin, 2011; Power, 2013; Brytting, Minogue, & Morino, 2011). Auditors must understand the motivations and conditions present when fraud takes place in order to accurately assess the potential for fraud and develop their audit procedures according to the risk presented (Dorminey et al., 2012). The following theories make up the theoretical framework for this study by explaining the conditions present when fraud occurs: the fraud triangle, accrual-related fraud theories, agency theory, prospect theory, and motivated reasoning theory.

Fraud triangle. Originally developed by Cressey (1953) in the mid-20th century, the fraud triangle explains the circumstances present when fraud occurs: opportunity, rationalization, and pressure/incentive. While each part of the fraud triangle is present when fraud occurs, they do not have to be present in equal amounts (Brytting et al., 2011). Wolfe and Hermanson (2004) added a fourth characteristic, capability, which includes the traits and abilities that must be present for fraud to be perpetuated in the presence of the other three characteristics. Evidence from their vast fraud investigation experience led them to the conclusion that a fraudster must also, in addition to the fraud triangle circumstances, possess certain traits in order to actually go through with a fraudulent act (Wolfe & Hermanson, 2004). Traits include the knowledge of business processes, the intelligence to exploit internal controls, a strong ego, a persuasive personality, the successful management of stress, and the ability to lie effectively (Wolfe & Hermanson, 2004). Dellaportas's (2013) study of inmate accountants supported Wolfe and Hermanson's findings that specialized knowledge and a trustworthy personality are necessary for fraud to occur. Accountants' unique position in the company allows them to gain trust and become very familiar with the internal control processes, including how to bypass the controls (Dellaportas, 2013).

Soltani (2014) argued that the fraud triangle should also consider the environmental, regulatory, and ethical climate of the organization. Additionally, Lokanan (2015) challenged the fraud triangle as a legitimate theory when assessing fraud risk and concluded that the fraud triangle provides a "limited conception of fraud" and should not be solely relied upon by auditors when assessing fraud risks (p. 220). He argued that the corporate culture and surrounding environment (including institutional processes and practices) should be considered when evaluating conditions and behaviors that could lead to fraud (Lokanan, 2015). Findings of

McMahon et al. (2016) agreed with Lokanan that auditors should move beyond the fraud triangle when evaluating fraud risks.

The term "fraud" includes actions of petty employee theft, embezzlement of funds, significant fraudulent financial reporting, and misappropriation of assets (Soltani, 2014). Because of this broad definition of fraud, it is important to narrow down the discussion of the fraud triangle to financial statement fraud in particular. Roden et al. (2016) applied the concepts of Cressey's fraud triangle in predicting corporate fraud and, like Lokanan (2015), found that corporate culture and the structure of the board of directors is an important part of the fraud risk discussion. They applied the characteristics of opportunity, pressure, and rationalization to 103 firms that had been issued AAERs by the SEC for financial statement fraud from 2003-2010. After comparing the results to those of a matched sample of similar, non-fraudulent firms, they found that fraud is more likely when there are fewer women, more insiders, and the CEO serves as the chair of the board of directors (Roden et al., 2016). Although they did not dispute Cressey's fraud triangle theory, they concluded that attention should also be focused on the corporate culture and the organizational make-up of the board of directors (Roden et al., 2016).

Accrual-related fraud theories. Narrowing down the discussion of financial statement fraud theory to accrual-related financial statement fraud theory was the topic of Koch and Wall's (2000) study. They studied the actions of several CEOs during periods of sub-target earnings as well as during the period right before they left the company. The use of discretionary accruals/earnings management was found to be significant in both scenarios. The four accrual-related fraud theories that came from the study include *live for today*, *smooth income*, *maximize variability*, and the *occasional big bath* (Koch & Wall, 2000). Figure 2 summarizes the actions of minimizing or maximizing discretionary accruals to achieve an intended result:

	Latent Earnings Above Target	
	Minimum Discretionary Accruals	**Maximize Discretionary Accruals**
Minimize Discretionary Accruals	**"Live for Today"**	**"Smooth Income"**
Maximize Discretionary Accruals	**"Maximum Variability"**	**"Occasional Big Bath"**

Figure 2: Possible Outcomes in the General Case. Adapted from (Koch & Wall, 2000).

Koch and Wall's (2000) *live for today theory* explains a manager's reasoning for maximizing net income in the current period in order to meet a short-term target. Perhaps they are not planning to be with the company much longer and are maximizing profit while they can (Koch & Wall, 2000). The *smooth income theory* describes the manipulation of accruals to provide a more stable earnings timeline (Koch & Wall, 2000; Zhang, 2016). The *maximize variability theory* refers to a manager's use of accruals to move further away from earnings targets in order to prepare for an extraordinary future quarter; the under-reporting of current earnings will make below-average future earnings appear fabulous (Koch & Wall, 2000). Finally, the *occasional big bath theory* describes management's motivation to inappropriately record accruals in order to report an occasional windfall quarter (Koch & Wall, 2000). Their findings add to the literature on linking earnings management fraud and compensation; in addition, their conclusions add to the theoretical framework of this study, which seeks to link accruals to financial statement fraud.

Healy and Wahlen (1999) reviewed the literature and found evidence of three reasons that managers conduct earnings management fraud. The first is capital market motivations; their study showed that some firms managed earnings for stock market purposes. However, the

frequency and magnitude of earnings management for capital market purposes was not identified (Healy & Wahlen, 1999). The second incentive for managers' earnings management related to contract incentives. Management compensation and lending agreements are often tied to earnings; therefore, there is an incentive to manage earnings to manipulate bonuses, ensure job security, and adhere to debt covenants (Healy & Wahlen, 1999; Dion, 2016). The final motivation evident from their study related to regulatory motivations including government and industry rules. Again, the frequency and magnitude of earnings management for this purpose was not identified (Healy & Wahlen, 1999). All of the theories mentioned in this section provide a theoretical framework that provided a foundation for the current study.

Agency theory. Beginning as an economic theory, agency theory has evolved to be one of the leading theories in accounting literature (Murphy & Dacin, 2011). Agency theory, first proposed by Mitnick (1973) and Ross (1973), seeks to define the relationship between a principal (i.e., employer) and an agent (i.e., employee). Although the agent is hired to act in the best interest of the principal, the theory states that the agent may act in his or her own self-interest rather than in the best interest of the agent. This conflict is a result of differing goals and attitudes of risk by the principal and agent (Eisenhardt, 1989; Gerard & Weber, 2014). In an attempt to resolve the agency problem of differing goals, agent compensation is often attached to the earnings of a company (i.e., stock options or earnings bonuses). This creates an incentive for the manager to manipulate earnings so that they (the agent) and the company/shareholders (the principal) are both better off…until the fraud is uncovered (Dion, 2016; Healy & Wahlen, 1999). While research shows that individuals may act more honestly than the agency theory suggests (Salterio & Webb, 2006), company stakeholders should recognize the conflict explained by the

agency theory and address the motivation to commit fraud created by management's employment contract.

The most recent research on agency theory as it applies specifically to accounting fraud includes studies by Dion (2016) and Shi, Connelly, and Hoskisson (2016). Dion (2016) explored executives' opportunistic (fraudulent) behavior and applied characteristics of three philosophical egoisms: self-interested yet compassionate (Adam Smith), self-interested and prudent yet yearning for power (Thomas Hobbes), and self-interested while leading with power and provoking fear in others (Machiavelli). His study found that executives with Smithian characteristics are not likely to commit financial statement fraud because they balance their self-interest with concern for others. Hobbesian executives are more inclined to commit financial fraud than the Smithian executive because of their hunger for power. Executives with Machiavellian tendencies are the most likely to commit financial statement fraud because of their unclear understanding of virtue and vice (Dion, 2016).

Shi et al. (2016) also applied agency theory to accounting fraud in their study of external corporate governance and financial statement fraud. They evaluated 265 cases of financial statement fraud from 1999-2012 based on the SEC's AAER database. The external corporate governance variables tested included (a) dedicated institutional ownership (the ratio of total shares held by dedicated institutional investors to total shares outstanding), (b) takeover defense provisions (staggered board, limitation of amending bylaws and charter, supermajority to approve a merger, golden parachute, and poison pill), and (c) analysts' recommendation pressure (sum of the average percent of sell recommendations and buy recommendations issued by securities analysts; Shi et al., 2016). Although external corporate governance is implemented to decrease the likelihood of corporate financial fraud, Shi et al. (2016) found these controls can

actually increase the likelihood of financial fraud. These findings add to the literature on financial statement fraud detection by identifying the likelihood of financial statement fraud amid various provisions to prevent it.

 Prospect theory. Originally proposed by Kahneman and Tversky (1979), prospect theory is an alternative to the expected utility theory that acknowledges the decision maker's awareness of risk based on *sure* gains or losses (certainty effect) and their tendency to isolate components that are common among all options (isolation effect). The prospect theory breaks down the decision process into two phases: editing and evaluation. In the first phase, options are coded, combined, or cancelled based on their probable outcomes. Then, the options (prospects) are evaluated based on their value and the option with the highest value is chosen (Kahneman & Tversky, 1979). The prospect theory proposes that decision makers can be both risk averse and risk seeking depending on the outcome of each option (Kahneman & Tversky, 1979; Abdel-Khalik, 2014). An option resulting in a gain makes the decision maker against taking on additional risk that might mitigate the gain; on the other hand, an option resulting in a loss makes the decision maker take on more risk in hopes of a larger payout (Abdel-Khalik, 2014). This is against the rational choice theory that a loss would make one extra careful in decision making (Abdel-Khalik, 2014). Thirteen years after the development of the prospect theory, Kahneman and Tversky expanded their research on the subject and concluded that losses are two to two-and-a-half times more significant in decision making than gains of the same size (Tversky & Kahneman, 1992; Jiang, Lu, Shan, & Zhu, 2016). In other words, avoiding losses is a more significant motivator in the commitment of fraud rather than the potential for gains.

 Several notable studies have applied the concepts of prospect theory to accounting fraud. Abdel-Khalik (2014) selected 60 accounting fraud cases from around the world that cost $200

million or more of losses. His research concluded that the "risk-seeking behavior in the manner predicted by the prospect theory is observable in the real world" (Abdel-Khalik, 2014, p. 81). Jiang et al. (2016) evaluated companies to determine if accounts were manipulated to avoid reporting negative working capital. Their results, concurring with the prospect theory, showed that the negative assessment of working capital deficits "significantly outweighs the positive assessment associated with reporting a working capital surplus of the same magnitude" (Jiang et al., 2016, pp. 109-110).

In 2015, Wasiuzzaman, Sahafzadeh, and Nejad tested the influence of the prospect theory on earning management activity. After using the earnings distribution model to test 538 firms from 15 countries, they found that the prospect theory is applicable when explaining executive motivation to manage earnings; however, it is not as effective when considering industries separately. Industry characteristics such as competitiveness, profitability, leverage, and capital intensity were found to influence managed earnings. They concluded that standard setters, researchers, and stakeholders should "focus on both firm and industry-level variables when assessing earnings management activities" (Wasiuzzaman et al., 2015, p. 344).

Most recently, Petrou and Procopiou (2016) applied the concepts of the prospect theory to CEO shareholdings and earnings manipulation. Their research concluded that CEOs with shareholdings are risk averse when it comes to earnings management. However, when the CEO holds dual positions (chief executive and board chair) there is increased motivation to manipulate earnings because of their powerful position (Petrou & Procopiou, 2016). They suggested that corporate boards of directors evaluate executive compensation and governance systems to ensure controls are in place to mitigate the chance of fraudulent earnings management (Petrou & Procopiou, 2016).

Motivated reasoning theory. Kunda (1990) was the first to explore the relationship between reason and rationality. He proposed that decision makers are motivated to arrive at a particular conclusion based on their "prior beliefs and expectancies" (Kunda, 1990, p. 480). The motivations behind the decision makers' actions may come from either the desire to be accurate (accurate conclusion) or the desire to achieve a goal (directional conclusion; Kunda, 1990). In the case of financial statement fraud, both accurate conclusions and directional conclusions can cloud the judgement of the decision maker because financial statements must be accurate *and* are expected to meet goals (Murphy & Dacin, 2011).

While most research on the motivated reasoning theory as it relates to accounting focuses on auditors, Murphy and Dacin (2011) applied the motivated reasoning theory to fraudulent behavior. Fraudsters rationalize their actions in order to rid themselves of guilt for doing the wrong thing (Dellaportas, 2013; Murphy & Dacin, 2011). The motivated reasoning theory considers two of the three parts of the fraud triangle: pressure (motivation) and rationalization (reasoning). According to Murphy and Dacin (2011), justification comes from a variety of sources including monetary rewards (improved standard of living), appearance of successfulness (improved social status), moral justification (it may be wrong but it will benefit more than it will hurt), and diffusion of responsibility (everyone does it; Murphy & Dacin, 2011).

Although fraud theory is a very broad subject, an understanding of the fraud triangle, accrual-specific fraud theories, agency theory, prospect theory, and motivated reasoning theory provides a framework to consult when assessing the likelihood of financial statement fraud. Rational choices cannot be expected when it comes to corporate governance (Marnet, 2007). The consideration of these theories will increase the efficiency of auditors, regulators, and stakeholders in the corporate governance process (Marnet, 2007).

Accruals in accounting research. This section of the literature review will visit the most significant studies that have used accruals in accounting research while the section that follows will focus specifically on using accruals to detect financial statement fraud. This first section is a necessary addition to the literature review to show the importance of accruals in various accounting research studies.

Paul M. Healy (1985) conducted one of the most notable studies on accruals. He evaluated the relationship between accrual policies of managers and their bonus contracts in 250 of the largest U.S. industrial corporations. Of the 250 corporations, 94 companies made it in to his sample because of their publicly disclosed bonus plan definitions. His study found a "strong association between accruals and managers' income-reporting incentives under their bonus contracts" (Healy, 1985, p. 106). Healy's work began a trend of accrual research regarding the incentives related to the manipulation of accruals and recent accrual researchers often cite his work.

Another research study of accruals investigated the relationship between cash flow, accruals, and stock prices and concluded that stock prices do not fully reflect all publicly available information due to accruals (Sloan, 1996). Sloan (1996) evaluated over 40,000 firm-year observations of financial statement and stock price data. Using earnings, accruals, and cash flow from operations, his conclusions contradicted the traditional efficient market theory that stock prices are an efficient way to reflect all publicly available information (Sloan, 1996). Although a more recent study found that Sloan's accrual anomaly may no longer be reliable in today's market (Green, Hand, & Soliman, 2011), his study has continued to be cited in decades of accrual-related research because it can be applied to all publicly traded companies, not just those with a specific circumstance.

Jones (1991) studied the use of earnings management by domestic producers involved in import-relief investigations by the U.S. International Trade Commission and found that managers used discretionary accruals to manipulate income during import relief investigations. The 23 firms studied were from five industries (automobiles, carbon steel, stainless and alloy tool steel, copper, and footwear) and were being investigated for acts such as antidumping, countervailing duty, and general escape clause damages. Jones (1991) presented a total accruals model that accounts for changes in revenues, property/plant/equipment, and total assets. Her model is often modified for specific research purposes (Dechow, Sloan, & Sweeney, 1995; Kothari, Leone, & Wasley, 2005; Larcker & Richardson, 2004; McNichols, 2002).

Patricia M. Dechow has been a significant contributor to accrual research. Beginning in 1994, she studied earnings and cash flows as a measure of firm performance (Dechow, 1994). By measuring the relationship between earnings, stock prices, and cash flows, she concluded that accrual-based earnings "have a higher association with stock returns than do realized cash flows" because of the timing and matching problems involved with cash basis accounting (Dechow, 1994, p. 35). Her 1994 study demonstrates the importance of accrual accounting and explains why accrual-based earnings and expenses are reported to stakeholders rather than cash basis reports (Dechow, 1994). In 2002, Dechow and Dichev investigated the quality of accruals based on how well they turned in to cash flows. Their study found that firm characteristics (such as volatility, operating cycle, firm size, reported losses, and level of accruals) can be used to judge the quality of accruals and, in addition, connected Sloan's 1996 study with Dechow's earlier 1994 study to conclude that "large accruals signify low quality earnings and less persistent earnings" (Dechow & Dichev, 2002, p. 54).

Continuing on the foundation of accrual research provided by earlier scholars, Ayers et al. (2006) explored the relationship between discretionary accruals and earnings benchmarks. They found a direct relationship between discretionary accruals and earnings but could not conclude the reasons behind this relationship (Ayers et al., 2006). Ghosh and Olsen (2009) looked at the use of discretionary accruals during periods of external uncertainty and found that managers use accruals to smooth earnings during periods of high external uncertainty; however, the factors that signal high uncertainty are hard to define (Ghosh & Olsen, 2009). Their findings supplement Dechow's (1994) study, previously mentioned, which evaluated uncertainty related to the firm's *internal* environment (i.e., earnings and cash flows).

The relationship between accruals and cash flows was once again studied by Badertscher et al. (2012). They examined managers' motivations for using discretionary accruals including opportunistic reasons, informational reasons, and contractual reasons. The "opportunistic" incentive involves using discretionary accruals to disguise poor economic performance of the firm. The "informational" use of accruals occurs in order to prepare for the future activities of the firm. In addition, the "contractual" use of accruals attempts to minimize the contracting costs in order to maximize firm value (Badertscher et al., 2012). Their findings suggest that the ability of discretionary accruals to predict future cash flows varies depending on the motivation behind the use of the discretionary accruals.

Research by Foster and Shastri (2013) looked at the relationship between accruals (earnings management), material internal control weaknesses, and audit quality. They suggested that auditors should extend the materiality threshold for firms with material internal control weaknesses when testing accruals in order to mitigate earnings management risks (Foster & Shastri, 2013). Adding to the literature on accruals and audits, Lustgarten and Shon (2013)

examined how abnormal accruals may impact the life expectancy of an audit and found an indirect relationship – when firms make large abnormal accruals, audit engagement life expectancy decreases.

The most recent accrual research involves investment uncertainty (Arif, Marshall, & Yohn, 2016), stock price crashes (Zhu, 2016), and cash flow disclosures (Miao, Teoh, & Zhu, 2016). Research by Arif et al. (2016) evaluated the relationship among accruals, length of operating cycle, and firm uncertainty. They found that accruals increase as uncertainty increases and is more evident for firms with longer operating cycles (Arif et al., 2016). Zhu (2016) examined decades' worth of financial information compared to stock price changes and found that "high accruals predict a higher price crash probability than low accruals" (p. 349). One explanation of this relationship was found to be due to "managers' use of income increasing accrual estimates to hoard bad news;" once the bad news is made public, the stock price crashes (Zhu, 2016, p. 349). Miao et al. (2016) examined accruals, statement of cash flow disclosures, and investor sophistication. He found a positive relationship between the thoroughness of the statement of cash flow disclosures and the efficient pricing of accruals by investors (Miao et al., 2016). In addition, less sophisticated investors need easily available cash flow disclosures for their evaluation of accruals (Miao et al., 2016).

This section has summarized the most notable and most recent accounting research using accruals. Following the suggestion of Jones et al. (2008), the present study will add to the existing literature by considering the use of a revenue accruals quality ratio as an indicator of financial statement fraud. An understanding of how accruals have been used in academic research in the past provides information that will help choose the most appropriate accruals ratio

for the present study. *Figure 3* summarizes all studies noted in this section of the literature review.

Researcher (s)	Topic
Arif, Marshall, & Yohn (2016)	Abnormal accruals and firm uncertainty
Ayers, Jiang, & Yeung (2006)	Discretionary accruals and earnings targets
Badertscher, Collins, & Lys (2012)	Discretionary accruals as a predictor of future cash flows
Dechow & Dichev (2002)	The quality of accruals and earnings: The role of accrual estimation errors
Dechow (1994)	Earnings and cash flows as a measure of firm performance: The role of accruals
Foster & Shastri (2013)	Materiality of abnormal accruals and internal control weaknesses
Ghosh & Olsen (2009)	Environmental uncertainty and discretionary accruals
Green, Hand, & Soliman (2011)	The apparent demise of Sloan's accruals anomaly
Jones (1991)	Earnings management during import relief investigations
Lustgarten & Shon (2013)	Abnormal accruals and the life expectancy of audit engagements
Miao, Teoh, & Zhu (2016)	Statement of Cash Flow disclosures and pricing of accruals
Sloan (1996)	Do stock prices fully reflect information in accruals and cash flows about future earnings?
Zhu (2016)	Accruals and stock price crashes

Figure 3: Accruals in Accounting Research.

Accruals to detect financial statement fraud. This literature review section is perhaps the most significant to this study as it summarizes the most relevant research that has tested accruals as an indicator of financial statement fraud. The study of using accruals to detect financial statement fraud is not necessarily a new idea. Two of the most significant accounting researchers on the topic of accruals are Patricia M. Dechow and Richard G. Sloan.

Dechow and Sloan partnered up to study the use of accruals to detect earnings management in perhaps the most notable research related to accruals and fraud (Dechow et al., 1995). Their study on detecting earnings management considered "five models of the process generating nondiscretionary accruals" (Dechow et al., 1995, p. 197). The Healy, Deangelo, Jones, modified-Jones, and industry models were all tested with the results showing that the Jones model "provides the most powerful tests of earnings management" (Dechow et al., 1995, p. 223). Because of their findings, a modified version of the Jones model is often the basis for accrual-related studies (Dechow et al., 1995; Kothari et al., 2005; Larcker & Richardson, 2004).

Beneish (1999) presented a model to distinguish between fraudulent and non-fraudulent earnings management. His model uses the following indexes: number of days' sales in

receivables, gross margin, asset quality, selling/general/administrative expenses, sales growth, depreciation, leverage, and total accruals to total assets (Beneish, 1999). His study found that earnings manipulation "generally consists of artificial inflation of revenues or deflation of expenses" and that the "primary characteristic of manipulators was that they had high growth prior to periods during which manipulation was in force" (Beneish, 1999, p. 34). Dechow and Dichev (2002) continued with the topic by incorporating accrual estimation errors into the study of earnings management and found that "accrual quality is positively related to earnings persistence" (p. 54).

Seventeen years after their first consideration of this topic, Dechow and Sloan partnered up again to study the detection of earnings management and created a new approach that "simultaneously improves test power and specification" (Dechow et al., 2012, p. 276). The new study considers the "inherent characteristics of accrual-based earnings," particularly the fact that "accrual-based earnings management in one period must reverse in another period" (Dechow et al., 2012, p. 276). Their study used the Healy model, the Jones model, the modified-Jones model, the Dechow and Dichev model, and the McNichols model and found that "accrual-based tests for earnings management can be significantly improved by incorporating accrual reversals" (Dechow et al., 2012, p. 331). This approach should identify only the fraudulent accruals (amounts that do not reverse in subsequent periods). Gerakos (2012) reviewed the new method presented by Dechow et al. (2012) and found that it is a great addition to the literature on using accruals to detect earnings manipulation by "introducing dynamics into the estimation of discretionary accruals" (p. 346). However, he also raised several fundamental questions related to the identification of accrual reversals, properties of nondiscretionary accruals, and the dynamics of discretionary accruals.

Jones et al. (2008) studied the relationship of accruals (earnings management) and financial statement fraud that was similar to that of the 1995 study by Dechow et al. Using 118 firms charged with fraud by the SEC as their sample, they tested several discretionary accrual models to determine their ability to detect earnings management fraud. The models included the Jones model, the modified-Jones model, the modified-Jones model with book-to-market ratio and cash flows, the modified-Jones model with ROA, the Dechow/Dichev measure of accrual quality, the McNichols variation of Dechow/Dichev's measure of accrual quality model, and the Beneish model. Their study found that only two of the 10 models tested (Dechow/Dichev's measure of accrual quality and McNichols variation of Dechow/Dichev's measure of accrual quality) have "predictive power for both fraudulent and non-fraudulent restatement of earnings" (Jones et al., 2008, p. 529). Their findings aid users of financial statements in understanding accrual-based earnings management as well as auditors and regulators who are tasked to uncover financial statement fraud.

Perols and Lougee (2011) added to the characteristics of fraudulent firms by finding a direct relationship between prior earnings management and financial statement fraud. Through their investigation of 108 firms that had been issued SEC AAERs, they applied a formula of aggregated prior discretionary accruals and found that "firms that have previously managed earnings are more likely to commit fraud even when there is no evidence of earnings manipulation to meet or beat analyst forecasts or inflate revenue" (Perols & Lougee, 2011, p. 52). They suggested that future research is needed to provide direct evidence of the cause of this relationship.

Dechow et al. (2011) evaluated 676 fraudulent firms to develop a model to predict financial statement misstatements. By using the cross-sectional modified Jones model, the

performance-matched discretionary accruals model, and the Dechow/Dichev model, they analyzed the firms' accruals and found that poor accrual quality is a likely indicator of earnings manipulation. Also identified as common characteristics of fraudulent firms are declining financial and nonfinancial firm performance, increasing cash sales, and increasing off-balance-sheet financing (Dechow et al., 2011). Their findings add to the literature on the characteristics of firms with fraudulent financial statements that aids regulators, auditors, and firm stakeholders in identifying fraud risks.

D'Amico and Mafrolla (2013) used the Jones model and three modified-Jones models to test accruals for a prediction of financial statement fraud and found that only one of the four models, Larcker and Richardson's (2004) modified-Jones model, accurately predicted earnings management. Their findings disagree with an earlier study by Dechow et al. (1995) that found the Jones model was a powerful predictor of financial statement fraud. This contradiction in findings supports the need for more research in the area of accruals as an indicator of financial statement fraud. Accruals were also found to be useful in the detection of financial statement fraud in a study by Kim et al. (2016). In their evaluation of 40 different variables applied to nearly 800 datasets, those related to accrual quality proved the most useful in the detection of financial statement fraud (Kim et al., 2016).

Researcher(s)	Topic
D'Amico & Mafrolla (2013)	Predicting financial statement fraud
Dechow & Dichev (2002)	Accrual quality and estimation errors
Dechow, Ge, Larson, & Sloan (2011)	Characteristics of firms who commit financial statement fraud
Dechow, Hutton, Kim & Sloan (2012)	Detecting fraudulent earnings management
Dechow, Sloan, & Sweeney (1995)	Detecting earnings management
Gerakos (2012)	Review of Dechow, et al. (2012) New Method of detecting earnings management
Jones, Krishnan, & Melendrez (2008)	Discretionary accruals ratios to detect financial statement fraud
Kim, Baik, & Cho (2016)	Multiple variables tested to predict financial misstatements with fraud intention
Perols & Lougee (2011)	Prior earnings management and financial statement fraud

Figure 4: Accruals to Detect Financial Statement Fraud.

Research variables and accrual ratios. This quantitative, correlational study examined the relationship between an accruals quality ratio and financial statement fraud. This section discusses the accrual ratio variables previously used by researchers. Chosen for discussion include accrual models by Jones (1991), Dechow et al. (1995), Sloan (1996), Beneish (1999), Dechow and Dichev (2002), Larcker and Richardson (2004), and Kothari et al. (2005).

Jones's (1991) study examined the use of earnings management during situations in which companies have an incentive to manipulate earnings, particularly during import relief investigations. Her accruals model "relaxes the assumption that nondiscretionary accruals are constant and...attempts to control for the effect of changes in a firm's economic circumstances on nondiscretionary accruals" (Dechow et al., 1995). The Jones model is as follows:

$$TA_t/A_{t-1} = \alpha[1/A_{t-1}] + \beta_1[\Delta REV_t/A_{t-1}] + \beta_2[PPE_t/A_{t-1}] + e_t$$

where:

TA_t = total accruals in year t = [ΔCurrent Assets - ΔCash] – [ΔCurrent Liabilities – Depreciation and Amortization Expense]

ΔREV_t = revenues in year t less revenues in year t-1;

PPE_t = gross property, plant, and equipment in year t;

A_{t-1} = total assets in year t-1;

e_t = error term in year t (assumed to be 0)

The Jones model assumes that revenues are nondiscretionary; therefore, the model removes the discretionary accruals from revenues. Gross property, plant, and equipment (PPE) and change in revenue (REV) are part of the model to control for the nondiscretionary accrual changes due to varying economic conditions (Jones, 1991). Total accruals (TA) includes changes in working

capital accounts (i.e., accounts receivables, inventory, and accounts payable) since they depend somewhat on changes in revenues (Jones, 1991).

A number of accrual-related studies adapt the Jones model to fit the objectives of each individual project (Dechow et al., 1995; Kothari et al., 2005; Larcker & Richardson, 2004; McNichols, 2002). One example is the Dechow et al. (DSS; 1995) modified-Jones model. The DSS modified-Jones model estimates discretionary accruals (instead of removing them) by assuming that changes in accounts receivable resulted from earnings management because it is easier to adjust earnings from credit sales than from cash sales (Dechow et al., 1995). They found that their modified-Jones model was a better predictor of earnings management than other models (Dechow et al., 1995; Ghosh & Olsen, 2009). The DSS modified-Jones model defines nondiscretionary accruals (NDA) as follows:

$$NDA_t = \alpha_1(1/A_{t-1}) + \alpha_2(\Delta REV_t - \Delta REC_t) + \alpha_3(PPE_t)$$

where:

A_{t-1} = total assets in year t-1;

ΔREV_t = revenues in year t less revenues in year t-1;

ΔREC_t = receivables in year t less receivables in year t-1;

PPE_t = gross property, plant, and equipment in year t

Sloan (1996) conducted one of the earliest and most cited accrual-related studies. He explored the accrual and cash flow components of financial statements and measured the extent to which they are reflected in stock prices (Sloan, 1996). His study concluded that "firms with relatively high (low) levels of accruals experience negative (positive) future abnormal stock returns that are concentrated around future earnings announcements" (Sloan, 1996, p. 290). His formula to calculate accruals is as follows:

$$TA_t = (\Delta CA_t - \Delta Cash_t) - (\Delta CL_t - \Delta STD_t - \Delta TP_t) - Dep_t$$

where:

TA = total accruals

ΔCA = change in current assets

ΔCash = change in cash/cash equivalents

ΔCL = change in current liabilities

ΔSTD = change in debt included in current liabilities

ΔTP = change in income taxes payable

Dep = depreciation and amortization expense

Sloan excluded debt in current liabilities (STD) because it relates to the financing instead of

operating functions of the business. In addition, taxes payable (TP) is subtracted because they

are not a part of income from continuing operations as reported on the income statement (Sloan,

1996). Miao et al. (2016) recently used Sloan's accrual model as part of their study of "the effect

of statement of cash flows disclosure on the market's ability to efficiently price the accrual

component of reported earnings" (Miao et al., 2016, p. 510). They found that including cash

flow disclosures in the earnings announcements allows more investors (including the less

sophisticated investors) to include accrual information into their decision making and valuing of

the firm (Miao et al., 2016). As it relates to this study, Sloan's model is not as specific as the

Jones model or the modified-Jones model because it does not account for discretionary accruals

or the relationship of accounts receivable to accrued earnings.

Using variables based on Healy (1985) and Jones (1991), Beneish (1999) created an

accrual model as part of his study to detect earnings management. His total accrual to total

assets (TATA) model measures the extent to which cash backs reported earnings. His accrual model is as follows:

$$TATA_t = [\Delta CA_t - \Delta Cash_t - \Delta CL_t - \Delta CLTD_t - \Delta TP_t - D\&A_t] / TA_t$$

where:

ΔCA = change in current assets

$\Delta Cash$ = change in cash

ΔCL = change in current liabilities

$\Delta CLTD$ = change in current maturities of long-term debt

ΔTP = change in income tax payable

$D\&A$ = depreciation and amortization expense

TA = total assets

The TATA ratio is "often positive when revenue fraud is occurring" (Abassi et al., 2012, p. 1303). In other words, higher accruals (less cash) signify an increased likelihood of earnings manipulation (Beneish, 1999). After combining the results from all eight variables in his study, he concluded that TATA was one of the most important indices for companies that improperly recorded revenues through earnings management (Beneish, 1999; Roxas, 2011). While discretionary accruals are not included in this model, his results "provide evidence of a systematic relationship between the likelihood of manipulation and selected financial statement data" (Jones et al., 2008).

Seven years after working with accruals and creating the DSS modified-Jones model, Dechow collaborated with Dichev to measure the quality of accruals (the extent to which accruals are eventually realized with cash flows). The Dechow/Dichev accruals earnings quality metric recognizes that accruals should eventually match up with cash flows; therefore,

"nondiscretionary accruals should be negatively correlated with contemporaneous cash flows and positively correlated with adjacent cash flows" (Dechow et al., 2012). The Dechow/Dichev model includes past, present, and future cash flow from operations (CFO) as variables (Dechow & Dichev, 2002; Dechow et al., 2012). The DD model is stated as follows:

$$\Delta WC_t = \beta_0 + \beta_1 CFO_{t-1} + \beta_2 CFO_t + \beta_3 CFO_{t+1} + e_t$$

where:

ΔWC = change in working capital

CFO = cash flow from operations

e = error term (assumed to be 0)

Their research concluded, "The standard deviation of the residuals is a firm-level measurement of accrual quality, where a higher standard deviation denotes lower quality" (Dechow & Dichev, 2002, p. 40). The Dechow/Dichev model has been proven a useful model for measuring accrual quality related to timing difference between revenue recognition and cash flow (Jones et al., 2008; Dechow et al., 2012; Lustgarten & Shon, 2013).

Larcker and Richardson (2004) adapted Defond and Subramanyam's (1998) modified-Jones accrual model to include the book-to-market (BM) ratio (to represent the expected growth of the firm's operations) and current cash flow from operations (CFO). The Larcker and Richardson modified-Jones model is as follows:

$$TA_t = \alpha + \beta_1 (\Delta Sales_t - \Delta REC_t) + \beta_2 PPE_t + \beta_3 BM_t + \beta_4 CFO_t + e_t$$

where:

TA = total accruals

$\Delta Sales$ = change in sales from previous year to current year

ΔREC = the difference in accounts receivable from beginning of year to end

PPE = end of year gross property, plant, and equipment

BM = ratio of common equity book value to common equity market value

CFO = cash flow from operations

e = error term (assumed to be 0)

Larcker and Richardson consider their modified-Jones model to be more accurate and useful than other accrual models because it "identifies unexpected accruals" and "identifies discretionary accruals that are associated with lower future earnings" (Jones et al., 2008, pp. 502-503).

The final accrual ratio discussed in this review of the literature is the Kothari, Leone, and Wasley (KLW) modified-Jones model. As with most accrual-related research, the KLW model is a modification of the Jones (1991) model. Kothari et al. (2005) argued that firm performance is related to accruals; therefore, their calculation of total accruals includes return on assets (ROA) as a measure of performance. The KLW performance-matched discretionary accruals modified-Jones model is as follows:

$$TA_t = \beta_0 + \beta_1(1/AT_{t-1}) + \beta_2(\Delta REV_t - \Delta AR_t) + \beta_3 PPE_t + \beta_4 ROA_t + e_t$$

where:

TA = total accruals

AT = total assets

ΔREV = change in total sales from previous year to current year

ΔAR = change in receivables from previous year to current year

PPE = end of year gross property, plant, and equipment

ROA = income before extraordinary items divided by previous year's total assets

e = error term (assumed to be 0)

Kothari et al. (2005) experimented with both current year and prior-year ROA and found that current-year ROA predicted earnings management better than prior-year ROA. Their research found that their KLW model enhanced the reliability of suggestions of earnings management (Jones et al., 2008). However, they also noted that their research only tested for earnings management and their findings may not apply to other research situations such as fraud (Kothari et al., 2005; Jones et al., 2008). In addition, a study by Dechow et al. (2011) found the KLW model has "less power to identify manipulation than unadjusted accrual measures" and suggest that controlling for things such as industry or performance (ROA) create significant estimation error into the discretionary accruals model when used to detect fraud (pp. 19-20). For these reasons, the KLW model was not chosen as the accrual variable in the current study. Figure 5 summarizes the accrual models discussed in this section.

Researcher(s)	Accrual Model Description
Jones (1991)	Controlled for changes in a firm's economic circumstances and *removes* nondiscretionary accruals
Dechow, Sloan, & Sweeney (1995)	Identified non-discretionary accruals
Sloan (1996)	Measured the relationship between accruals and stock performance
Beneish (1999)	Measured total assets to total accruals to predict financial statement fraud
Dechow & Dichev (2002)	Measured accrual quality related to timing differences between revenue recognition and cash flow
Larcker & Richardson (2004)	Included book-to-market ratio and current operations cash flow
Kothari, Leone, & Wasley (2005)	Used ROA to predict earnings management

Figure 5: Accrual Models.

This quantitative, correlational study examined the relationship between accrual quality and financial statement fraud. The accrual quality ratio chosen for this study was based on the model provided by Dechow and Dichev (2002). This model was chosen because it recognized that accruals should eventually match-up with cash flows and considers past, present, and future cash flows. The Dechow/Dichev model has proven to be a useful model for measuring accrual quality related to timing differences between revenue recognition and cash flows (Jones et al., 2008; Dechow et al., 2012; Lustgarten & Shon, 2013). The second variable for this study is the commitment of financial statement fraud. The SEC issues AAERs against firms when there is

strong evidence of accounting manipulation. In general, firms that have been issued AAERs are very likely guilty of financial statement manipulation and have already restated their earnings, thereby admitting their guilt (Dechow et al., 2011).

Transition and Summary

Various forms of research, including professional and academic literature, cover accruals and their use to detect financial statement fraud. Professional literature relevant to this study includes the FASB's ASU 2014-09 and Concept Statement No. 8, which provide authoritative guidance on accounting for revenue and accruals. In addition, auditing standards and the SOX Act of 2002 provide fieldwork guidelines for auditors as they test for financial statement fraud. In particular, Auditing Standard 2110, SAS No. 99, AU§316.28, and various PCAOB regulations relate directly to the current study. As stated in these guidelines, analytical procedures are commonly used as an audit testing procedure. This study will add to the literature on using analytical procedures as an indicator of financial statement fraud.

Academic literature was reviewed in areas including financial statement fraud, accruals and earnings management, theoretical framework, accruals in accounting research, and using accruals to detect fraud. Journal articles that focused on the detection of financial statement fraud and, more specifically, using accruals to detect financial statement fraud were reviewed. Accrual formulas that have previously been used in the study of financial statement fraud were exhaustively reviewed and considered in the planning for the current study.

Research has indicated that there is a need for additional analytical indicators of financial statement fraud (Abassi et al., 2012; Bolton & Hand, 2002; Golden et al., 2013; Kassem & Higson, 2012; McMahon et al., 2016; Bian et al., 2016). This study will add to the literature on the topic and help auditors, creditors, investors, and other stakeholders in their analysis of

financial statements. The next section of this applied doctoral research project discusses the role

of the researcher, the participants, the research method and design, the population and sampling,

the data collection, the data analysis, and the reliability/validity of the study.

Section 2: The Project

This section provides information on the research method and design of this applied doctoral research project. Items included are: (a) purpose statement, (b) role of the researcher, (c) participants, (d) research method and design, (e) population sampling, (f) data collection, (g) data analysis, and (h) reliability and validity.

Purpose Statement

The purpose of this quantitative, correlational study was to examine the relationship between accrual quality and financial statement fraud. Prior research found that companies with excessive accruals are more likely to produce fraudulent financial statements (Perols & Lougee, 2011). Although most companies will have revenue accruals as a normal part of business, this study attempted to determine if an accruals ratio may be an appropriate detection measure for the likelihood of financial statement fraud.

Role of the Researcher

In this quantitative, correlational study, the researcher collected and analyzed publicly available archival data in order to address the research question regarding revenue accruals and financial statement fraud. Unlike a qualitative study where the researcher is an instrument in the study, there was no relationship with the participants. The researcher interpreted the results of the statistical analysis and applied the findings to the hypotheses of this dissertation.

Participants

This research did not use any live subjects, only archival data. Data gathered were obtained from the Securities and Exchange Commission's (SEC) Accounting and Auditing Enforcement Releases (AAER), a publicly available database. AAERs are actions taken against firms that have strong evidence of accounting manipulation (Dechow et al., 2011) and are often

used in financial statement fraud research. Information needed for this study was collected from financial statements available through S&P Capital IQ NetAdvantage, company websites, or the publicly available SEC database. No confidential or personal information was collected for this study.

<div align="center">**Research Method and Design**</div>

This section covers the research method and design of this study. First, the applicability of the quantitative research method to this study is discussed. Next, explanation as to why the qualitative method and mixed-method approaches are not ideal for this study is provided. Finally, the correlational design is addressed as the most appropriate design with a further discussion on why other research designs were not conducive for this study.

Method

The quantitative method was chosen for this project because it involves the use of statistically analyzed data to determine the relationship between variables (Creswell, 2014). The quantitative method is very useful in accounting research as a way to interpret data for practical use (Richardson, 2015). Quantitative research is appropriate for this study because the theoretical framework is based on positive accounting theory, which includes the analysis of archival data (Kabir, 2010). Statistical analysis will determine if there is a relationship between the variables and, if so, to what extent (Stake, 2010). Many researchers in the fields of accounting and financial statement analysis have used the quantitative method to measure the relationship among variables with archival data that has been directly observed and evaluated (Abassi et al., 2012).

Other research methods such as qualitative and mixed-method were not appropriate because of the scope and intention of this study. Qualitative studies are subjective and

situational (Stake, 2010) while this study involves the analysis of numerous instances of financial statement fraud. The mixed method is a combination of qualitative and quantitative and is not appropriate because this study is searching for a statistical relationship among variables (Creswell, 2014).

Design

A correlational design was used to determine if a relationship exists between the accrual quality and financial statement fraud. A correlational design fits the purpose of this study because it describes the nature and magnitude of the relationship between the variables (Salkind, 2010). Comparing the accrual quality of companies with financial statement fraud to the accrual quality of companies without financial statement fraud will determine if a statistically significant relationship exists between these variables. Other quantitative designs that were not chosen include the experimental and descriptive designs.

The experimental and quasi-experimental designs of quantitative research are not appropriate for this study because there is no intervention with pre-tests and post-tests (Edmonds & Kennedy, 2017). These designs call for independent, dependent, and control variables as well as a control procedure with the intention of identifying a cause and effect relationship (Salkind, 2010). This study compares historical data from financial statements with no new intervention or procedure to the data.

The descriptive design is used to explore a phenomenon and "describe what exists with respect to the individual, group, or condition" (Edmonds & Kennedy, 2017, p. 161). Generally, with a descriptive design, a survey is administered to a random sample of a population or, if feasible, an entire population (Edmonds & Kennedy, 2017). Surveys are used to "observe trends, attitudes, or opinions of the population of interest" (Edmonds & Kennedy, 2017, p. 133). This

study compares historical data (retrospective analysis) to determine the relationship between variables. Therefore, the descriptive approach is not appropriate to address the research question or test the hypothesis of this study.

Variables. The dependent variable for this study is commitment of financial statement fraud. The SEC issues AAERs against firms when there is strong evidence of accounting manipulation. In general, firms that have been issued AAERs are very likely guilty of financial statement manipulation and have already restated their earnings, thereby admitting their guilt (Dechow et al., 2011). As discussed in the following section regarding the population of the study, AAERs are commonly used in accounting fraud research.

The independent variable chosen for this study is accrual quality based on the model provided by Dechow and Dichev (2002). Dechow and Dichev created this model to measure accrual quality and used the Pearson correlation to test it against existing theory in the areas of firm operating cycle, firm size, sales volatility, cash flow volatility, accrual volatility, earnings volatility, frequency of negative earnings, and magnitude of accruals. Furthermore, they suggested that their accrual quality model could be tested to predict other applications of earnings management, such as "accruals manipulated by management" (Dechow & Dichev, 2002, p. 46) which is the objective of this study.

The Dechow/Dichev 2002 model was chosen because it recognizes that accruals should eventually match-up with cash flows and considers past, present, and future cash flows. This model has been proven a useful model for measuring accrual quality related to timing differences between revenue recognition and cash flows (Jones et al., 2008; Dechow et al., 2012; Lustgarten & Shon, 2013). For this study, an independent *t*-test was used to determine if there is a statistically significant difference between the non-fraud standardized residuals and the

fraudulent standardized residuals taken as two separate groups. Results from this analysis

address the research question and research hypotheses.

Population and Sampling

The SEC has been issuing AAERs since 1982 during or at the conclusion of an

investigation against an individual or entity for accounting misconduct (Dechow et al., 2011; Shi

et al., 2016). The SEC issues AAERs when there is strong evidence or admitted accounting

manipulation. Many accounting researchers rely on the AAER data to identify companies that

have committed financial statement fraud (Beneish, 1999; Dechow et al., 2011; Dechow et al.,

2012; Jones et al., 2008; Perols & Lougee, 2011; Roxas, 2011; Shi et al., 2016). The population

for this study consisted of firms that have been issued AAERs by the SEC for fraudulently

misstating their financial statements during the years 2015 and 2016. These two years were

chosen because they contain the most recent data available.

Purposive, criterion sampling was used to select the sample for this study. Purposive

sampling is used when the researcher selects participants based on a "specific need or purpose"

such as commitment of financial statement fraud (Edmonds & Kennedy, 2017, p. 20).

Consistent with prior research (Beneish, 1999; Dechow et al., 2011; Jones et al., 2008), the

following AAERs were disregarded from the population of the study: (a) individuals, accounting

firms, and government/municipal agencies that were issued AAERs; (b) firms that were issued

AAERs for violations under the Foreign Corrupt Practices Act of 1977; (c) AAERs that were

issued against quarterly data rather than yearly data; and (d) firms that were public companies.

Removing these AAERs from the population leaves only those that were issued to *companies* for

financial statement fraud for a *fiscal year*.

After applying these exclusion criteria to the 222 AAERs issued in 2015 and 2016, seventeen firms remained. Data were collected from 100% of the eligible companies in the sample. For each of the 17 fraudulent companies chosen for the study, a non-fraudulent company was chosen for the non-fraud group based on the following inclusion criteria: (a) similar in revenue size or market capitalization, (b) same industry (based on SIC industry code), and (c) same fraud year as that of the fraudulent firms. Therefore, 34 companies made up the sample in this study. Most of the companies were issued AAERs for more than one year resulting in 40 firm-years evaluated for each group. The Dechow/Dichev accruals quality model chosen as the independent variable for this study requires each observation to have prior-year, current-year, and subsequent-year information. Therefore, 240 firm-year observations make up the sample in the study.

Data Collection

Instruments

No specific data-gathering instruments were used in this study. The data used were collected from publicly available historical data (the SEC's EDGAR database) as well as the subscription-based website S&P Capital IQ NetAdvantage. The raw data were downloaded and entered into IBM SPSS 24 Software to perform statistical analysis. A list of all raw data may be obtained by contacting the researcher.

Data Collection Technique

Fraudulent financial statements were identified through the SEC's 2015 and 2016 AAER archives. While the SEC issues AAERs for companies, individuals, accounting firms, and governmental/municipal agencies, purposive sampling was applied to the population leaving only *public companies* with *fraudulent financial statement activity* in the sample. The researcher

identified 17 fraudulent companies and 17 non-fraudulent companies as meeting the criteria for

this study and downloaded their data for the fraud year(s) into IBM SPSS 24 for statistical

analysis. The data used in the analysis were limited to what were obtained from the SEC

EDGAR database and the S&P Capital IQ NetAdvantage database.

Data Organization Techniques

Data collected during this study were downloaded from the S&P Capital IQ

NetAdvantage software and/or the SEC EDGAR database to IBM SPSS 24. As recommended

by Stake (2010), working papers detailing the selection of the participants were also kept by the

researcher. The working papers acted as a reflective journal detailing the specific characteristics

of the firms chosen for the study as well as those excluded from the study. In addition, details of

the characteristics and reasoning behind the choices for the non-fraudulent companies were also

included in the reflective journal. The IBM SPSS 24 document was stored on a cloud server

(Microsoft OneDrive) and was backed up on a hard drive. The working papers were kept in the

researcher's locked office.

Data were organized in IBM SPSS 24 to prepare for the statistical analysis. Relevant

company data were entered for each of the 40 fraudulent firm years as well as the 40

nonfraudulent firm years. This data included change in working capital for the current (fraud)

year (ΔWC_t), prior period cash flow from operations (CFO_{t-1}), current period cash flow from

operations (CFO_t), and future period cash flow from operations (CFO_{t+1}). As required by the

Dechow/Dichev model, the period for the collected data were the year of, the year before, and

the year after the fraudulent activity. Although the AAERs used were those issued in 2015 and

2016, the related fraudulent activity was perpetrated in years ranging from 2008-2013.

Data Analysis Technique

The chosen data analysis techniques tested the difference in the revenue accruals quality for companies with detected financial statement fraud and similar companies without detected financial statement fraud. After the financial statement data for each company was organized into IBM SPSS 24, a regression analysis was applied to the non-fraudulent company data to determine the coefficients for the accrual quality formula that would provide the best fit. ΔWC_t = Intercept + b0 * CFO_{t-1} + b1 * CFO_t + b2 * CFO_{t+1}. Next, the best fit regression coefficients from the non-fraud companies were applied to both the fraudulent and non-fraudulent company data to project an estimate for the change in working capital. Intercept + b0 * CFO_{t-1} + b1 * CFO_t + b2 * CFO_{t+1} = projected ΔWC_t. Per the Dechow/Dichev accrual quality model, the residual (the difference between the projected change in working capital and the actual change in working capital) determines the quality of accruals. The method determines that a high standard deviation of residuals indicates lower quality accruals and a low standard deviation of residuals indicates higher quality accruals (Dechow & Dichev, 2002). Therefore, additional columns were used to calculate the residual data for the fraudulent and non-fraudulent company data.

Because of the varying sizes of companies in the sample, the residuals of all companies were then standardized in units of standard deviations based upon the variance of both groups taken together (Salkind, 2013; see Figures 7 & 8). The Dechow/Dichev method states the magnitude of the deviation, rather than the direction is significant (Dechow & Dichev, 2002); therefore, the absolute value of the standardized residuals were generated. In order to test H_1, a difference analysis was conducted using an independent *t*-test to determine if there is a statistically significant difference between the non-fraud standardized residuals and the fraudulent standardized residuals taken as two separate groups.

Reliability and Validity

Issues with reliability and validity are concerns in all research studies (Edmonds & Kennedy, 2017; Creswell, 2014). Reliability refers to the consistency of the researcher's approach compared to different researchers and studies (Gibbs, 2008) while validity is the "extent to which the outcome accurately answer the stated research question(s) of the study" and "measures what it is developed to measure" including the hypothesis presented in the study (Edmonds & Kennedy, 2017, p. 4). The type of research and the instruments used in the study will determine the specific threats to reliability and validity. The reliability and validity of this study is discussed in the following paragraphs.

Reliability

In quantitative research, reliability refers to the accuracy of the data collected and the ability of the results to be replicated (Creswell, 2014). The test-retest correlation and internal consistency are two forms of determining reliability (Creswell, 2014). The use of statistical analysis to test for financial statement fraud is a common practice in accounting research (Bolton & Hand, 2002; Dechow et al., 2012; Gupta & Gill, 2012; Perols & Lougee, 2011) and should be easily replicated (test-retest). This study did not involve any specific instruments for gathering data (i.e., survey). All information was collected from public databases (i.e., SEC EDGAR and company websites) or subscription-based services (i.e., S&P Capital IQ NetAdvantage). When available, the researcher compared the data to other sources to verify the information and make the results of this study more reliable.

The use of commercial and/or public databases is common practice in accounting research (Karpoff, Koester, Lee, & Martin, 2014). In particular, SEC AAERs are often used when researching financial statement fraud as these are issued with evidence or admittance of

financial irregularities (Beneish, 1999; Dechow et al., 2011; Dechow et al., 2012; Jones et al., 2008; Perols & Lougee, 2011; Roxas, 2011). While there is a chance of publicly available archival data being inaccurate (Karpoff et al., 2014), the use of data from a federally regulated agency (SEC) reduces the likelihood of incorrect data. In addition, subscription-based services, such as the S&P Capital IQ NetAdvantage software, have a profit incentive to keep their data accurate.

Richardson (2015) studied the use of qualitative and quantitative methods in accounting research and mentioned the use of commercial and/or public databases in his discussion. He stated that researchers that rely on archival data should do so with a "critical perspective" (p. 73). All data used in this study were collected from archival data sources and were, when possible, verified with other third-party sources such as the companies' websites. The research questions in this study are suitable for archival data due to the abundance of financial information analyzed and the implied reliability of federally regulated and subscription-based sources.

Validity

Quantitative research validity refers to the ability to draw "meaningful and useful inferences" from the results of the study (Creswell, 2014, p. 160). It is impossible to design a study that is free of any threat to validity (Creswell, 2014); however, the use of archival data reduces validity threats that are present in other research designs (Smith, 2003). When conducting quantitative research, Creswell (2014) suggested establishing content validity, predictive validity, and construct validity.

Content validity refers to whether or not the study measures the content it was intended to measure. Prior to choosing the specific accrual quality model that would be used as the variable in this study, significant research was conducted to evaluate the most common models used in

financial statement fraud research. The researcher chose the Dechow/Dichev model for this study because of its applicability and historical accuracy in other fraud research studies. For example, Jones et al. (2008) found of the 10 measures of earnings management they examined, the Dechow/Dichev model and a modified Dechow/Dichev model were the only two that had "predictive power for both fraudulent and non-fraudulent restatements of earnings" (p. 529). In addition, Lustgarten and Shon (2013) used the Dechow/Dichev model to compare accrual quality with life expectancy of audit engagements. The many uses of this model to test a variety of firm characteristics made it an optimal choice for this study that will test yet another firm characteristic: commitment of financial statement fraud.

Predictive validity refers to the re-testing ability of the measure and whether or not the same results would be concluded. The use of publicly available company data strengthens the predictive validity of the study and the small sample size creates an easily replicated study. Construct validity refers to the usefulness of the findings in practice. This study will add to the literature on financial statement fraud identification techniques and should prove useful in practice for many different stakeholders.

Transition and Summary

This quantitative, correlational study examined the relationship between accruals quality and financial statement fraud. The research method and design were chosen to address the specific research question in this study. The accruals quality model variable was chosen due to its applicability to the research question and its historical accuracy in other accounting research studies. All reasonable steps were taken to mitigate reliability and validity threats that are part of any similar research. Section 3 will discuss the findings of this study and its application to professional practice.

Section 3: Applications to Professional Practice and Implications for Change

Overview of Study

This study was conducted to address the need for additional financial statement fraud detection techniques. Accrual quality was chosen as the focus of this study due to the high likelihood of financial statement manipulation using accruals (Dechow et al., 2011; Mangala & Kumari, 2015; Perols & Lougee, 2011). Using the Dechow/Dichev accrual quality model, this study examined the relationship between accrual quality and financial statement fraud to determine whether accrual quality may be used as an indicator of financial statement fraud.

Data were collected from SEC AAERs issued in 2015 and 2016. Using purposive, criterion sampling, fraudulent companies were chosen from the AAERs and similar, non-fraudulent companies were chosen for the non-fraud group. The Dechow/Dichev model was applied to the data to compare the accrual quality for each group. Then, the standardized residuals produced for each group by the Dechow/Dichev model were used as the variables for the analysis. In order to test H_1, a difference analysis was conducted using an independent t-test to determine if there is a statistically significant difference between the non-fraud standardized residuals and the fraudulent standardized residuals taken as two separate groups.

Presentation of Findings

The purpose of this quantitative, correlational study was to examine the relationship between accrual quality and financial statement fraud. Prior research found that companies with *excessive* accruals are more likely to produce fraudulent financial statements (Perols & Lougee, 2011). While this study does not measure accrual size, it does measure the *quality* of the accruals based on the recognition of accrued revenue in subsequent cash flows. Dechow and Dichev's (2002) accrual quality model was used as the foundation of the analysis for this study:

ΔWC_t = Intercept + b0 * CFO_{t-1} + b1 * CFO_t + b2 * CFO_{t+1}. Their formula takes into consideration the changes in working capital (ΔWC_t), prior period cash flow from operations (CFO_{t-1}), current period cash flow from operations (CFO_t), and future period cash flow from operations (CFO_{t+1}). Their method determined that "the standard deviation of the residuals is a firm-level measure of accrual quality, where a higher standard deviation denotes lower quality" (Dechow & Dichev, 2002, p. 40). Their formula was found to be an accurate indicator of accrual quality and has been used in many subsequent studies (Jones et al., 2008; Dechow et al., 2012; Lustgarten & Shon, 2013). This study takes the Dechow/Dichev model, applies it to the data, calculates the standard deviation of the residuals, and applies a difference analysis using an independent *t*-test to determine if there is a statistically significant difference between the non-fraud standardized residuals and the fraudulent standardized residuals taken as two separate groups.

The sample was gathered from public companies that had been issued an AAER by the SEC in 2015 or 2016 for misstating financial statements. Two hundred and twenty-two AAERS were issued in 2015 and 2016. Of the 222 issued, 190 were excluded due to violations of the Foreign Corrupt Practices Act (FCPA), accounting professional violations, and other non-financial statement related infractions. Of the remaining 32 companies, 15 were excluded based on no subsequent data, misstatement of quarterly data (rather than annual data), or no similar public company available for the non-fraud group. Once the final group of 17 fraud companies was identified, similar non-fraud companies were chosen. Inclusion criteria used to identify similar, non-fraud companies included revenue size, market capitalization, SIC industry codes, and public company status. In total, 17 fraud and 17 non-fraud companies made up the final sample and 100% of these companies were included in the study. Since companies were issued

AAERs for fraud during multiple years, 80 firm year observations were included in this study

(40 in the fraud group and the same 40 firm years in the non-fraud group).

All statistical tests and analyses were conducted using IBM SPSS version 24. The

financial statement data were collected using the S&P Capital IQ NetAdvantage database.

The change in working capital (ΔWC) and cash flow from operations for the three years needed

for the Dechow/Dichev formula (CFO_{t-1}, CFO_t, and CFO_{t+1}) were collected from each

company's financial reports (Form 10-K). The raw data for the fraud group and the non-fraud

group are provided in the Appendices.

Using the Dechow/Dichev model, a regression analysis was applied to the non-fraudulent

company data to determine the coefficients for the accrual quality formula that would provide the

best fit. $\Delta WC_t = \text{Intercept} + b0 * CFO_{t-1} + b1 * CFO_t + b2 * CFO_{t+1}$.

	Coefficients
Intercept	-178753.6323
CFO_{t-1}	1.500574794
CFO_t	-1.048344296
CFO_{t+1}	0.242082647

Figure 6: Coefficients.

Once the best fit regressions coefficients were identified, they were applied to both the

fraudulent and non-fraudulent company data to project an estimate for the change in working

capital:

$\Delta WC_t = -178753.6323 + (1.500574794)CFO_{t-1} + (-1.048344296)CFO_t + (0.242082647)CFO_{t+1}$

Figures 7 and 8 show the results after the application of the Dechow/Dichev formula on

the separate group data. The column titled ΔWC_t lists the actual change in working capital for

the fraud year and the residuals column shows the difference in estimated ΔWC_t and actual

ΔWC_t. Following the Dechow/Dichev procedures for determining accrual quality, the standard

deviation of the residuals was calculated (see Figure 9).

Due to the varying sizes of companies in the sample, the residuals of all companies were standardized in units of standard deviations based upon the variance of both groups taken together (Salkind, 2013). The Dechow/Dichev method states the magnitude of the deviation, rather than the direction is significant (Dechow & Dichev, 2002), therefore, the absolute value of the standardized residuals were generated.

FRADULENT COMPANIES			
(in thousands)			
Company Name	ΔWC_t	RESIDUALS	ABS Standardized Residual
Computer Sciences Corp. FY2009	(885,000)	(1,037,248)	1.442
Computer Sciences Corp. FY2010	(418,000)	(1,875,575)	2.608
Computer Sciences Corp. FY2011	(426,000)	(1,357,769)	1.888
FNCB Bancorp, Inc. FY2009	(12,433)	151,907	0.211
General Cable Corporation FY2008	(155,100)	(215,789)	0.300
General Cable Corporation FY2009	346,600	729,890	1.015
General Cable Corporation FY2010	(144,200)	(705,084)	0.980
General Cable Corporation FY2011	(141,300)	(78,814)	0.110
IEC Electronics Corp. FY2012	(4,763)	169,421	0.236
INTL FCStone, Inc. FY2010	91,700	312,211	0.434
INTL FCStone, Inc. FY2011	155,400	405,988	0.565
INTL FCStone, Inc. FY2012	23,200	(219,089)	0.305
Keybanc Capital Markets, Inc. FY2010	1,116,000	211,574	0.294
Logitech International FY2012	1,555	122,409	0.170
Logitech International FY2013	21,454	(21,201)	0.029
Miller Energy Resources, Inc. FY 2010	202,219	379,418	0.528
ModusLink Global Solutions FY2007	12,197	222,560	0.309
ModusLink Global Solutions FY2008	(43,141)	41,869	0.058
ModusLink Global Solutions FY2009	18,105	233,269	0.324
ModusLink Global Solutions FY2010	371	169,106	0.235
ModusLink Global Solutions FY2011	(16,389)	100,745	0.140
Monsanto Company FY2009	(1,240,000)	(3,255,689)	4.527
Monsanto Company FY2010	(702,000)	(3,094,167)	4.303
Monsanto Company FY2011	280,000	572,397	0.796
Orrstown Financial Services, Inc. FY2010	1,893	179,442	0.250
Orrstown Financial Services, Inc. FY2011	3,165	176,716	0.246
Park National Corporation FY2010	(8,794)	162,964	0.227
Powersecure International, Inc. FY2012	4,116	202,995	0.282
Powersecure International, Inc. FY2013	(14,457)	142,825	0.199
Powersecure International, Inc. FY2014	8,003	202,470	0.282
St. Joe Company FY2009	(23,167)	132,109	0.184
St. Joe Company FY2010	52,607	174,711	0.243
Stein Mart, Inc. FY2010	40,515	281,291	0.391
Stein Mart, Inc. FY2011	(18,537)	50,278	0.070
The Phoenix Companies FY2010	(515,800)	300,820	0.418
The Phoenix Companies FY2011	(263,800)	283,088	0.394
Weatherford International FY2007	(863,599)	(1,668,709)	2.320
Weatherford International FY2008	(949,153)	(1,070,409)	1.488
Weatherford International FY2009	(515,715)	(1,623,497)	2.258
Weatherford International FY2010	(182,000)	55,795	0.078

Figure 7: Fraud Group Residuals (in thousands).

NON-FRAUDULENT COMPANIES			
(in thousands)			
Company Name	ΔWC_t	RESIDUALS	ABS Standardized Residuals
Harris Corp. FY2009	(14,700)	(164,799)	0.229
Harris Corp. FY2010	46,600	(135,403)	0.188
Harris Corp. FY2011	(49,200)	(408,054)	0.567
First Farmers & Merchants Corp. FY2009	(14,848)	141,937	0.197
Mueller Industries FY2008	60,231	136,118	0.189
Mueller Industries FY2009	(7,737)	(40,244)	0.056
Mueller Industries FY2010	(56,279)	28,210	0.039
Mueller Industries FY2011	21,393	250,544	0.348
Nortech Systems, Inc. FY2012	2,095	186,939	0.260
Principal Financial Group, Inc. FY2010	1,464,800	547,584	0.761
Principal Financial Group, Inc. FY2011	1,482,600	(428,110)	0.595
Principal Financial Group, Inc. FY2012	2,054,600	853,974	1.188
M&T Bank Corporation FY2010	274,376	(4,013)	0.006
Teradata Corporation FY2012	(53,000)	(164,705)	0.229
Teradata Corporation FY2013	(99,000)	(413,037)	0.574
PrimeEnergy Corporation FY2010	15,368	198,223	0.276
TESSCO Technologies FY2007	15,325	217,474	0.302
TESSCO Technologies FY2008	(7,473)	129,918	0.181
TESSCO Technologies FY2009	3,618	188,432	0.262
TESSCO Technologies FY2010	(2,772)	165,852	0.231
TESSCO Technologies FY2011	(3,625)	160,259	0.223
Icahn Enterprises FY2009	740,000	(48,539)	0.067
Icahn Enterprises FY2010	1,137,000	328,071	0.456
Icahn Enterprises FY2011	(3,106,000)	(1,263,836)	1.757
Citizens & Northern Corp. FY 2010	9,322	196,287	0.273
Citizens & Northern Corp. FY 2011	4,672	163,418	0.227
NBT Bancorp, Inc. FY2010	9,272	179,451	0.250
Atlantic Power Corporation FY2012	2,700	235,856	0.328
Atlantic Power Corporation FY2013	47,100	119,140	0.166
Atlantic Power Corporation FY2014	(18,600)	(21,550)	0.030
The InterGroup Corp. FY2009	3,379	183,489	0.255
The InterGroup Corp. FY2010	(2,947)	170,496	0.237
Stage Stores, Inc. FY2010	(37,869)	22,155	0.031
Stage Stores, Inc. FY2011	(33,913)	91,418	0.127
Primerica, Inc. FY2010	(116,062)	(990,307)	1.377
Primerica, Inc. FY2011	22,813	202,344	0.281
KBR, Inc. FY2007	190,000	(798,310)	1.110
KBR, Inc. FY2008	(320,000)	(374,679)	0.521
KBR, Inc. FY2009	(495,000)	(672,961)	0.936
KBR, Inc. FY2010	180,000	830,962	1.156

Figure 8: Non-Fraud Group Residuals (in thousands).

The research question and hypotheses for this study were as follows:

Q1: To what extent does the revenue accruals quality differ for public companies with detected financial statement fraud compared to public companies with no detected financial statement fraud?

$H1_0$: There is no statistically significant difference in the revenue accruals quality ratio for companies with detected financial statement fraud and similar companies without detected financial statement fraud.

$H1_a$: There is a statistically significant difference in the revenue accruals quality ratio for companies with detected financial statement fraud and similar companies without detected financial statement fraud.

Dechow/Dichev Model of Accrual Quality Results

The application of the Dechow/Dichev to each group provided the following results:

	Std Deviation of Residuals
FRAUD group	923,568
NON-FRAUD group	418,862

Figure 9: Standard Deviation Summary.

These numbers indicate the residuals for the fraud group are much more volatile than the residuals for the non-fraud group. The Dechow/Dichev model measures accrual quality related to timing differences between revenue recognition and cash flows (Jones et al., 2008; Dechow et al., 2012; Lustgarten & Shon, 2013). Their research concluded, "The standard deviation of the residuals is a firm-level measure of accrual quality, where a higher standard deviation denotes lower quality" (Dechow & Dichev, 2002, p. 40). Therefore, the research question can be answered by stating that the revenue accruals for the fraud group are lower quality than the revenue accruals for the non-fraud group based on the Dechow/Dichev model. These findings

indicated that there is a relationship between accrual quality for the fraud companies and the non-fraud companies; therefore, additional testing is warranted.

Descriptive Statistics

Before conducting the independent *t*-test, descriptive statistics were created to determine the quality and characteristics of the data.

Fraud Data		Non-Fraud Data	
Mean	0.778	Mean	0.412
Median	0.302	Median	0.258
Standard Deviation	1.074	Standard Deviation	0.406
Sample Variance	1.153	Sample Variance	0.165
Kurtosis	5.261	Kurtosis	2.565
Skewness	2.326	Skewness	1.728
Range	4.498	Range	1.752
Minimum	0.029	Minimum	0.006
Maximum	4.527	Maximum	1.757
Count	40.000	Count	40.000

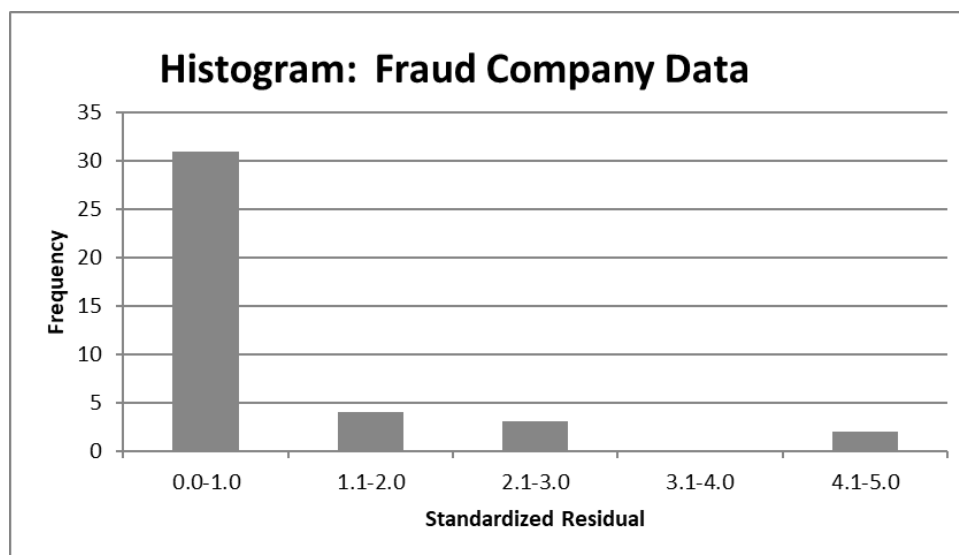*Figure 10:* Descriptive Statistics for each Data Set.

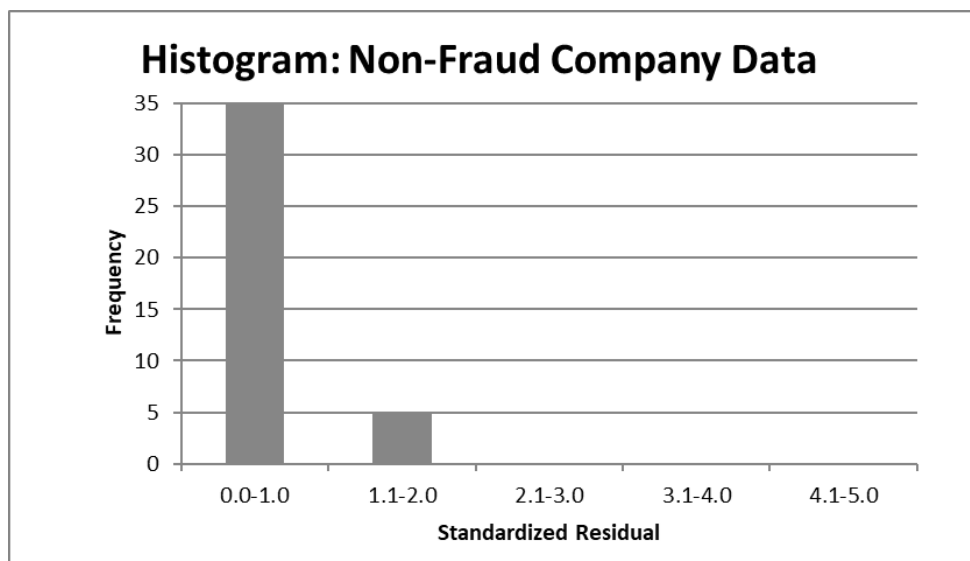*Figure 11:* Fraud Data Frequency Distribution.

Figure 12: Non-Fraud Data Frequency Distribution.

Of particular interest in the descriptive statistics is the standard deviation of each group

and the range of the two groups. The standard deviation of the fraudulent data is 1.074 while the

standard deviation of the non-fraudulent data is 0.406. In addition, the range of the fraudulent

data is 0.029 to 4.527. Since the data are standardized, values higher than three are considered

very unusual and values higher than four are considered extreme outliers (Salkind, 2013).

Notice, however, that the non-fraud group did not have any value higher than 1.757. The

following analysis will verify this preliminary assumption that these groups are distinctly

different.

T-test Results

An independent *t*-test was conducted to compare the fraud group standardized residuals

to the non-fraud group standardized residuals. Because the absolute value of the standardized

residuals was used, a 1-tailed *t*-test was appropriate. There was a significant difference in the

scores for the fraud group (M=0.778, SD=1.074) and the non-fraud group (M=0.412, SD=0.406)

conditions; t (78) = 2.017, p = 0.245. In other words, the difference in accrual quality for

fraudulent and non-fraudulent firms is statistically significant. Therefore, applying these results, $H1_0$ can be rejected.

Summary of Findings

The use of the Dechow/Dichev model provided insight into the usefulness of using accruals as an indicator of financial statement fraud by comparing the standard deviation of the residuals. The fraud group's standard deviation of the residuals was higher than the non-fraud group's standard deviation of the residuals indicating low quality accruals for the fraud group data. The *t*-test results concluded that there is a statistically significant difference between the accrual quality of the non-fraud group and the accrual quality of the fraud group. Therefore, applying these results, $H1_0$ can be rejected.

<div align="center">

Applications to Professional Practice

</div>

Accruals have been found to be high in years of fraudulent financial statements (Dechow et al., 2011). In addition, Perols and Lougee (2011) found that companies with excessive accruals are more likely to produce fraudulent financial statements. These researchers as well as Mangala and Kumari (2015) and Sharma and Panigrahi (2012) recognized the need for additional research in the area of accrual fraud indicators. The purpose of this quantitative, correlational study was to determine if accruals quality could be used as a financial statement fraud detection technique. The Dechow/Dichev model was used to compare accrual quality of fraudulent financial statements with the accrual quality of non-fraudulent financial statements. The findings suggested that, as expected, the accruals in the fraudulent financial statements were of significantly lower quality than the accruals in the non-fraudulent financial statements. As a group, there was a difference in the quality between fraud and non-fraud. It was not a predictor or indicator for a specific company.

The most practical application to professional practice for this study is for investors, creditors, and other stakeholders to use the Dechow/Dichev model to measure accrual quality, as it was intended to do, rather than use it as an indicator of financial statement fraud. Prior research found that poor quality accruals could be related to the existence of fraud (Ayers et al., 2006; Badertscher et al., 2012; D'Amico & Mafrolla, 2013; Dechow et al., 2012; Perols & Lougee, 2011; Healy & Wahlen, 1999; Dechow, 1994; Foster & Shastri, 2013; Gerakos, 2012). This study also found a relationship between the Dechow/Dichev accrual quality model results and the presence of financial statement fraud when viewed as a group.

This study adds to the accrual fraud detection literature by assessing accrual quality as a fraud detection technique. The findings suggest that accrual quality may be a potential indicator of financial statement fraud. Therefore, accountants should not mitigate the importance of accrual quality nor dismiss the importance of accruals in financial statement analysis. Accruals are a normal part of business and the subjective nature of many accrual transactions provides an opportunity for easy financial statement manipulation.

Accountants must be trustworthy, honest, and reliable while following guidelines and principles set forth by regulators and the profession's governing agencies. Biblical concepts cover ethical issues that may be applied to business situations to provide clarity to tough situations, including fraud. Fraud is theft and God's Ten Commandment's instruct us not to steal (Mark 10:19). Proverbs 20:17 states, "food gained by fraud tastes sweet, but one ends up with a mouth full of gravel." Also, Romans 13:1-4 instructs us to obey governing authorities and regulations. Unfortunately, not all accountants and managers of financial information are trustworthy and some turn to fraudulent activity.

Pressure and rationalization are two of the fraud triangle theory characteristics that are present when fraud occurs (Dellaportas, 2013) and are part of the theoretical framework of this study. God's word provides us with direction on how to overcome these characteristics of fraudulent behavior. To mitigate financial pressure, Proverbs 3:9-10 instructs us to "honor the Lord with your wealth…then your barns will be filled to overflowing, and your vats will brim with new wine." In other words, good financial stewards are rewarded. Rationalization is the process of justifying a behavior. Fraudsters rationalize their actions; however, Matthew 16:26 relates to the rationalization of fraudulent behavior as the forfeiting of the soul. Putting God first and removing the idolatry of monetary and social success reduces the pressure and rationalization present during fraudulent activity (Albertson, 2016).

We Christians are instructed to live our lives with honesty and integrity (Matthew 5:8, Proverbs 21:3, Psalm 25:21, & Psalm 112) and these characteristics should flow through to all areas of our lives, including our businesses. We are called to "always strive to do what is good for each other and for everyone else" in all parts of our lives (1 Thessalonians 5:15). Regarding the biblical framework related to this study, the findings emphasize the continued need for checks and balances within the accounting profession. Using tools that have been tested and proven effective, such as the Dechow/Dichev accrual quality model, we can aid authorities, auditors, and management in the detection of fraud. By detecting financial statement fraud, we are providing useful and accurate information for all stakeholders' decision-making. These actions allow our communities to continue to flourish (Van Duzer, 2010).

Concerning the cognate field of accounting, this study adds to the literature on fraudulent financial statement detection. The manipulation of financial statements is the costliest type of fraud in the workplace (ACFE, 2016). Our capital markets and individual company stakeholders

rely on accurate financial statements for decision-making. The application of the results of fraud theory research, accrual quality research, and financial statement fraud detection research strengthens the data used for decision-making, therefore strengthening our capital markets as a whole.

Recommendations for Action

Users of financial statements include investors, analysts, auditors, regulators, and other stakeholders of businesses. The capital markets rely on the accuracy of information provided in financial statements. The results of this study can be of use to all stakeholders of businesses who are looking for indicators of financial statement quality. The Dechow/Dichev model may be a reliable indicator of the quality of the accruals presented which is an important characteristic to consider when analyzing financial statements.

One recommended action is to increase awareness of the many models of accrual quality and their usefulness in financial statement analysis. Accountants, analysts, and auditors have access to a plethora of publications that cover their particular area of accounting. The AICPA and FASB websites send out regulation updates regularly as well as publications for use in accounting practice. In addition, organizations such as the National Society of Accountings (NSA), Chartered Institute of Internal Auditors, and state CPA agencies publish newsletters and magazines reporting recent findings in accounting research. The results of this study could be disseminated through any of these means in order to increase awareness of and application of accrual quality models.

Recommendations for Further Study

Accounting research is continually developing to identify more ways to uncover fraudulent financial statement activity. Despite the variety of fraud detection literature, a gap

exists regarding the detection of fraudulent financial reporting related specifically to revenue accrual misstatements (Dechow et al., 2011; Mangala & Kumari, 2015; Perols & Lougee, 2011). Further research should focus on finding additional indicators of financial statement fraud by applying existing accrual models such as Jones (1991), Dechow et al. (1995), Beneish (1999), Larcker and Richardson (2004), Kothari et al. (2005), or by creating models yet to be identified. Future studies should include expanding the periods used to include more years of AAERs issued. In addition, specific industries could be analyzed separately to identify normal accrual levels for particular markets. Finally, this study found that as a group there was a difference in the quality between fraud and non-fraud. The results were not a predictor or indicator for a specific company. A study is needed that could provide the missing link in detecting potential fraud in a way that could predict fraud in individual companies rather than the two groups.

Reflections

The results of this study were what I expected. The Dechow/Dichev model proved to be effective in estimating fraudulent accrual quality to be lower than non-fraudulent accrual quality; in addition, I anticipated that low accrual quality would be an indication of financial statement fraud. Since accruals are subjective and easy to manipulate and have been found to be of low quality in years of financial statement fraud (Perols & Lougee, 2011), it seemed logical that they could be used as a detection technique. Accruals are an easy avenue to commit fraud and should continue to be analyzed in order to find an analytical procedure that proves to be useful for the detection of financial statement fraud.

I have been on the doctoral journey for three years and this dissertation has been a part of my life for the past year. The research process was strenuous, but not unbearable. My biggest challenge was time management. The most demanding and time-intensive requirement was the

literature review and theoretical framework. While the data collection also required a lot of time, I thoroughly enjoyed digging through financial statements and gathering the data. Since this study used archival data, I do not feel as if any personal biases were introduced in the data collection process.

As I reflect on this accounting research, I am reminded that accounting is the language of business. Just as we have different words for the same objects (e.g., automobile/vehicle, house/home, trip/vacation, child/kid, etc.) we can also have different applications of accounting rules. Different accountants may interpret some of the accounting language, or rules, differently while still being legally applied. These subjective applications of rules and estimates make it difficult to compare the financial results of businesses. Therefore, we must do the best we can with the analytical tools we have. This study attempted to add to our collection of financial statement analysis tools regarding accruals, one of the most subjective areas of financial statements.

Biblically, this study follows the passage found in Proverbs 27:17, "As iron sharpens iron, so one person sharpens another." Accounting research, just like any subject, relies heavily on existing literature and those researchers who have a passion in the same area as their own. Each study added to the existing literature improves the information available to those who follow us in the profession. In addition, each study related to financial misstatement improves the efficiency of detecting fraud which improves our capital markets overall. It is my hope that this study is one piece of iron that sharpens others in order to strengthen accounting literature and the profession as a whole.

Summary and Study Conclusions

The purpose of this study was to add to the literature regarding financial statement fraud detection techniques by examining the relationship between accrual quality and financial statement fraud. The Dechow/Dichev model has proven to be an effective model in predicting accrual quality and, therefore, was chosen as the accrual model for this study. Data were collected from SEC AAERs issued in 2015 and 2016. Using purposive, criterion sampling, fraudulent companies were chosen from the AAERs and similar, non-fraudulent companies were chosen for the non-fraud group. The Dechow/Dichev model was applied to the data to compare the accrual quality for each group. Then, the standardized residuals produced for each group by the Dechow/Dichev model were used as the variables for the correlation analysis. An independent *t*-test was conducted to examine the relationship between accrual quality and financial statement fraud. The results indicated that the Dechow/Dichev model estimated accrual quality lower for fraudulent companies and low accrual quality might be considered an indicator of fraudulent activity. Significant difference was found in the revenue accrual quality for companies with detected financial statement fraud and similar companies without detected financial statement fraud. Research on the topic of accounting fraud detection techniques should continue with additional tests to aid auditors, regulators, and other stakeholders in making informed decisions when using financial statement data.

References

Abassi, A., Albrecht, C., Vance, A., & Hansen, J. (2012). Metafraud: A meta-learning

framework for detecting financial fraud. *MIS Quarterly, 36*(4), 1293-1327.

Abdel-Khalik, A. R. (2014). Prospect theory predictions in the field: Risk seekers in settings of

weak accounting controls. *Journal of Accounting Literature, 33*, 58-84. doi:

10.1016j.acctlit.2014.10.001

Albertson, H. (2016). Christian leaders on faith and work: An empirical inquiry. *Christian

Business Review, 5*, 40-48.

American Institute of Certified Public Accountants (AICPA). (2002). *AU section 316:

Consideration of fraud in a financial statement audit*. Retrieved from www.aicpa.org

American Institute of Certified Public Accountants (AICPA). (2007). *AU section 316:

Consideration of fraud in a financial statement audit*. Retrieved from www.aicpa.org

Arif, S., Marshall, N., & Yohn, T. L. (2016). Understanding the relation between accruals and

volatility: A real options-based investment approach. *Journal of Accounting and

Economics, 62*(1), 65-86. doi: 10.1016/j.jacceco.2016.04.005

Association of Certified Fraud Examiners (ACFE). (2016). *Report to the nations on occupational

fraud and abuse*. Retrieved from www.acfe.com

Ayers, B. C., Jiang, J., & Yeung, P. E. (2006). Discretionary accruals and earnings management:

An analysis of pseudo earnings targets. *The Accounting Review, 81*(3), 617-652.

Badertscher, B. A., Collins, D. W., & Lys, T. Z. (2012). Discretionary accounting choices and

the predictive ability of accruals with respect to future cash flows. *Journal of Accounting

and Economics, 53*, 330-352. doi: 10.1016/j.jacceco.2011.11.003

Ball, R. (2013). Accounting informs investors and earnings management is rife: Two

    questionable beliefs. *Accounting Horizons, 27*(4), 847-853. doi:10.2308/acch-10366

Bartov, E., & Cohen, D. (2009). The number games in the pre- and post-Sarbanes-Oxley eras.

    Journal of Accounting, Auditing, & Finance, 24(4), 505-534. doi: 10.1177

    /0148558X0902400401

Beneish, M. D. (1999). The detection of earnings management. *Financial Analysts Journal,*

    55(5), 24-36.

Bian, Y., Cheng, M., Yang, C., Yuan, Y., & Li, Q. (2016). Financial fraud detection: A new

    ensemble learning approach for imbalanced data. *PACIS 2016 Proceedings, 315*.

Bolton, R. J., & Hand, D. J. (2002). Statistical fraud detection: A review. *Statistical Science,*

    17(3), 235-255.

Bradshaw, M. T., Richardson, S. A., & Sloan, R. G. (2001). Do analysts and auditors use

    information in accruals? *Journal of Accounting Research, 39*(1), 45-74.

Brytting, T., Minogue, R., & Morino, V. (2011). *The anatomy of fraud and corruption:*

    Organization causes and remedies. Surrey, UK: Gower Publishing Limited.

Chang, H. S. (2015). *Firm life cycle and detection of accrual-based earnings manipulation*

    (Doctoral dissertation, University of Illinois at Urbana-Champaign). Retrieved from

    ProQuest Dissertations and Theses. (3737619)

Chewning, R. C., Eby, J. W., & Roels, S. J. (1990). *Business through the eyes of faith*. San

    Francisco, CA: Harper Collins Publishers.

Cohen, D., Dey, A., & Lys, T. (2008). Real and accrual-based earnings management in the pre-

    and post-Sarbanes-Oxley periods. *The Accounting Review, 83*(3), 757-787.

Cressey, D. (1953). *Other people's money: A study in the social psychology of embezzlement.* Glencoe, IL: Free Press.

Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches.* Thousand Oaks, CA: Sage Publications.

D'Amico, E., & Mafrolla, E. (2013). The importance of earnings management detection models to identify fraud: A case from Italian listed firms. *Journal of Modern Accounting and Auditing, 9*(1), 68-75.

Dechow, P. M. (1994). Accounting earnings and cash flows as measures of firm performance: The role of accounting accruals. *Journal of Accounting and Economics, 18*, 3-42. doi: 10.1016/0165-4101(94)90016-7

Dechow, P. M., & Dichev, I. D. (2002). The quality of accruals and earnings: The role of accrual estimation errors. *The Accounting Review, 77*, 35-59.

Dechow, P. M., Ge, W., Larson, C. R., & Sloan, R. G. (2011). Predicting material accounting misstatements. *Contemporary Accounting Research, 28*(1), 17-82. doi: 10.1111/j.1911-3846.2010.01041.x

Dechow, P. M., Hutton, A. P., Kim, J. H., & Sloan, R. G. (2012). Detecting earnings management: A new approach. *Journal of Accounting Research, 50*(2), 275-334. doi: 10.1111/j.1475-679X.2012.00449.x

Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1995). Detecting earnings management. *The Accounting Review, 70*(2), 193-225.

Defond, M., & Subramanyam, K. (1998). Auditor changes and discretionary accruals. *Journal of Accounting and Economics, 25*, 35-67. doi: 10.1016/S0165-4101(98)00018-4

Dellaportas, S. (2013). Conversations with inmate accountants: Motivation, opportunity, and the fraud triangle. *Accounting Forum, 37*, 29-39. doi: 10.1016 /j.accfor.2012.09.003

Dion, M. (2016). Agency theory and financial crime: The paradox of the opportunistic executive. *Journal of Financial Crime, 23*(3), 574-587. doi: 10.1108/JFC-03-2015-0012

Dorminey, J., Fleming, J. S., Kranacher, M., & Riley Jr, R. A. (2012). The evolution of fraud theory. *Issues in Accounting Education, 27*(2), 555-579. doi: 10.2308/iace-50131

Edmonds, W. A., & Kennedy, T. D. (2017). *An applied guide to research design: Quantitative, qualitative, and mixed methods*. Thousand Oaks, CA: Sage Publications.

Eisenhardt, K. M. (1989). Agency theory: An assessment and review. *The Academy of Management Review, 14*(1), 57-74.

Financial Accounting Standards Board (FASB). (2010). *Statement of Financial Accounting Concepts No. 8*. Retrieved from www.fasb.org

Financial Accounting Standards Board (FASB). (2014). *Accounting Standards Update No. 2014-09*. Retrieved from www.fasb.org

Foster, B. P., & Shastri, T. (2013). Material internal control weaknesses and earnings management in the post-SOX environment. *The Journal of Applied Business Research, 29*(1), 183-194.

Gavious, I., & Rosenboim, M. (2013). The disciplining role of the market versus government regulation: The case of Sarbanes-Oxley and the earnings quality of M&A targets. *American Law and Economics Review, 15*(1), 300-332. doi: 10.1093/aler/ahs032

Gerakos, J. (2012). Discussion of detecting earnings management: A new approach. *Journal of Accounting Research, 50*(2), 335-347. doi: 10.1111/j.1475-679X.2012.00452.x

Gerard, J. A., & Weber, C. M. (2014). How agency theory informs a $30 million fraud. *Journal of Finance, Accounting, and Management, 5*(1), 16-47.

Ghosh, A., Marra, A., & Moon, D. (2010). Corporate boards, audit committees, and earnings management: Pre- and post-SOX evidence. *Journal of Business Finance and Accounting, 37*(9/10), 1145-1176. doi: 10.1111/j.1468-5957.2010.02218.x

Ghosh, D., & Olsen, L. (2009). Environmental uncertainty and managers' use of discretionary accruals. *Accounting Organizations and Society, 34*(2), 188-205. doi: 10.1016 /j.aos.2008.07.001

Gibbs, G. R. (2008). *Analyzing qualitative data*. Thousand Oaks, CA: Sage Publications.

Gill, D. W., & Erisman, A. M. (2016). The first words on business. *Christian Business Review, 5*, 22-32.

Golden, L. L., Meyerson, M. M., Brockett, P. L., & Wortham, G. (2013). Detecting fraud in accounting and marketing. *Journal of Accounting and Marketing, 2*(3). doi: 10.4172 /2168-9601.1000e122

Green, J., Hand, J. R. M., & Soliman, M. T. (2011). Going, going, gone? The apparent demise of the accruals anomaly. *Management Science, 57*(5), 797-816. doi: 10.1287 /mnsc.1110.1320

Gullkvist, B., & Jokipii, A. (2013). Perceived importance of red flags across fraud types. *Critical Perspectives on Accounting, 24*, 44-61. doi: 10.1016/j.cpa.2012.01.004

Gupta, R., & Gill, N. S. (2012). Prevention and detection of financial statement fraud: An implementation of data mining framework. *International Journal of Advanced Computer Science and Applications, 3*(8), 150-156.

Hammersley, J. S., Johnstone, K. M., & Kadous, K. (2011). How do audit seniors respond to heightened fraud risk? *Auditing: A Journal of Practice & Theory, 30*(3), 81-101. doi: 10.2308/ajpt-10110

Healy, P. M. (1985). The effect of bonus schemes on accounting decisions. *Journal of Accounting and Economics, 7*(1), 85-107. doi: 10.1016/0165-4101(85)90029-1

Healy, P. M., & Wahlen, J. M. (1999). A review of the earnings management literature and its implications for standard setting. *Accounting Horizons, 13*(4), 365-383.

Idleman, K. (2013). *Gods at war*. Grand Rapids, MI: Zondervan.

Jiang, W., Lu, M., Shan, Y., & Zhu, T. (2016). Evidence of avoiding working capital deficits in Australia. *Australian Accounting Review, 76*(26), 107-118. doi: 10.1111/auar.12095

Johnstone, K. M., Gramling, A. A., & Rittenberg, L. E. (2016). *Auditing: A risk-based approach to conducting a quality audit.* Boston, MA: Cengage Learning.

Jones, J. (1991). Earnings management during import relief investigations. *Journal of Accounting Research, 29*(2), 193-228. doi: 10.2307/2491047

Jones, K. L., Krishnan, G. V., & Melendrez, K. D. (2008). Do models of discretionary accruals detect actual cases of fraudulent and restated earnings? *Contemporary Accounting Research, 25*(2), 499-531. doi: 10.1506/car.25.2.8

Jordan, C. E., Clark, S. J., & Pate, G. R. (2015). Earnings management to report an additional cent of EPS: Evidence from pre- and post-SOX periods. *Academy of Accounting and Financial Studies Journal, 19*(3), 153-163.

Kabir, M. H. (2010). Positive accounting theory and science. *Journal of Centrum Cathedra*, *3*(2), 136-149.

Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica, 47*(2), 263-292.

Karpoff, J. M., Koester, A., Lee, D. S., & Martin, G. S. (2014). Database challenges in financial misconduct research. *Unpublished Manuscript*.

Kassem, R., & Higson, A. (2012). Financial reporting fraud: Are standards setters and external auditors doing enough? *International Journal of Business and Social Science, 3*(19), 283-290.

Killen, K. L. (2016). *Ratio of income tax expense to operating income as an indicator of fraud*. (Doctoral dissertation, Northcentral University). Retrieved from ProQuest Dissertations and Theses. (10105357)

Kim, Y. J., Baik, B., & Cho, S. (2016). Detecting financial misstatements with fraud intention using multi-class cost-sensitive learning. *Expert Systems with Applications, 62*, 32-43. doi: 10.1016/j.eswa.2016.06.016

Koch, T. W., & Wall, L. D. (2000). The use of accruals to manage reported earnings: Theory and evidence. *Federal Reserve Bank of Atlanta Working Paper Series*. Retrieved from www.frbatlanta.org/publica/work_papers/index.html

Kothari, S. P., Leone, A. J., & Wasley, C. E. (2005). Performance matched discretionary accrual measures. *Journal of Accounting and Economics, 39*(1), 163-197. doi: 10.1016 /j.jacceco.2004.11.002

Kunda, Z. (1990). The case for motivated reasoning. *Psychological Bulletin, 108*(3), 480-498. doi: 10.1037/0033-2909.108.3.480

Larcker, D. F., & Richardson, S. A. (2004). Fees paid to audit firms, accrual choices, and corporate governance. *Journal of Accounting Research, 42*(3), 625-658.

Lokanan, M. E. (2015). Challenges to the fraud triangle: Questions on its usefulness. *Accounting Forum, 39*(3), 201-224. doi: 10.1016/j.accfor.2015.05.002

Lustgarten, S., & Shon, J. (2013). Do abnormal accruals affect the life expectancy of audit engagements? *The Review of Quantitative Financial Accounting, 40*(3), 443-466. doi: 10.1007/s11156-012-0276-1

Mangala, D., & Kumari, P. (2015). Corporate fraud prevention and detection: Revisiting the literature. *Journal of Commerce and Accounting Research, 4*(1), 52-62.

Marnet, O. (2007). History repeats itself: The failure of rational choice models in corporate governance. *Critical Perspectives on Accounting, 18*(2), 191-210. doi: 10.1016 /j.cpa.2005.11.010.

McMahon, R., Pence, D., Bressler, L., & Bressler, M. S. (2016). New tactics in fighting financial crimes: Moving beyond the fraud triangle. *Journal of Legal, Ethical, and Regulatory Issues, 19*(1), 16-25.

McNichols, M. F. (2002). Discussion of the quality of accruals and earnings: The role of accrual estimation errors. *Accounting Review, Dec 2002*, 61+. Retrieved from http://accounting.rutgers.edu/raw/aaa

Miao, B., Teoh, S. H., & Zhu, Z. (2016). Limited attention, statement of cash flow disclosure, and the valuation of accruals. *Review of Accounting Studies, 21*(2), 473-515. doi: 10.1007/s11142-016-9357-z

Mitnick, B. M. (1973). *Fiduciary rationality and public policy: The theory of agency and some consequences.* Presented at Annual Meeting American Political Science Association, 69th, New Orleans, LA.

Murphy, P. R., & Dacin, M. T. (2011). Psychological pathways to fraud: Understanding and preventing fraud in organizations. *Journal of Business Ethics, 101*(4), 601-618. doi: 10.1007/s10551-011-0741-0

Perols, J. L., & Lougee, B. A. (2011). The relation between earnings management and financial statement fraud. *Advances in Accounting Incorporating Advances in International Accounting, 27*, 39-53. doi: 10.1016/j.adiac.2010.10.004

Petrou, A. P., & Procopiou, A. (2016). CEO shareholdings and earnings manipulation: A behavioral explanation. *European Management Review, 13*(2), 137-148. doi: 10.1111/emre.12073

Power, M. (2013). The apparatus of fraud risk. *Accounting, Organizations, and Society, 38*(6), 525-543. doi: 10.1016/j.aos.2012.07.004

Public Company Accounting Oversight Board (PCAOB). (2010). *Auditing standard 2110: Identifying and assessing risks of material misstatement*. Retrieved from https://pcaobus.org/Standards/Auditing/Pages/AS2110.aspx

Purda, L., & Skillicorn, D. (2015). Accounting variables, deception, and a bag of words: Assessing the tools of fraud detection. *Contemporary Accounting Research, 32*(3), 1193-1223. doi: 10.1111/1911-3846.12089

Raslan, I., Hegazy, M., & Eldawla, N. K. (2016). Quality control elements and auditor fraud risk assessment: An experimental study. *Journal of Accounting and Finance, 16*(2), 151-176.

Richardson, A. J. (2015). Quantitative research and the critical accounting project. *Critical Perspectives on Accounting, 32*, 67-77. doi: 10.1016/j.cpa.2015.04.007

Roden, D. M., Cox, S. R., & Kim, J. Y. (2016). The fraud triangle as a predictor of corporate fraud. *Academy of Accounting and Financial Studies Journal, 20*(1), 80-92.

Rosenhouse, M. A. (2014). FASB, IASB issue converged revenue recognition standard. *SEC Accounting Report, 40*(8), 1-3.

Ross, S. A. (1973). The economic theory of agency: The principle's problem. *The American Economic Review, 63*(2), 134-139.

Roxas, M. L. (2011). Financial statement fraud detection using ratio and digital analysis. *Journal of Leadership, Accountability, and Ethics, 8*(4), 56-66.

Salkind, N. J. (2010). *Encyclopedia of research design*. Thousand Oaks, CA: Sage Publications.

Salkind, N. J. (2013). *Statistics for people who (think they) hate statistics*. Thousand Oaks, CA: Sage Publications.

Salterio, S. E., & Webb, A. (2006). Honesty in accounting and control: A discussion of "The effect of information systems on honesty in managerial reporting: A behavioral perspective." *Contemporary Accounting Research, 23*(4), 919-932. doi: 10.111 /j.1911-3846.2006.tb00346.x

Sarbanes-Oxley Act of 2002, Pub. L. No. 107-204, § 101. (2002). Retrieved from https://www.gpo.gov/fdsys/pkg/PLAW-107publ204/content-detail.html

Scott, I. (2012). *Accounting and auditing enforcement releases: Cash flow evidence associated with revenue recognition fraud* (Doctoral dissertation, University of Memphis). Retrieved from ProQuest Dissertations and Theses. (3520379).

Sharma, A., & Panigrahi, P. K. (2012). A review of financial accounting fraud detection based on data mining techniques. *International Journal of Computer Applications, 39*(1), 37-47. doi: 10.5120/4787-7016

Shi, W., Connelly, B. L., & Hoskisson, R. E. (2016). External corporate governance and

    financial fraud: Cognitive evaluation theory insights on agency theory prescriptions.

    Strategic Management Journal, 38(6), 1268-1286. doi: 10.1002/smj

Sloan, R. G. (1996). Do stock prices fully reflect information in accruals and cash flow about

    future earnings? *The Accounting Review, 71*(3), 289-315.

Smith, M. (2003). *Research methods in accounting*. Thousand Oaks, CA: Sage Publications.

Soltani, B. (2014). The anatomy of corporate fraud: A comparative analysis of high profile

    American and European corporate scandals. *Journal of Business Ethics, 120*(2), 251

    -274. doi: 10.1007/s10551-013-1660-z

Stake, R. E. (2010). *Qualitative research: Studying how things work*. New York, NY: Guilford

    Press.

Stevens, S. S. (1946). On the theory of scales of measurement. *Science, 103*(2684), 677-680.

Tversky, A., & Kahneman, D. (1992). Advances in prospect theory: Cumulative representation

    of uncertainty. *Journal of Risk and Uncertainty*, *5*(4), 297-323.

Van Duzer, J. B. (2010). *Why business matters to God and what still needs to be fixed.* Downers

    Grove, IL: InterVarsity Press.

Vogt, W., Vogt, E., Gardner, D., & Haeffele, L. (2014). *Selecting the right analyses for your*

    data: Quantitative, qualitative, and mixed methods. New York, NY: Guilford Press.

Wang, I. Z., & Fargher, N. (2015). The effects of tone at the top and coordination with external

    auditors on internal auditors' fraud risk assessments. *Accounting and Finance*. doi:

    10.1111/acfi.12191

Wasiuzzaman, S., Sahafzadeh, I., & Nejad, N. R. (2015). Prospect theory, industry

characteristics and earnings management. *Review of Accounting and Finance, 14*(3), 324-

347. doi: 10.1108/RAF-07-2014-0075

Weske, J., & Benuto, L. (2015). Share prices and price/earnings ratios as predictors of fraud

prior to a fraud announcement. *Academy of Accounting and Financial Studies Journal,

19*(2), 281.

Wolfe, D. T., & Hermanson, D. R. (2004). The fraud diamond: Considering the four elements of

fraud. *The CPA Journal, 74*(12), 38-42.

Zhang, X. (2016). Income smoothing, idiosyncratic risk, & CEO turnover. *Journal of

Mathematical Finance, 6*(1), 1-13. doi: 10.4236/jmf.2016.61001

Zhu, W. (2016). Accruals and price crashes. *Review of Accounting Studies, 21*(2), 349-399. doi:

10.1007/s11142-016-9355-1

Appendix A: Non-Fraud Group Data

NON-FRAUDULENT COMPANIES			
(in thousands)			
Company Name	CFO $_{t-1}$	CFO $_t$	CFO $_{t+1}$	ΔWC $_t$
Harris Corp. FY2009	555,500	666,800	802,700	(14,700)
Harris Corp. FY2010	666,800	802,700	833,100	46,600
Harris Corp. FY2011	802,700	833,100	852,900	(49,200)
First Farmers & Merchants Corp. FY2009	10,515	(3,866)	8,828	(14,848)
Mueller Industries FY2008	185,844	185,760	77,388	60,231
Mueller Industries FY2009	185,760	77,388	56,357	(7,737)
Mueller Industries FY2010	77,388	56,357	153,749	(56,279)
Mueller Industries FY2011	56,357	153,749	108,297	21,393
Nortech Systems, Inc. FY2012	(874)	4,622	276	2,095
Principal Financial Group, Inc. FY2010	2,243,000	2,791,700	2,713,300	1,464,800
Principal Financial Group, Inc. FY2011	2,791,000	2,713,300	3,080,900	1,482,600
Principal Financial Group, Inc. FY2012	2,713,300	3,080,900	2,221,200	2,054,600
M&T Bank Corporation FY2010	1,189,389	1,675,647	1,772,246	274,376
Teradata Corporation FY2012	513,000	575,000	510,000	(53,000)
Teradata Corporation FY2013	575,000	510,000	680,000	(99,000)
PrimeEnergy Corporation FY2010	34,060	62,211	41,339	15,368
TESSCO Technologies FY2007	3,318	28,026	4,160	15,325
TESSCO Technologies FY2008	28,026	4,160	15,156	(7,473)
TESSCO Technologies FY2009	4,160	15,156	14,811	3,618
TESSCO Technologies FY2010	15,156	14,811	12,038	(2,772)
TESSCO Technologies FY2011	14,811	12,038	21,746	(3,625)
Icahn Enterprises FY2009	893,000	365,000	41,000	740,000
Icahn Enterprises FY2010	365,000	41,000	1,995,000	1,137,000
Icahn Enterprises FY2011	41,000	1,995,000	1,514,000	(3,106,000)
Citizens & Northern Corp. FY 2010	12,968	35,046	37,464	9,322
Citizens & Northern Corp. FY 2011	35,046	37,464	27,652	4,672
NBT Bancorp, Inc. FY2010	54,684	89,437	83,765	9,272
Atlantic Power Corporation FY2012	55,900	167,100	152,400	2,700
Atlantic Power Corporation FY2013	167,100	152,400	65,000	47,100
Atlantic Power Corporation FY2014	152,400	65,000	87,400	(18,600)
The InterGroup Corp. FY2009	3,092	7,032	5,684	3,379
The InterGroup Corp. FY2010	7,032	5,684	2,965	(2,947)
Stage Stores, Inc. FY2010	120,936	77,875	78,055	(37,869)
Stage Stores, Inc. FY2011	77,875	78,055	75,981	(33,913)
Primerica, Inc. FY2010	716,344	41,057	87,215	(116,062)
Primerica, Inc. FY2011	41,057	87,215	119,978	22,813
KBR, Inc. FY2007	931,000	248,000	124,000	190,000
KBR, Inc. FY2008	248,000	124,000	(36,000)	(320,000)
KBR, Inc. FY2009	124,000	(36,000)	549,000	(495,000)
KBR, Inc. FY2010	(36,000)	549,000	650,000	180,000

Appendix B: Fraud Group Data

FRADULENT COMPANIES				
(in thousands)				
Company Name	CFO_{t-1}	CFO_t	CFO_{t+1}	ΔWC_t
Computer Sciences Corp. FY2009	1,343,000	1,986,000	1,643,000	(885,000)
Computer Sciences Corp. FY2010	1,986,000	1,643,000	1,564,000	(418,000)
Computer Sciences Corp. FY2011	1,643,000	1,564,000	1,176,000	(426,000)
FNCB Bancorp, Inc. FY2009	11,215	3,641	5,792	(12,433)
General Cable Corporation FY2008	231,700	229,400	546,300	(155,100)
General Cable Corporation FY2009	229,400	546,300	98,900	346,600
General Cable Corporation FY2010	546,300	98,900	97,300	(144,200)
General Cable Corporation FY2011	98,900	97,300	288,600	(141,300)
IEC Electronics Corp. FY2012	12,806	12,970	(4,338)	(4,763)
INTL FCStone, Inc. FY2010	17,400	113,000	209,000	91,700
INTL FCStone, Inc. FY2011	113,000	209,000	(92,100)	155,400
INTL FCStone, Inc. FY2012	209,000	(92,100)	44,900	23,200
Keybanc Capital Markets, Inc. FY2010	2,320,000	2,724,000	1,890,000	1,116,000
Logitech International FY2012	156,742	196,142	116,990	1,555
Logitech International FY2013	196,142	116,990	205,421	21,454
Miller Energy Resources, Inc. FY 2010	(1,721)	(2,160)	7,734	202,219
ModusLink Global Solutions FY2007	16,636	52,627	(5,792)	12,197
ModusLink Global Solutions FY2008	52,627	(5,792)	35,943	(43,141)
ModusLink Global Solutions FY2009	(5,792)	35,943	41,148	18,105
ModusLink Global Solutions FY2010	35,943	41,148	(3,217)	371
ModusLink Global Solutions FY2011	41,148	(3,217)	(14,452)	(16,389)
Monsanto Company FY2009	2,799,000	2,236,000	1,398,000	(1,240,000)
Monsanto Company FY2010	2,236,000	1,398,000	2,814,000	(702,000)
Monsanto Company FY2011	1,398,000	2,814,000	3,051,000	280,000
Orrstown Financial Services, Inc. FY2010	12,511	24,808	34,855	1,893
Orrstown Financial Services, Inc. FY2011	24,808	34,855	18,658	3,165
Park National Corporation FY2010	72,338	126,134	126,731	(8,794)
Powersecure International, Inc. FY2012	(5,481)	10,852	(2,164)	4,116
Powersecure International, Inc. FY2013	10,852	(2,164)	12,056	(14,457)
Powersecure International, Inc. FY2014	(2,164)	12,056	713	8,003
St. Joe Company FY2009	48,459	50,735	16,312	(23,167)
St. Joe Company FY2010	50,735	16,312	(9,839)	52,607
Stein Mart, Inc. FY2010	19,356	98,329	49,632	40,515
Stein Mart, Inc. FY2011	98,329	49,632	59,568	(18,537)
The Phoenix Companies FY2010	(583,000)	(258,000)	(138,400)	(515,800)
The Phoenix Companies FY2011	(258,000)	(138,400)	(520,800)	(263,800)
Weatherford International FY2007	1,087,019	872,506	1,104,568	(863,599)
Weatherford International FY2008	872,506	1,104,568	614,322	(949,153)
Weatherford International FY2009	1,104,568	614,322	1,128,000	(515,715)
Weatherford International FY2010	614,322	1,128,000	833,000	(182,000)