

# JOURNAL OF BUSINESS AND ACCOUNTING

Volume 18 Number 1

ISSN 2153-6252

SPRING 2026

## IN THIS ISSUE

- Understanding Fraud: Which Symbols Work Best, The Triangle, Diamond, Pentagon, Hexagon, or Instructional Octagon?  
.....King, Case and McLanahan
- Foreign Corrupt Practices Act (FCPA) Investigation Targets: A Linguistic Analysis of Firm Disclosures  
.....Demaline
- An advantageous Alignment: The impact of Organizational Culture Fit on M&A Success in the Banking Industry  
.....Dobbs and McKay
- Accounting for Environmental Credit Assets and Obligations: History and Emerging Guidance  
.....Beeler and Panter
- The Expansion of Mobile Banking-Based Fintech and its Impact on Financial Literacy and Financial Services Access for Unbanked and Underbanked Minority Households in the United States (2019 - 2024)  
.....Ramne, Boyer-Davis and Uhbeck
- Social Media and Securities Fraud: Deceitfully Promoting One Stock for Another  
.....Blythe
- The Effect of Operating Cash Flow on Share Price in the Retail Trade Sector  
..... Jackson, Jackson and Linn
- The Impact of ESG Disclosure Type on Investment Behavior Across Generational Cohorts  
.....Andrews, Hall, Nyantakyi and Wharton
- Robotic Process Automation and Future Employment of Accounting Professionals  
.....Lui and Shum

**A REFEREED PUBLICATION OF THE AMERICAN SOCIETY  
OF BUSINESS AND BEHAVIORAL SCIENCES**

**JOURNAL OF BUSINESS AND ACCOUNTING**

P.O. Box 502147, San Diego, CA 92150-2147: Tel 909-648-2120

Email: [mondal@asbbs.org](mailto:mondal@asbbs.org) <http://www.asbbs.org>

**ISSN: 2153-6252**

**Editor-in-Chief**

Wali I. Mondal  
National University

**Editorial Board**

Pani Chakrapani  
University of Redlands

Gerald Calvasina  
University of Southern Utah

Shamsul Chowdhury  
Roosevelt University

Lisa Flynn  
SUNY, Oneonta

Bala Maniam  
Sam Houston State University

Saiful Huq  
University of New Brunswick

William J. Kehoe  
University of Virginia

Trish Petak  
Kansas Wesleyan University

Thomas Vogel  
Canisius College

Linda Whitten  
Skyline College

The Journal of Business and Accounting is a publication of the American Society of Business and Behavioral Sciences (ASBBS). Papers published in the Journal went through double-blind review process prior to acceptance for publication. The editors wish to thank anonymous referees for their contributions.

The national annual meeting of ASBBS is held in March of each year and the international meeting is held in May/June. Visit [www.asbbs.org](http://www.asbbs.org) for information regarding ASBBS.

# JOURNAL OF BUSINESS AND ACCOUNTING

ISSN 2153-6252

Volume 18, Number 1; Spring 2026

## TABLE OF CONTENTS

Understanding Fraud: Which Symbols Work Best, The Triangle, Diamond, Pentagon, Hexagon, or Instructional Octagon? King, Case and McLanahan.....	4
Foreign Corrupt Practices Act (FCPA) Investigation Targets: A Linguistic Analysis of Firm Disclosures Demaline .....	20
An advantageous Alignment: The impact of Organizational Culture Fit on M&A Success in the Banking Industry Dobbs and McKay .....	36
Accounting for Environmental Credit Assets and Obligations: History and Emerging Guidance Beeler and Panter .....	51
The Expansion of Mobile Banking-Based Fintech and its Impact on Financial Literacy and Financial Services Access for Unbanked and Underbanked Minority Households in the United States (2019 - 2024) Ramne, Boyer-Davis and Uhbeck .....	59
Social Media and Securities Fraud: Deceitfully Promoting One Stock for Another Blythe .....	75.
The Effect of Operating Cash Flow on Share Price in the Retail Trade Sector Jackson, Jackson and Linn .....	92
The Impact of ESG Disclosure Type on Investment Behavior Across Generational Cohorts Andrews, Hall, Nyantakyi and Wharton .....	101
Robotic Process Automation and Future Employment of Accounting Professionals Lui and Shum .....	117.

## **UNDERSTANDING FRAUD: WHICH SYMBOLS WORK BEST, THE TRIANGLE, DIAMOND, PENTAGON, HEXAGON, OR INSTRUCTIONAL OCTAGON?**

*Darwin L. King*

*Carl J. Case*

*Michael L. McLanahan*

St. Bonaventure University

### ***ABSTRACT***

Fraud Examination is a course that is taught by thousands of colleges and universities in the United States. Depending on the instructor, various symbols are used to better communicate to the students who committed fraud, why they do it, and how they are able to accomplish the deed. This paper discusses the various symbols that are available to the instructor when teaching a fraud examination. Beginning with the fraud triangle, this paper also discusses how other symbol concepts can be used in teaching fraud such as the fraud diamond, pentagon, hexagon, and others. Finally, the authors introduce the Fraud Octagon, which they believe will be a positive addition to the body of accounting knowledge.

Key Words: Fraud Education, Fraud Symbols, Fraud Octagon, Fraud Triangle, Fraud Prevention.

### **INTRODUCTION**

There are many university and college instructors who are faced with the question of how to best present the topic of fraud examination to students. The authors include some information on fraud and fraud examination in each of their courses. The lead author has taught a fraud examination for over 25 years utilizing materials provided by the ACFE in addition to a major fraud examination textbook. The other authors of the paper include fraud concepts in every course they teach such as management information systems, financial and managerial accounting, introductory and advanced taxation, and several others.

The intent of this paper is to review the various fraud diagrams of symbols that are commonly used by university and college instructors when teaching a basis fraud examination course. This paper begins with a discussion of the fraud triangle which was developed by Donald Cressey in the early 1950's (Cressey, 1953). Following the fraud triangle discussion, the authors continue with a review of the fraud diamond, pentagon, and hexagon. The authors discuss the advantages of using each of these symbols depending on the course, introductory or advanced, and the level of students taking the course, undergraduate or graduate. Specifically, certain symbols are more appropriate to be discussed in upper level undergraduate or graduate course as they are more complicated, and complex compared to the basic fraud triangle. Our discussion begins with Cressey's concept of the fraud triangle. The Instructional Fraud Octagon is presented in the Appendix.

## THE FRAUD TRIANGLE

Donald Cressey published his discussion of the fraud triangle in his book *Other People's Money* (Cressey, 1953). He arrived at three fundamentals which he thought affected a person's decision to commit fraud. These were an incentive or pressure, opportunity, and rationality or attitude. First, a person feels pressure or has an incentive that drives him or her to perpetrate a fraud. In many cases, this is financial pressure or motivation where the person is not being paid what they are worth. To get to this "worth value," the person steals from the employer. For example, an employee currently making \$50,000 per year may feel they are worth \$70,000. This provides the incentive to steal the additional \$20,000 from the employer to earn what he or she believes they are worth. Many other factors may provide this incentive or motivation such as an addiction to alcohol, drugs, or gambling. In addition, family issues such as excessive medical expenses or a pending divorce are other issues that can provide the incentive for a person to commit fraud to raise needed funds.

The second side of the triangle is opportunity. The fraudster must believe that there is an opportunity for him or her to commit the fraud and not get caught. Cressey called this a "perceived opportunity" which in most cases is a suspected weakness in the firm's system of internal controls. The fraudster believes that he or she is smart enough to steal funds from the company and not trigger detection by the system of internal controls. This shows the importance of an effective and efficient system of internal controls to deter potential fraudsters.

The third side of the triangle is rationality or attitude. The fraudster has a mental attitude and rationalizes in his or her mind that committing a fraud against the company is acceptable. For example, the fraudster may feel that everyone else in the firm is also stealing money from the company, so it is at the point of widespread practice. The video lessons published by the ACFE show that the "everyone is doing it" attitude is common. Another rationalization attitude found in the ACFE videos is "I am going to pay the money back." The fraudster believes that he or she is only borrowing the money and will later repay the funds to the company. Unfortunately, the "slippery slope" concept takes over and repayment becomes impossible. This concept states that frauds often start out small but increase in size as the fraudster gets bolder and braver over a period. This term came from the situation where someone on a muddy slope starts sliding slowly but picks up speed as he or she slides down the hill.

The lead author, in his classes, refers to Cressey's triangle as the MOR triangle. As seen in ACFE fraud video programs, many fraudsters are plain greedy. Greed is their prime motivator and what continues to encourage to continue the crime. This is something easily understood by students in an introductory fraud examination class. MOR, in this case, stands for motivation, opportunity, and rationalization. As actual fraud cases from the ACFE videos are discussed in class, these three terms become very apparent to students. This is especially true of the video program titled "The Corporate Con." This instructional video has been used by the lead author for 25 years in his fraud examination class.

Cressey used slightly different terms in his early writings in the 1950's. He interviewed numerous individuals in prisons convicted of various frauds to gain insight into why they perpetrated the crimes. To summarize his findings, Cressey claimed that the three factors that were common in inmates that he interviewed were: a non-shareable problem, a perceived opportunity for a trust

violation, and a set of rationalizations that allowed them to believe their actions were acceptable under the circumstances (Cressey, 1953). The non-sharable problem that created the motivation for the fraudster is often financial in nature. The perceived opportunity and set of rationalizations are like our earlier discussion. In summary, the three elements that Cressey described about 75 years ago are still relevant today in attempting to better understand why individuals commit fraud. A relevant example of this is the discussion of the fraud triangle contained in the SAS No. 99 Implementation Guide published by the AICPA (AICPA, 2003). The guide states that the “fraud triangle framework is an important conceptual underpinning for a great deal of SAS No. 99” (AICPA, p.5). The fraud triangle discussion was also included in the previous fraud SAS which was No. 82 published in 1998. Finally, the fraud triangle concept was also included in the Sarbanes-Oxley Act of 2002. These examples show that the fraud triangle theory continues endure as a valuable concept in the study of fraud.

There has been much written concerning the fraud triangle since its introduction in 1953. Some of the current literature strongly supports Cressey’s original concepts while other articles suggest modifications. For example, one article in support of Cressey’s work was published in the *ACFE Magazine* by Steve Albrecht (Albrecht, 2014). He summarizes the reasons that the fraud triangle has continued to endure over the years. Specifically, he states that all students studying anti-fraud principles have been exposed to the seminal fraud triangle. He adds that the fraud triangle is universally accepted in every situation where fraud is described or analyzed. Students are exposed to the fraud triangle concept in literature discussed in many college and university courses including fraud examination, accounting, auditing, marketing, and management. In summary, the theory is logical, concise, and easily understood allowing students to comprehend the problem of why individuals commit fraud.

Schuchter and Levi revisited the fraud triangle concept reviewing current literature and adding results from their study with convicted fraudsters in Austria and Switzerland (Schuchter & Levi, 2013). They report that company policies may contribute to a low fraud risk corporate culture which tends to minimize the number of occupational frauds. Also, their study found that perceived pressures by fraudsters were especially important in the decision to commit fraud or not. In addition, rather than using the term rationalizations, the fraudsters interviewed claimed that a “fraud inhibiting inner voice” before the crime was a key factor in stopping the person from committing a fraud. Those interviewed also reported that this inner voice became quieter over time until the time that the actual fraud occurred. Schuchter and Levi’s interviews with inmates showed that all three of the Fraud Triangle elements, including the inner voice concept, were significantly affected by the corporate culture or climate of the firm where they were employed. The “inner voice” or moral/ethical character of the individual and the corporate or ethical climate of the firm are found in more recent theories of why an individual commits fraud. These later concepts of fraud, diamond, pentagon, and hexagon are discussed later in this paper.

Authors who are not fans of the fraud triangle include Mark Lokanan. He believes that the ACFE presents a restrictive version of fraud (Lokanan, 2015). He argues that fraud is a multifaceted phenomenon and may not fit into a specific framework. Therefore, he argues that the fraud triangle concept does not present a dependable model for anti-fraud professionals. He argues that the fraud triangle alone cannot explain all types of fraudulent behavior. Lokanan believes that a wider study of societal practices must be completed. He feels that fraud is not always a result of an individual’s

frail morality but often is affected by wider societal influences. Therefore, the corporate culture or ethical climate of the firm may, indeed, influence why certain employees commit fraud.

John Gill, president of the ACFE since July 2023, makes it clear that the ACFE has never stated that the fraud triangle theory explains all types of fraud (Gill, 2017). Gill states that Dr. Donald Cressey's Fraud Triangle has continued to endure for two reasons. Those are it is correct and it is simple to understand. He makes it clear that the fraud triangle is a useful tool to understand why and how individuals commit fraud, but Gill stresses that it is not a scientific theory. Therefore, he advises antifraud professionals to use care taking the fraud trial to court as the judge may reject it. In summary, there is no one theory or concept that explains all types of fraud. The reasons why people commit fraud are varied. Therefore, there is no simple solution to explain the reasons for the various forms of occupational fraud. However, the fraud triangle provides a logical starting point in understanding why and how frauds are committed.

In summary, the fraud triangle is a topic that should be taught to students enrolled in introductory courses at the college and university level. Financial and managerial accounting, introductory marketing and management, economics, and business law introductory courses, in the opinion of the authors, should contain a basic introduction to fraud examination. This introductory material should certainly contain at least a brief discussion of the fraud triangle concept. It is so important for students to be aware of the frauds lurking in emails and text messages. The authors receive, at least on a weekly, if not daily basis, email fraud of a financial nature. As John Gill, and others, has said the fraud triangle concept is valuable today and should be taught to business students because it is both correct and easy to understand.

## **THE FRAUD DIAMOND**

Following the fraud triangle, the second fraud symbol or diagram that appeared in the fraud examination literature is the fraud diamond. David Wolfe and Dana Hermanson published an article in 2004 on this concept (Wolfe D. & Hermanson D., 2004). Wolfe and Hermanson believed that the fraud triangle could be improved by adding a fourth element and presenting the theory in the shape of a diamond. The author's four-sided fraud diamond added the individual's capability or ability to the original three elements of motivation, opportunity, and rationalization. They argue that a person's position in the firm and inherent abilities may determine if a fraud occurs even if the other three fraud triangle elements exist.

Wolfe and Hermanson argue that the individual's position and abilities may be the deciding factor in whether the fraud takes place. This is in addition to an environment where motivation, opportunity, and rationalization exist. For example, if the potential fraudster is the CEO of the company, he or she holds the ability or capability to complete the fraudulent transaction. Frauds committed by top management also generate the largest losses for the firms and take the longest amount of time to detect. According to the 2024 ACFE Fraud Report, although only 19% of the identified frauds were committed at the owner/executive level, the median loss was \$500,000 compared to median losses at the staff/employee level of \$60,000 (ACFE, 2024). In addition, the average time to detect fraud at the staff/employee level was only 8 months, whereas the detection period for owner/executive fraud was triple that time at 24 months.

The fourth side of the diamond of capability or ability is an important addition to the fraud triangle elements of motivation, opportunity, and rationalization. Students seem to agree that adding the concept of capability or ability to the basic fraud triangle makes a lot of sense. It is easy for students to understand that a top executive could easily feel that he or she possesses the necessary abilities and traits to commit premeditated fraud. This capability or ability of top managers allows them to believe that they possess the capacity to convert a perceived opportunity into reality. Students also understand that top managers can override internal controls and conceal fraud for a longer period than a lower or middle level employee. The authors believe that the fraud diamond can logically be included in an introductory fraud examination course following the introductory discussion of the fraud triangle.

The lead author has, for many years, added the 10-80-10 rule as it pertains to fraud, after the discussion of the fraud triangle and fraud diamond (NASACT, 2025). The National Association of State Auditors, Comptrollers and Treasurers and the Oregon State Controller's Division are only two of the many organizations that have discussed this rule related to the understanding of financial fraud. In summary, this rule states that ten percent of the population would never commit fraud regardless of the situation. They are honest. Eighty percent are called "situationally dishonest" and may commit fraud depending on the situation and the levels of motivation and opportunity inherent in the situation. If the levels of motivation or pressure and opportunity are high in each situation, it is more likely that these individuals will decide to commit fraud. Finally, the last ten percent of individuals are actively looking for ways to commit a fraudulent act. There are several variations of the 10-80-10 rule, but this is the most appropriate version for the study of fraud.

Before leaving our discussion of the fraud diamond, Sanya and Steve Morang offer the Seduction of Fraud Diamond (Sanya & Steve Morang, 2019). They argue that we need to change the way we look at ethics and human behavior to better understand fraud prevention, detection, and investigation. The Morang's revised "Seduction of Fraud Diamond" included the terms temptation, entitlement, opportunity, and boldness. First, they described temptation as the reason fraud was committed. Donald Cressey described this as a perceived pressure which was typically financial in nature. Entitlement for the Morang's replaced Cressey's rationalization since individuals who feel entitled possess no need to rationalize their behavior.

Opportunity is an essential element as it was with Cressey's fraud triangle. Opportunity is critical, because if the fraudster sees little or no opportunity to commit fraud, it will not occur. The final element of the seduction diamond is the concept of boldness. Morang's idea of boldness is the ability of a fraudster to act in a manner that is more courageous or confident than the average individual. They argue that even firms with strong internal controls may be defrauded by individuals who are bold and courageous enough to circumvent controls that the average person would never attempt. The Morang's stress that boldness is the major personality trait that needs to be considered when a fraud risk assessment study is conducted. This concept is better to include in an intermediate or advance fraud investigation course. The authors now move to another diagram, the fraud pentagon, which was introduced in 2010.

## THE FRAUD PENTAGON

The fraud pentagon is the next diagram that is appropriate to add to an intermediate or advanced fraud examination course. This concept was developed by Jonathan Marks in conjunction with CPA firm Crowe Horwarth LLP (Christie, G. & Weaver, C., 2023). However, Marks makes it clear that he developed the fraud pentagon and not Crowe Horwarth. The pentagon expands on the fraud triangle by adding competence and arrogance. Competence is related to capability or ability which was previously discussed as the fourth element in the fraud diamond. Specifically, competent managers/executives should possess the ability or capability to orchestrate fraud. Therefore, competence is a logical addition to the fraud pentagon.

According to Jonathan Marks, competence involves the capacity of an individual to surpass internal controls to manipulate the circumstances to his or her benefit (Marks, J., 2018). This may come in the form of persuading (selling), pressuring, or intimidating someone into engaging in inappropriate actions. He defines perceived competence as the perception of an individual's skills and abilities in the organization where the person is employed. Fraudsters may attempt to associate themselves with someone who they perceive as competent but also easily manipulated. Fraud is completed when this competent but easily manipulated person is presented with either a positive or negative offer.

The positive offer normally involves additional, even excessive, compensation for committing fraud. The negative condition is the threat and resulting fear of job loss if fraud is not committed. Both positive and negative incentives allow the fraudster to orchestrate a fraud with the help of individuals under his or her control. The offer of additional compensation or the fear of losing one's job are sufficient for some individuals to bend or break his or her ethical or moral principles. As mentioned earlier, these are the people that Marks refers to as easily manipulated. A smart fraudster, using either positive (additional salary) or negative (fear of job loss) combined with employees who are easily manipulated is the recipe for an increased fraud environment within an organization.

The fifth and final side of Marks' pentagon is the concept of arrogance. He defines arrogance as the absence of conscious by a person with an attitude of superiority, entitlement, and/or greed (Marks, J., 2024). This person typically believes that corporate policies, procedures, and controls do not apply to her or him. Marks attributes this, at least in part, to current aggressive compensation structures which disregard the consequences of fraud on the victims of that fraud.

Marks states that each of the five fraud drivers – motivation, opportunity, rationalization, competence, and arrogance – can be sufficient for some employees to commit fraud. However, he believes that competence and arrogance provide major influences on today's employees as they decide whether to perpetrate a fraud. He argues that all five drivers of fraud exist in all major corporations worldwide especially in the U.S. pressure filled corporate environment. Lacking a strong internal control system that includes preventative, detective, and corrective controls, the result is a poor corporate or ethical climate in which employees rationalize that top management just does not care. A combination of an ethically poor corporate culture, a weak internal control system, and an ethically lacking tone at the top produces an environment ripe for fraudulent behavior.

The lead author has included a discussion of Marks' fraud pentagon in his MBA fraud examination class with excellent acceptance by the students. The students appreciated the evolution in fraud theory starting with the Cressey's fraud triangle, then moving to the fraud diamond, and finally moving to the fraud pentagon. The authors feel that more mature students better appreciate this evolution of fraud symbols from the original fraud triangle introduced by Cressey in the 1950's.

## **THE FRAUD HEXAGON**

Next, we move to the concept of the fraud hexagon. Vousinas expanded the fraud pentagon concept by adding the element of collusion. In addition, he replaced the component of arrogance with ego. This created his S.C.O.R.E. model (stimulus, capability, opportunity, rationalization, and ego). Adding collusion, as mentioned earlier, created the sixth section of the fraud hexagon (Vousinas, G. L. (2019). In developing the S.C.O.R.E. model, Vousinas argued that the Fraud Triangle and Fraud Diamond needed updating given current developments in the field of fraud examination. He argues that the S.C.O.R.E. model identifies the primary factors that determine if fraud will occur.

To arrive at the fraud hexagon, Vousinas made two changes from earlier literature. As mentioned above, these adjustments were the inclusion of ego, in the place of arrogance, used by Marks in the pentagon, and collusion into the fraud hexagon diagram. He felt that ego should be involved in the diagram, because it plays a critical role in persuading people to commit a fraudulent act and frauds of the period were often committed by individuals who exemplified an extremely high self-image. Vousinas added collusion to the fraud hexagon because frauds of the period, especially top management, or financial statement frauds, frequently involved more than one participant. This was especially true with significant white-collar crimes involving top management and the loss of millions of dollars.

Vousinas decision to add ego to the fraud hexagon began with a review of the works of Sigmund Freud (Freud, 1923). Freud defined the ego as the product of the interaction between what a person wants and what his conscience will allow him to do to achieve what he wants. Freud believed that the ego was the part of the personality that helps a person deal with reality by mediating between the demands of the id, superego, and the environment. In addition, he believed that the ego prevented a person from acting upon every urge produced by the id which could prove to be destructive to the individual. The bottom line is that Freud felt that the ego had a considerable influence on the behavior of individuals, especially when those actions evaluate the ethical character of the person.

Slotland suggests that one of the primary motivations for white collar crime, which has historically been the most expensive form of fraud, is the sense of superiority, mastery, and admiration of others. (Stotland, E. (1977). He argues that after committing one successful crime, the fraudster often gains confidence and pleasure in knowing that he or she has fooled the world. In effect, the fraudster has shown superiority and mastery over others.

Duffield and Grabosky identified an aspect of motivation common to many, or all frauds is personal ego (Duffield and Grabosky, 2001). These authors believe that an egotistical person typically feels a sensation of power over other individuals. They believe that, in many cases, this power provides sufficient motivation to drive a dishonest individual to commit the fraudulent act. Likewise, Allan believes that one of the most common personality types for fraudsters is the "egotist" (Allan R.

(2003). He describes the egotistical personality as one who is driven to succeed at all costs, is self-confident, self-absorbed, and many times narcissistic. Allan adds that these individuals often possess a strong need for admiration and lack empathy for others. In addition, egotistical personalities typically believe they are unique or superior to others and often possess exaggerated assessments of their own abilities and accomplishments. These personality characteristics, no doubt, provide, at least some, motivation for the fraudster to commit the illegal act.

Geis states that, not surprisingly, there are many factors or reasons that motivate a person to commit a fraudulent act (Geis, G. (2011). He maintains that one of the most significant motivations for the commission of fraud is the individual's personality. Geis felt that inherently some people are more ethical than others. Individuals develop his or her ethical character at an early age. According to Geis, people who are by nature arrogant or entitled are more likely to commit fraud than individuals who do not possess these personality traits. He believed that two common motivating factors in an individual's personality that caused a person to commit a fraud are the desire for power/ego and the sense of entitlement. This supports the argument that ego or arrogance should be included in the various instructional diagrams designed to explain who and why individuals commit fraud. This is obvious in the S.C.O.R.E. model which includes stimulus/incentive, capability, opportunity, rationalization, and ego (Vousinas, G. L. (2019).

Finally, Vousinas' fraud hexagon included the concept of collusion. Collusion has been involved in every major fraud in the last 50 years. For example, the ACFE's educational video programs describe how fraud was able to happen and continue over an extended period. These video programs include the Phar-Mor fraud, the Crazy Eddie's fraud, and The Corporate Con. In particular, the Corporate Con video presents several fraud cases accompanied by interviews with the actual fraudsters who explain why he or she committed the fraud. These video programs are especially helpful in understanding the motivation, opportunity, and rationalization of the criminals in various crime situations.

In all the larger frauds, the frauds consistently involved several individuals in the top management group. For example, one ACFE training program covers three frauds which included ZZZZ Best Carpet Cleaning, Regina Vacuum Cleaner Company, and ESM Government Securities. A common thread in each fraud is collusion of top management employees to complete and cover up the fraudulent acts. With ZZZZ Best, Barry Minkow colluded with several top management individuals to enable him to commit fraud. He was incredibly careful to ensure that only an extremely limited number of top executives were party to fraud (ACFE, 1988). This was also the case in the ACFE video about Regina Vacuum Cleaners. In this fraud, the firm's three top executives colluded to orchestrate the fraud (ACFE, 1988). In summary, a review of ACFE educational videos and previous frauds such as Enron, Adelphia, and WorldCom show that all major frauds require collusion. Therefore, it is appropriate that collusion be included in any educational fraud diagram.

The final portion of our paper describes the authors' suggestion for a complete instructional diagram for the use in teaching the topic of fraud examination at most the college or university level. For lack of a better designation, we have humbly labeled it the "KCM Instructional Fraud Octagon." The authors feel that the fraud octagon includes most fraud concepts that have been developed over the years since the introduction of Donald Cressey's Fraud Triangle in the 1950's. Therefore, a description of our instructional octagon constitutes the final segment of this paper.

## **INTRODUCING THE “KCM INSTRUCTIONAL FRAUD OCTAGON”**

It is common knowledge that a traditional stop sign is in the shape of an octagon with eight sides. The authors suggest the use of a Fraud Octagon diagram for teaching students why frauds occur and how they may be prevented, detected, and corrected quickly within an organization. Our educational fraud stop sign contains the words “Stop Fraud.” Therefore, the stop sign diagram is appropriate for what the authors want to communicate.

The eight sides of the fraud octagon provide students with the concepts that they need to know to better understand what motivates fraudulent behavior, how it can be identified, and finally how fraudulent behavior can be minimized. Our octagon is built upon previous fraud literature including the fraud triangle, diamond, pentagon, and hexagon. The eight key factors in our instructional fraud octagon include: motivation (or perceived pressure), greed, opportunity, rationalization, capability (or ability), moral/ethical character, collusion, and arrogance (ego)/ignorance.

Included in the appendix of this paper is a diagram that the lead author is currently using in his MBA Fraud Examination course. In the future, this diagram will also be incorporated into a variety of undergraduate classes that discuss, even superficially, the topic of fraud. The authors believe that the educational fraud octagon is a valuable teaching tool in any class that introduces the topic of fraud examination. The following paragraphs discuss the overall fraud diagram and the eight important concepts which are represented by the sides of the octagon.

The authors felt that the overall diagram, in the shape of a stop sign was appropriate for teaching the topics of fraud prevention, detection, and correction. Most everyone recognizes the octagonal shape of a stop sign, so the words “stop fraud” inside the octagon is easily understood. A major emphasis in any educational course that discusses fraud is how it can be prevented and quickly detected when a fraud does enter the organization by circumventing the internal control systems. Each side of our educational fraud octagon represents a major concept concerning fraud that the students need to understand. The following paragraphs discuss the eight sides of our diagram.

The first, third, and fourth sides of the educational octagon (in clockwise order) represent the original fraud triangle as introduced by Donald Cressey in the 1950’s. Cressey’s triangle included the concepts of motivation (or perceived pressure), opportunity, and rationalization. The lead author, when teaching fraud examination, often calls this the “MOR” triangle. This is logical since many fraudsters are never satisfied and can never get enough. In other words, the primary motivation for many fraudsters is simply greed. This is evident in many of the ACFE educational videos such as “The Corporate Con.” Many of the seven fraudsters reviewed in this video admit that his or her motivation was simply greed. A bank president confessed that he was single and did not need the money, but he was motivated simply by greed.

Since greed is a common motivation for fraudsters, the authors have included it as the second side of our Educational Fraud Octagon immediately following motivation or perceived pressure. Using Cressey’s model, the third and fourth sides of the educational octagon are opportunity and rationalization. Opportunity or perceived opportunity is required to encourage the fraudster to act and commit fraud. Since opportunity frequently comes in the form of a perceived weakness in the internal control system of the firm, an individual would be very unlikely to commit a fraudulent act lacking an identified weakness in the internal control system. Very seldom will a person commit a

crime if he or she believes they will be discovered and face prosecution. Ignorance of the internal control system in question is a reason some frauds are discovered since the fraudster underestimated the quality and efficiency of the existing system.

The fifth side of the educational octagon is the capability or ability of the potential fraudster. As mentioned earlier, this concept was introduced by Wolfe and Hermanson in the fraud diamond. Depending on the employee in the organization, some individuals have the capability or ability to commit a fraud due to his or her position in the firm. For example, upper-level employees can override the system of internal controls much more often and more easily than lower-level workers. This concept is easily understood by the majority of the authors' students.

The sixth side of the Educational Fraud Octagon is the moral or ethical character of the potential fraudster. There are several percentage rules that have been published in recent years, but an interesting one is the 10-80-10 Rule proposed by the National Association of State Auditors, Comptrollers, and Treasurers (NASACT). This rule advises that 10% of the general population would never commit fraud, 10% of the population would readily commit fraud with no hesitation, and the remaining 80% are what is termed "situationally" honest or ethical. This largest group may or may not commit fraud depending on the specific situation. For example, an individual who recently incurred significant medical expenses may be motivated to perpetrate fraud, whereas without the medical costs, that action would not even be a consideration for the individual. Given this theory, depending on the situation, up to 90% of people would consider committing fraud. Given this theory, the ethical or moral character of a person is a major determinant of whether a fraudulent act will be committed or not.

Another theory in previous literature uses the percentages of 20-60-20 with the same three groups who would always be honest (20%), may or may not be honest depending on the situation (60%), and those that are never honest (20%) (Schwartz, 2013). Schwartz terms the largest 60% group "fence sitters." He argues that this group is likely to be ethical if the firm has an ethical corporate climate and management emphasizes the importance of ethical business practices. Collins argues that this group would compromise his or her ethical values either periodically, quite often, or most all the time depending on the corporate workplace environment (Collins, 2012). These authors do not brand this group as bad people. They argue that these are ordinary people who take advantage of weaknesses in the corporate or organizational culture.

In summary, the sixth side of our fraud octagon is the importance of the individual's moral or ethical character. Individual moral character combined with corporate ethical climate affects decisions that a significant percentage of employees make daily. Using this theory, a very ethical and moral person working in an organization with an ethical corporate climate will virtually never commit a fraudulent act. Conversely, a fundamentally unethical person working in an organization with a poor or weak corporate climate will regularly commit fraud. The authors feel that this side of the octagon is especially important, because 60% of situationally dishonest individuals represent a major portion of the workforce.

Firms that possess an ethical tone at the top and a corporate culture or climate that supports integrity and honesty gain the benefits of less occupational fraud committed by employees at all levels within the organization. Elizabeth Kittner suggests actions that support an ethical tone at the top. These

include publishing and updating the company's code of conduct, gaining feedback from employees concerning leadership, frequently reviewing various corporate values and ethics statements with employees at all levels (Kittner, E.P., 2024). The U.S. Department of Defense provides an extensive list of fraud detection resources for auditors (Department of Defense, 2025). This includes an extensive list of general fraud indicators including weak or inadequate internal controls, management override of key controls, no written policies or procedures, overly complex organizational structures, key employees never taking vacation or leave, and many more. These factors all indicate the presence of a weak or unethical corporate climate. In summary, both individual and corporate ethical values contribute to the amount of occupational fraud that takes place within every organization. Therefore, the authors believe that ethics at both the individual and corporate levels deserve to represent one side of the fraud octagon.

The seventh side of our instructional octagon is important because all material frauds are not committed by a single individual. Instead, collusion raises its ugly head as several top executives commonly conspire to commit the largest, most devastating frauds. Again, the ACFE training videos are excellent examples of this scenario. An excellent training video from ACFE covers three frauds including ZZZZ Best Carpet Cleaning, Regina Vacuum Cleaner Co., and ESM Government Securities. In each of these frauds, there was a lead fraudster accompanied by other top management conspirators who colluded to conceal the fraud from most other employees. ACFE has many other educational videos including one that reviews two notorious financial statement fraud cases: WorldCom and HealthSouth which also illustrates collusion between a limited number of top management personnel.

Another fraud that illustrates how common collusion between top management officials is the PharMor fraud. Three top managers colluded to accomplish this material fraud. They included Mickey Monus, the CEO, Pat Finn, CFO, and John Anderson, Accounting Manager, who together were able to hide the fraud for an extended period. The fact that collusion is common to most every fraud included in the ACFE's educational videos is significant. Immaterial frauds can be orchestrated by a single individual, but multiple fraudsters are normally required to conduct a material fraud involving millions of dollars. ACFE reports in the past have stated that between 40% and 50% of fraud schemes have involved collusion. Recently, the ACFE's 2024 Report to the Nations, which analyzed 1,921 fraud cases, reported that fraud cases involving multiple perpetrators decreased, reversing a previous trend of increasing collusion (ACFE, 2024). In summary, since collusion is common in material crimes, it is appropriate that this fact should be included in the fraud octagon.

The eight and final side of the fraud octogen is arrogance or ego and ignorance. This is a two-sided coin. Some fraudsters have a huge ego and are extremely arrogant, while others are ignorant of the fact that he or she will be caught and subsequently prosecuted. Referring again to the ACFE video titled The Corporate Con, several of the criminals on this video program admitted that they were too smart or ingenious to get caught. A young man who worked at an auto parts store felt that he was astute and shrewd enough to get away with many nonexistent customer returns. However, auditors quickly identified him after a review of sales returns from customers showing that he gave far more returns than any other salesperson. His ego and resulting arrogance proved to be his downfall.

Jonathan Marks proposed the five-sided fraud pentagon by adding arrogance to Wolfe and Hermanson's four-sided fraud diamond which included motivation, opportunity, rationalization, and capability. Since the addition of arrogance or ego was a significant advancement in fraud diagram theory, the authors felt that it deserved to be part of our educational fraud octagon along with the concepts of greed, moral/ethical character, and collusion. The appendix of this paper includes our version of the educational fraud octagon. Like a stop sign which has eight sides, our fraud octagon includes eight caution factors that are useful in explaining why fraud occurs. The authors believe that this fraud octagon will prove to be a beneficial tool for providing instruction on what conditions are conducive for fraud to occur. In addition to the original fraud triangle consisting of motivation, opportunity, and rationalization, other significant factors that must be considered are greed, capability, moral/ethical character, collusion, and arrogance or ego. The author's fraud octagon using road signs, including stop and caution, should prove to be a valuable teaching aid for training in both the corporate and educational settings.

## **SUMMARY & CONCLUSION**

Teaching the basics of fraud and fraud examination are important topics for educating students at the college or university level as well as all employees employed in any business organization. Whether it is a professor or member of the Human Resources Department, information on how fraud can be prevented, detected, and corrected is critical to everyone involved. The authors had two goals in mind when researching and drafting this paper. First, a historical review of the various fraud symbols that researchers have used in the past beginning with Donald Cressey's fraud triangle in the 1950's. The authors continued with a review of the fraud diamond, pentagon, and hexagon. Second, the authors wanted to introduce what we call the KCM Educational Fraud Octagon. The diagram for this instructional octagon is attached as the appendix to this paper.

The Educational Fraud Octagon uses symbols that all students and employees should find remarkably familiar namely highway road signs. The two highway signs contained in this diagram are the caution and stop signs. The caution signs on the outside of the diagram represent eight fraud caution factors. These caution factors are assigned to the eight sides of the stop sign. The stop sign in the center of the diagram summarizes the intent of this educational diagram which is to aid in the process of stopping fraud. To be able to prevent fraud, students and employees must understand the eight fraud caution factors including motivation or perceived pressure, opportunity, and rationalization. These of course, are Cressey's original conditions in which fraud is likely to occur. Piggybacking on these three caution factors is greed, which is the most usual form of motivation or perceived pressure.

Moving around the octagon, the authors include the concepts of ability or capability and the moral or ethical character of the employee. These are also critical issues in understanding why frauds occur and how they can be quickly detected and corrected. Higher level employees have a greater ability to override the system of internal controls compared to individuals with less power and authority. Likewise, the individual's moral or ethical character is another major factor in the determination of whether a person commits or does not commit fraud. This is especially relevant given prior research which has found that up to 80% of individuals, depending on the situation and level of pressure, may commit fraud. As discussed earlier, approximately 60% of the population

has been termed “fence sitters” who may or may not commit fraud depending upon the situation. The importance of the person’s moral or ethical character should not be overlooked.

Completing the final two sides of the octagon are the possibility of collusion with others and the individual’s level of arrogance or ego. As discussed earlier, most material frauds are a result of collusion and not the act of a single individual. Many actual fraud cases, from prior years, can be used to demonstrate this scenario. Likewise, the level of arrogance or ego is another determining factor in an individual’s decision of whether to commit a fraud or not. Highly arrogant people with huge egos often believe that he or she is too smart or adept to get caught. Reviewing previous fraud cases, including those found in the numerous ACFE educational videos, also aids in teaching these important fraud caution factors.

In summary, the authors believe that the educational fraud octagon is a useful tool in teaching the subject of fraud especially when used with an introductory course or presentation on the subject. We feel that the use of highway signs, including the caution and stop symbols, are logical and easily understood by both students and employees. The diagram clearly shows that to stop, or at least minimize fraud, eight environmental fraud caution factors must be considered. If these eight caution factors are recognized and understood by both students and employees, the process of better understanding the possibility and probability of fraud occurring is enhanced. It is the authors’ hope that using the fraud octagon might enhance the student or employees understanding of the process of fraud prevention, detection, and correction.

## REFERENCES

- ACFE. (2024). “Occupational Fraud 2024: A Report to the Nations.” Retrieved from [acfe.com](https://www.acfe.com) on 6/2/2025.
- ACFE. (1988). “Cooking The Books - What Every Accountant Should Know - Video 1-ZZZZ Best Carpet Cleaners.” <https://www.youtube.com/watch?v=Rp5yEhY2hdI> retrieved on 6/25/2025.
- ACFE. (1988). “Cooking the Books – What Every Accountant Should Know – Video 2 – Regina Vacuum Cleaner Co.” <https://www.youtube.com/watch?v=KmsdRPCg0Ng&t=10s> retrieved on 6/25/2025.
- AICPA (2003). “Fraud Detection in a GAAS Audit: SAS No.99 Implementation Guide.” AICPA, New York, NY.
- Albrecht, Steve. (2014). “Iconic Fraud Triangle Endures.” *ACFE Fraud Magazine*, July/August 2014.
- Allen, R. (2003). “Fraud-The human face of fraud: Understanding the suspect is vital to any investigation.” *CA Magazine-Chartered Accountant*, Volume 136, Number 4, 39-40.
- Christie, Ginny and Weaver, Charity. (2023). “The Shapes of Fraud: From Fraud Triangle to Pentagon.” Capstone Forensic Group, LLC,

- <https://capstoneforensic.com/the-shapes-of-fraud-from-fraud-triangle-to-pentagon/> retrieved on 6/4/2025.
- Collins, D. (2012). "Business ethics: How to design and manage ethical organizations." New Jersey: John Wiley & Sons.
- Cressey, Donald R. (1953). "Other People's Money; a Study in the Social Psychology of Embezzlement." The Free Press. New York, NY.
- Department of Defense, Office of the Inspector General, Fraud Detection Resources for Auditors, <https://www.dodig.mil/Resources/Fraud-Detection-Resources/Fraud-> retrieved on 8/6/2025.
- Duffield, G. and Grabosky, P. (2001). "The Psychology of Fraud Trends and Issues in Crime and Criminal Justice, Bd. 199." Australian Institute of Criminology, Canberra.
- Freud, S. (1923). "The Ego and the Id. The Standard Edition of the Complete Psychological Works of Sigmund Freud." Volume XIX (1923-1925): The Ego and the Id and Other Works, 1-66.
- Gill, John. (2017). "The Fraud Triangle on Trial." *ACFE Fraud Magazine*, September 2017, 18-23.
- Geis, G. (2011). "White-collar and Corporate Crime: A Documentary and Reference Guide." ABC-CLIO.
- Kittner, E.P. (2024). "Essential Fraud-Fighting Strategies That Promote Ethics and Trust." *Insight Ethics Engaged*, Fall, <https://www.icpas.org/information/copy-desk/insight/article/fall-2024/essential-fraud-fighting-strategies-that-promote-ethics-and-trust> retrieved on 8/6/2025.
- Lokanan, Mark. (2015). "Challenges to the fraud triangle: Questions on its usefulness." *ScienceDirect, Accounting Forum*, Volume 39, Issue 3, September 2015, 201-224.
- Marks, Jonathan. (2018). "Fraud Pentagon – An Enhancement for the Fraud Triangle and Other Models." <https://www.linkedin.com/pulse/fraud-pentagon-enhancement-jonathan-t-marks-cpa-cff-cfe/> retrieved on 6/4/2025.
- Marks, Jonathan. (2024). "Playing Offence in a High-Risk Environment – A Sophisticated Approach to Fighting Fraud." [https://www.academia.edu/31698128/Playing Offense in a High Risk Environment A Sophisticated Approach to Fighting Fraud](https://www.academia.edu/31698128/Playing_Offense_in_a_High_Risk_Environment_A_Sophisticated_Approach_to_Fighting_Fraud) retrieved on 6/6/2025.

King, Case and McLanahan

Morang, Sanya and Morang, Steve. (2019). "The 'Seduction' of Fraud." *CEP Magazine*, September 2019.

National Association of State Auditors, Comptrollers, and Treasurers (NASACT). (2025), <https://www.agacgfm.org/Resources/intergov/FraudPrevention/FraudMitigation/FraudTriangle.aspx> retrieved on 6/3/2025.

Schwartz, M.S. (2013). "Developing and sustaining an ethical corporate culture: The core elements. *Business Horizon*." Volume 56, 39-50, <https://doi.org/10.1016/j.bushor.2012.09.002> retrieved on 6/3/2025.

Schuchter, Alexander & Levi, Michael. (2013). "The Fraud Triangle Revisited." *Security Journal*, Macmillan Publishers Ltd., 1-15.

Stotland, E. (1977). White Collar Criminals. *Journal of Social Issues*, 33(4), 179-196.

Vousinas, G. L. (2019). "Advancing theory of fraud: The S.C.O.R.E. Model. *Journal of Financial Crime*." Volume 26, Issue 1, 372 - 381.

Wolfe, David T. and Hermanson, Dana R. (2004). "The Fraud Diamond: Considering the Four Elements of Fraud." *CPA Journal*, Volume 74, Issue 12, March/April 2004, 38-42.

# The Fraud Octagon



## **FOREIGN CORRUPT PRACTICES ACT (FCPA) INVESTIGATION TARGETS: A LINGUISTIC ANALYSIS OF FIRM DISCLOSURES**

*Christopher J. Demaline*  
Central Arizona College

### ***ABSTRACT***

This study examines to what extent, if any, the linguistic characteristics of managers' disclosures related to an FCPA violation differ from managers' disclosure characteristics in the broader population. The research is a nonexperimental, archival, and cross-sectional analysis of FCPA-investigated firms' disclosures. This study employs quantitative content analysis to analyze FCPA target firm disclosures released during the investigation. The test results suggest that the FCPA-related disclosures have a relatively negative sentiment and are less readable than the broader population of financial narratives. There is insufficient statistical evidence to show a difference in self-attribution between FCPA-related disclosures and the broader population of disclosures. The findings add to the research covering the linguistic characteristics of management's disclosures related to the firm's alleged illegal or unethical acts. These findings also inform the stream of research considering impression management theory. Investors, accounting standards setters, and financial regulators may be interested in this study's results.

Keywords: financial disclosure, FCPA, disclosure readability, disclosure tone, impression management

### **INTRODUCTION AND BACKGROUND**

Financial markets depend on economic information (Healy & Palepu, 2001), and textual disclosures add incremental value to the accounting numbers released by firms (Beatty et al., 2019; McClane, 2019; Roychowdhury et al., 2019). The linguistic characteristics of the disclosure affect its value relevance (Cho et al., 2024; Sila Alan et al., 2023; Wang, 2021). Viewed through the lens of impression management (IM) theory and self-serving attribution bias theory (SAB), managers use a multitude of linguistic manipulation measures to put forth a favorable representation of themselves and their firms (Aerts, 2005; Demaline, 2019; Hemmings et al., 2017; Jin et al., 2022). While much has been revealed in the disclosure research, there was a need for further exploration of linguistic manipulation in corporate communications, as questions remained concerning how managers manipulate disclosures (Bassyouny et al., 2022; Jin et al., 2022).

Limited research reviews disclosure characteristics of regulatory violators. For instance, Demaline (2019) explores firms' disclosures about being investigated by the U.S. Securities and Exchange Commission (SEC) for financial reporting fraud. Jaeschke et al. (2018) review the aggregate disclosure trends of Foreign Corrupt Practices Act (FCPA)-violating firms. This present study adds to the literature by exploring how managers of firms being investigated for FCPA violations draft FCPA-related disclosures.

## LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

### Theory

IM theory refers to individuals presenting the most positive version of themselves and their organizations to others (Goffman, 1959). Research suggests that managers intentionally structure readability and tone to manage impressions (Hemmings et al., 2017; Caserio et al., 2019; Kayed and Meqbel, 2022; Jin et al., 2022).

Self-serving attribution bias (SAB) is another IM mechanism. SAB describes how individuals take responsibility for favorable outcomes while blaming external factors for adverse outcomes (Miller and Ross, 1975). Much empirical finance research exploring SAB focuses on how this bias affects management and investor decisions (Aerts, 2005; Baker et al., 2018; Billett and Qian, 2008; Hoffmann and Post, 2014). A modicum of research suggests SAB is evidenced in management disclosure (Guedes and da Conceição Gonçalves, 2019; Li, 2012). Managers are likely uncomfortable discussing the prospect of the firm's illegal or immoral acts. Therefore, managers may manipulate disclosures to deflect attention from corrupt behaviors and related sanctions (Fabrizio and Kim, 2019).

### Disclosure Manipulation Tools

#### *Tone*

Managers may manipulate disclosure tone (positively or negatively) to mislead investors. D'Augusta and DeAngelis (2020) propose that managers manipulate the disclosure tone to regulate market expectations. FCPA-violating firms are geographically dispersed, and there is a significant relationship between the narrative tone and stock market returns of geographically diverse firms (Boudt and Thewissen, 2019). However, concerns over potential litigation associated with overly optimistic disclosure limit managers' opportunism in choosing financial disclosure tone (Luo and Zhou, 2019). Finally, Demaline (2019) found that a firm's disclosures related to financial misconduct were more negative than the population of aggregate 10-K disclosures.

#### *Readability*

Based on IM theory, the obfuscation hypothesis supports the view that executives communicate negative information that is unnecessarily difficult for readers to comprehend (Brennan & Merkl-Davies, 2013; Senave et al., 2023). Narrative complexity is primarily measured via readability. FCPA violators are often subject to SEC enforcement actions because the bribes are misreported as legitimate expenses, and managers manipulating financial information tend to provide less readable disclosures (la Maux and Smaili, 2024a). Further, narcissistic managers are more likely to be involved in unethical conduct (Van Scotter and Rogelio, 2020) and to provide less readable narratives (la Maux and Smaili, 2024b). Finally, managers of FCPA violators release more complex disclosures than those of non-violators during the violation period (Jaeschke et al., 2018). However, the researchers fail to analyze how violators disclose the violation. There remains uncertainty about the precise location and level of readability manipulation within management disclosure related to the FCPA.

#### *Self-serving Attribution Bias (SAB)*

Many of the biases identified in social psychology research are highly applicable in the context of management decision-making (Hodgkinson et al., 2023). Managers of better-performing companies tend to use more personal pronouns (Li, 2012) and attribute the performance to internal

## Demaline

causes (Libby and Rennekamp, 2012). However, Demaline (2019) fails to find SAB in firms' disclosures of fraudulent financial reporting allegations. While self-attribution appears to vary based on the manager's ethnicity, it remains unclear whether self-referencing decreases when the news is unfavorable (Brochet et al., 2019; Phesa and Sibanda, 2022). However, FCPA violators tend to lack corporate governance (Persons, 2020), and managers of firms that lack sufficient governance tend to provide self-serving disclosure (Bassyouny et al., 2020). FCPA violations commonly involve foreign (non-U.S.A.) business segments and often involve third-party consultants (Billings et al., 2022; Chan et al., 2021). Overall, managers have the motive and opportunity to use external attribution language to distance themselves from the alleged corruption.

## FCPA

The U.S. FCPA was enacted to discourage firms from bribing foreign officials in foreign markets. FCPA firms are also commonly charged with 13(b) (Securities Exchange Act of 1934) violations because the firm's internal controls were insufficient to detect the misclassification of bribery payments. Thus, the U.S. Department of Justice (DOJ) and the SEC jointly enforce the U.S. anti-bribery provisions. (Criminal Division of the U.S. Department of Justice and Enforcement Division of the U.S. Securities and Exchange Commission, 2020). In 2025, U.S. President Trump ordered the U.S. attorney general to review the FCPA enforcement guidelines. The goal of this order was to minimize barriers to U.S. firm competition in foreign markets (Aviad et al., 2025; Exec. Order No. 14,209, 2025). In response to the executive order, the Department of Justice will now place an increased emphasis on serious misconduct impacting U.S. economic and national security interests (U.S. Department of Justice, Office of the Deputy Attorney General, 2025).

One Trillion U.S. Dollars per year are paid in bribes (U.N., 2018). Firm representatives offer bribes to maximize profits by obtaining business, acquiring proprietary information, or concealing illegal activity (Chan et al., 2021; Xu, 2024). Firms fined for bribery suffer significant economic losses, and the target firm's stock price tends to decrease around the time of a regulatory investigation announcement (Parsons, 2018; Wu and Zhang, 2014). Bribers may represent various positions and skill levels, but the firm and its management are ultimately responsible for the firm and its agents (Chan et al., 2021). Therefore, managers may be motivated to manipulate disclosures related to alleged FCPA infractions.

## FCPA Violators' Disclosure

Jaeschke et al. (2018) find that during the FCPA violation period, the management of FCPA violators used more negative, less litigious, and more complex language in financial disclosures. Jaeschke et al. (2018) also note that FCPA firms provide more readable annual report filings after the prosecution than before the enforcement. This present study complements Jaeschke (2018) in critical respects. At some point, the firm's management realizes they are being investigated for violating the FCPA; therefore, the target firm managers may adopt a different narrative style (Jaeschke, 2018). Accordingly, this present study considered the linguistic characteristics of FCPA violators during the investigation period. Further, the present study's corpus is limited to disclosure segments related to the FCPA investigation instead of aggregate annual report narratives.

While firms reporting adverse accounting numbers are accompanied by relatively positive disclosures (Huang et al., 2014; Melloni et al., 2016), firms subject to financial reporting fraud investigations draft negatively themed disclosures (Demaline, 2019). Firms with more effective governance release relatively negative disclosures (Frei and Muethel, 2017). Interestingly, litigation target firms that provide more negative disclosure have better litigation outcomes (Files

et al., 2018. FCPA target firms are aware that investigators may read their FCPA disclosure, which may motivate managers to draft more negative disclosures.

### Regulatory Investigation Disclosure

FASB ASC Topic 450 requires firms to disclose possible or probable losses due to ongoing litigation. Yet, firms have significant flexibility in how the information is disclosed. Firms consider the disclosure's costs and benefits and the ambiguity inherent in ongoing litigation when drafting litigation narratives (Cen et al., 2018).

When the case receives significant press coverage, management initially discloses this information in an SEC Form 8-K using more readable language and a relatively positive tone (Krupa, 2023). Target firm managers commonly use the risk section of their annual reports to disclose that they are subject to an FCPA-related inquiry. Improved governance is positively associated with the amount (Jia et al., 2019) and readability of risk disclosures (Jia and Li, 2022). A lack of corporate governance is associated with FCPA violations (Frei and Methel, 2017).

Whitehead and Belghitar (2022) performed a case study analysis of Petrobras' disclosure surrounding the company's bribery scandal. They reported a significant increase in anti-corruption and compliance disclosure once the corruption became public. While Capus and Bozinova (2023) review how regulators use impression management in their narratives covering corporate bribery cases, previous literature fails to address the linguistic characteristics of management's disclosures during an FCPA investigation. This present study fills the gap in the literature.

### Disclosure During Litigation and Investigation

Firms subject to potential litigation losses disclose related information to comply with accounting regulations and minimize future shareholder litigation costs (Huang et al., 2022; Marinovic and Varas, 2016). Attention from regulators is related to increased firm disclosure (Belnap, 2022). While FCPA violators are more likely to have material internal control weaknesses, firms that disclose internal control weaknesses are more likely to be the target of future shareholder litigation (Lin et al., 2018; Manry et al., 2023). Files et al. (2018) suggest that firms guilty of financial misconduct that ultimately receive no fines increase negative disclosure tone during the investigation period. Additionally, Demaline (2019) determines that firms investigated for fraudulent financial reporting disclose the investigation using a relatively incomprehensible style and a pronounced negative tone. Further, Burke and Gunny (2022) illustrate that disclosure readability tends to decline when a firm receives specific attention from regulators via an SEC Comment letter. Thus, managers may release information about FCPA investigations to avoid repercussions but manipulate the disclosure's qualitative characteristics to limit the disclosed information's negative effects.

### Research Question and Hypotheses

The previously noted considerations lead to the following research question and hypotheses.

**RQ:** Do the characteristics of managers' disclosures that the firm is subject to an FCPA violation differ from management's disclosure characteristics in the broader population?

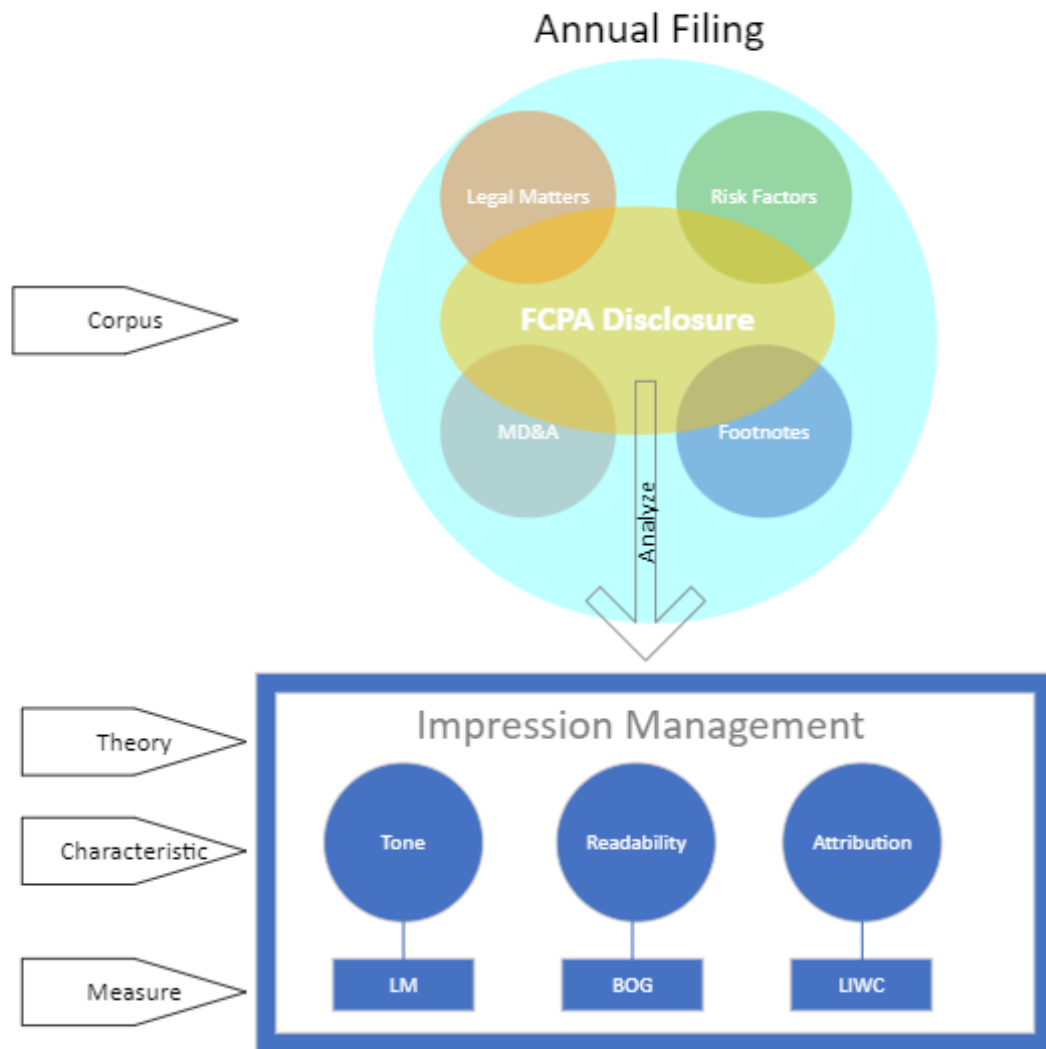
**H1<sub>alt</sub>:** The tone of disclosures concerning FCPA violations is statistically significantly different from that of the broader population of 10K/20F disclosures.

**H2<sub>alt</sub>:** The readability of disclosures concerning FCPA violations is statistically significantly different from the broader population of 10K/20F disclosures.

**H3<sub>alt</sub>:** The attribution of disclosures concerning FCPA violations is statistically significantly different from that of the broader population of 10K/20F disclosures.

## METHODS

The research design was a nonexperimental, archival, and cross-sectional analysis of FCPA-investigated firms' disclosures and the disclosures of the broader population of firms. This study employs a quantitative content analysis to analyze disclosures covering FCPA investigations. The study overview is provided in Exhibit 1.



**Exhibit 1. Study Overview**

Cross-sectional studies that use a sample covering many years of SEC enforcement events mitigate alternative explanations linked to correlated omitted variables because heterogeneity exists throughout several sample dimensions (Silvers, 2016). The sample narratives were drafted for a geographically dispersed group of firms and were drafted by individuals from various cultures. This mix makes it unlikely that a systematically omitted variable related to cultural differences affects this study's statistical tests.

#### Sample development

An FCPA enforcement commonly begins with a DOJ and SEC investigation (U.S. Securities and Exchange Commission, 2014). The SEC communicates financial reporting-related enforcement actions via AAERs. SEC agents publish an AAER after they find sufficient evidence of wrongdoing. Consistent with previous research on financial misdeeds (Dechow et al., 2011; Liu et al., 2022), this present study draws its sample from AAER target firms.

The AAER Archive (<https://www.sec.gov/divisions/enforce/friactions.shtml>) was used to obtain each enforcement event's nature and timing. The sample includes AAERs noting that the organization was investigated for an FCPA violation and found to have violated the "books-and-records" provisions of the 1934 Securities and Exchange Act to disguise illegal payments as legitimate expenses. This selection process mitigates variability in disclosure content by using a specific subsample of FCPA violators represented in AAERs. The sample includes AAER targets from 1998–2023.

The present study's corpus comprises FCPA investigation-related disclosures extracted from the target company's 10-K filings for U.S. domestic private equity issuers and 20-F filings for foreign private equity issuers. The annual filing released the nearest in time, but before the AAER revelation date was used for this study. Important asymmetric information related to the investigation is present before the Commission issues the related AAER. Thus, managers have more incentive to manipulate the related disclosure.

Following the text collection techniques used in the affiliated research (Demaline, 2019; Hennes, 2014), a list of common keywords was established through a cursory review of 10 randomly selected 10-Ks/20-Fs. These keywords and phrases were used to search relevant annual filings. Example keywords and phrases included "Department of Justice," "bribery," "investigation," "corruption," and "FCPA." Finally, a close reading of each annual filing was completed to ensure all relevant passages were captured. The paragraph containing the identified text was extracted. The subsection was extracted if a relevant keyword or phrase was placed in a subsection heading. Using an approach similar to Bayerlein and Davidson (2012) and Demaline (2019), all passages extracted from a single 10-K/20-F were aggregated for linguistic analysis. Consistent with prior work, the extracted data were cleaned before performing the linguistic analysis (Kang et al., 2018; Loughran & McDonald, 2014). Target firms with no 10-K/20-F filed with the SEC within two years before the AAER date, or target filing with FCPA-related narratives in their 10-K/20-F were omitted from the analysis.

#### Variables

The following measures were used to develop descriptive and inferential statistics:

*Bog Readability Index (BOG)*. The BOG measures reading ease based on plain English and considers words and constructs that can deliberately improve readability (Senave et al., 2023). The BOG measures word difficulty using StyleWriter v.4 software's proprietary algorithm and is a valid readability measure for financial disclosures (Bonsall et al., 2017). The BOG increases as reading difficulty rises.

*Disclosure Tone (TONE<sub>LIWC</sub>)*. TONE<sub>LIWC</sub> is a validated measure of sentiment that is higher for positive texts. Numbers below 50 imply a negative emotional tone (Boyd et al., 2022). LIWC is a linguistic analysis package used in previous financial disclosure research (Kang et al., 2018; Pitt et al., 2020; Rich et al., 2021; Smith, 2023; Tsileponis, 2020). The validity and reliability of LIWC 22 are detailed in Boyd et al. (2022).

*Disclosure Tone (TONE<sub>LM</sub>)*. TONE<sub>LM</sub> is higher for more positive texts. The Loughran and McDonald's (LM, 2011) dictionary lists positive and negative words tailored for financial text analysis. This present study implements the 2024-updated LM dictionary (Marketing Communications: Web // University of Notre Dame).

*Gunning Fog Index (FOG)*. The FOG score indicates the years of formal education necessary to comprehend the text (Gunning, 1952). The FOG is commonly used to measure financial disclosure readability (Chakrabarty et al., 2018; Nguyen and Kimura, 2023).

*Return on assets (ROA)*. ROA is a standard firm performance measure calculated as net income divided by average total assets.

*Self-Attribution Score (SELFREF)*. The SELFREF equals the number of times a disclosure includes first-person pronouns, scaled by total words in the disclosure (Brochet et al., 2019, Li, 2012). The scores are calculated using LIWC 22.

## Data Analysis Procedures

One-sample *t*-tests establish if there is a difference between the textual characteristics of FCPA-related disclosures and the broader population of publicly traded firms' disclosures. The One-sample Wilcoxon signed rank test compares the sample and population medians. Supplemental data analysis is also provided.

## RESULTS

### Sample Collection and Profile

The sample of 94 firms and related disclosures was collected from the AAER archive and firm annual filings using the previously described procedures. The narratives were drawn from 67 10-Ks and 27 20-Fs. Firms from six continents are present in the sample. The sample firms represent 27 industries based on the two-digit SIC. The most common industries are oil and gas extraction, chemical and allied products, and instruments and related products. Each is represented by 13 firms. Disclosure segments have a mean (median) word count of 1193 (822). Unsurprisingly, the words "foreign," "corrupt," and "practices" were commonly observed. The words "business," "investigation," and "compliance" also appear in at least 75% of the firm's disclosures. The sample encompasses annual filings published from 2001-2023. Relevant disclosure segments appear in various locations. FCPA-related narratives are commonly included in the financial statement footnotes, Management's Discussion and Analysis (MD&A), risk factors, and litigation sections. Exhibit 2 provides sample characteristics and Exhibit 3 provides population characteristics.

**Exhibit 2. Sample Characteristics (n=94)**

Variable	Mean	SD	Q1	Median	Q3
TONE <sub>LM</sub>	-4.77	1.83	-5.81	-4.66	-3.59
BOG	100.70	108.80	91.00	99.50	108.80
SELFREF	0.57	1.04	0.07	0.21	0.58
FOG	23.42	2.73	21.79	23.3	24.93
TONE <sub>LIWC</sub>	23.27	12.09	14.44	22.1	30.38

**Exhibit 3. Population Characteristics**

Variable	N	Mean	SD	Q1	Median	Q3
TONE <sub>LM</sub>	183602	-1.13	0.44	-1.14	-1.11	-0.83
BOG	161688	83.85	9.20	78	83	89
SELFREF	38953	1.27	1.73	0.02	0.12	2.78
FOG	50757	19.8	Na	na	19.8	na
TONE <sub>LIWC</sub>	na	>60	Na	na	na	na

## Test Results

The results of the hypothesis tests are provided in this section. Portions of the disclosures that comprise the corpus analyzed for this study are reviewed. A supplemental analysis is also presented.

**H1<sub>alt</sub>**: The tone of disclosures concerning FCPA violations is statistically significantly different from that of the broader population of 10K/20F disclosures.

The mean (median) percentage of positive terms less negative terms (TONE<sub>LM</sub>) of FCPA-related disclosure is -4.77 (-4.66). The population data were retrieved from the Software Repository for Accounting and Finance (Marketing Communications: Web // University of Notre Dame) 10-Ks filed from 2001 to 2023. The population mean (median) percentage of positive terms less negative terms (TONE<sub>LM</sub>) is -1.33 (-1.11). One-sample *t*-tests show that the TONE<sub>LM</sub> is more negative ( $p < .001$ ) than the TONE<sub>LM</sub> of the population of annual filing disclosures. One-sample Wilcoxon signed-rank test results are consistent with the *t*-test results.

The following narrative is in United Industrial Corporation's 2006 10-K, where it appears in the financial statement footnotes.

*From time to time, the company receives **allegations of improper** conduct relating to its operations, including operations subject to the U.S. Foreign **Corrupt Practices Act**, export control and licensing regulations and other U.S. domestic and international laws. When the company receives any such **allegations**, it conducts internal (and if necessary, external) **investigations**...*

The words in bold are “negative” according to the Loughran and McDonald Sentiment Dictionary.

**H2<sub>alt</sub>**: The readability of disclosures concerning FCPA violations is statistically significantly different from the broader population of 10K/20F disclosures.

The mean (median) BOG of the sample disclosures is 100.7 (99.5), suggesting the disclosure is extremely difficult to read. The Bog Data File (Miller, 2023) reveals that annual filings published

## Demaline

from 2001–2022 have a mean (median) BOG of 83.9 (83). A one-sample  $t$ -test shows that this study's sample is statistically significantly more challenging to read ( $p < .001$ ) than the population of annual filings. Wilcoxon signed-rank test results are consistent with the  $t$ -test results.

The following sentence is from Honeywell International's (2021 form 10-K) financial statement footnotes.

*The Company continues to cooperate with investigations by the U.S. Department of Justice (DOJ), the Securities and Exchange Commission (SEC) and the Brazilian authorities relating to the Company's use of third parties who previously worked for the Company's UOP business in Brazil in relation to Petróleo Brasileiro S.A. (Petrobras) in connection with a project awarded in 2010.*

According to the StyleWriter summary, the sentence readability is “dreadful” (BOG = 157). It is difficult to read because of jargon, lengthy phrases, complicated words, and excessive length. Another example disclosure comes from Novartis' 2015 20-F.

*We invest a significant amount of effort and resources into outsourcing and offshoring certain key business functions with third parties, including research and development collaborations, manufacturing operations, warehousing, distribution activities, certain finance functions, marketing activities, data management and others.*

This 39-word sentence (BOG = 200) may obfuscate the facts. According to AAER No. 3759, Novartis managers attempted to conceal bribes using complicit third parties. StyleWriter's summary output indicates that sentence length and the overuse of jargon are significant factors that reduce the readability of Novartis disclosures.

**H3<sub>alt</sub>:** The attribution of disclosures concerning FCPA violations is statistically significantly different from that of the broader population of 10K/20F disclosures.

The sample disclosures have a mean (median) percentage of SELFREF words of 0.57 (0.21). The proxy for the population parameters (mean = 1.27, median = 0.12) is taken from 10-K MD&As referenced in Li (2012). One-sample  $t$ -tests show that, compared to the broader population, the sample mean rate of SELFREF words is lower ( $p < .001$ ). However, Wilcoxon's signed-rank test results are inconsistent with the  $t$ -test results. Test statistics are presented in Exhibit 4.

### Exhibit 4. Test results for difference between FCPA disclosure characteristics and population disclosure characteristics

Variable	$t$	df	Sig.	Mean Diff.	Sig.	Med Diff.
TONE <sub>LM</sub>	-19.28	93	<.001	-3.64	<.001	-3.55
BOG	10.68	93	<.001	16.85	<.001	16.5
SELFREF	-6.52	93	<.001	-0.7	<.001	0.09
TONE <sub>LIWC</sub>	-29.45	93	<.001	-36.73	na	na
FOG	12.86	93	<.001	3.62	<.001	3.5

## Supplemental Analysis

TONE<sub>LIWC</sub> is used as an alternative measure of sentiment. The mean TONE<sub>LIWC</sub> is 23.27, suggesting a very negative sentiment. One-sample *t*-tests show that the TONE<sub>LIWC</sub> is more negative ( $p < .001$ ) than the population of 10-K disclosures. These findings align with the results based on TONE<sub>LM</sub>. In addition to using the BOG, readability was measured using FOG. The mean FOG of the sample disclosures is 23.4, suggesting that a person needs more than 23 years of formal education to comprehend the text. A one-sample *t*-test shows that this present study's disclosure sample is statistically significantly more challenging to read ( $p < .001$ ) than the population of 10-Ks reviewed in Cannon et al. (2020). These findings are in line with those based on the BOG.

## DISCUSSION

The test results suggest that the FCPA-related disclosures have a relatively negative sentiment. This is unsurprising, considering the subject matter. The findings are consistent with Demaline (2019) and Luo and Zhou (2019). These findings inform previous research on financial disclosure sentiment.

The readability tests suggest that the FCPA-related disclosures are less readable than the broader population of 10-K/20-F narratives. The low readability provides evidence that tactical obfuscation exists in FCPA-related disclosures. This builds on previous findings related to the disclosure of firms involved in regulatory investigations (Demaline, 2019) and bribery (Jaeske, 2018). Overall, these findings contribute to the existing research on financial report readability.

While Li (2012) and Libby and Rennekamp (2012) suggest that managers may distance themselves from negative information, the results of this present study failed to support the notion that managers use attribution language to distance themselves from the FCPA issue. However, this may be due, in part, to the measurement instrument used. The Legg Mason 10-K for the year ended March 31, 2018, includes the following disclosure in Item 3. Legal Matters.

*We expect that we will shortly complete negotiations with both the U.S. Department of Justice (“DOJ”) and the SEC staff to resolve a Foreign Corrupt Practices Act investigation concerning the activities of our former Permal business in connection with managing assets of Libyan governmental entities in structures established by a third-party financial institution.*

The attribution bias measures used in this study fail to capture the self-serving disclosure sufficiently. While self-referencing pronouns are used multiple times, it seems from the statement that Legg Mason's current management blames a former business segment and a third party for any wrongdoing.

## CONCLUSION

This study aimed to examine how managers of firms being investigated for FCPA violations draft FCPA-related disclosures. A growing body of evidence supports that managers use IM tools when drafting disclosures. This study's results suggest that, compared to the broader population of annual filing disclosures, disclosures relating to an FCPA-related inquiry have a more negative sentiment and are more difficult to read. This present study informs previous research on the linguistic characteristics of management's disclosures related to the firm's alleged illegal or unethical acts. These findings add to the research considering the obfuscation hypothesis and impression

management theory. These results have significant implications. Investors must be aware of the manipulation present in management's narratives. Accounting standards setters and financial regulators may use this information to recalibrate disclosure guidance and regulatory enforcement efforts.

As with all studies, this study has limitations. The sentiment and readability population datasets include 10-K filings. Therefore, the datasets may not sufficiently reflect the linguistic characteristics of 10-K and 20-F filings. However, Nguyen and Kimura (2018) note that the readability levels of 10-Ks and 20-Fs are similar. Further, no published evidence suggests that the tone and SAB characteristics of 10-K and 20-F filings systematically differ. Analysis of this present study's sample disclosures failed to find statistically significant differences in the linguistic features of 10-K and 20-F disclosures. Another limitation of this study is that the quantitative linguistic measures used may inadequately measure the characteristics they purport to measure. For instance, machine learning techniques may be used to locate attributional bias more effectively (Berkin et al., 2023; Frankel et al., 2023). Additionally, statistical methods used to improve causal inference in non-experimental research may offer more substantial evidence of the cause-effect relationships between the variables considered in this present study. Propensity score matching is a valuable tool; however, the unique nature of the narratives explored in this endeavor limits the researcher's ability to compare results with those of other texts. Future research may investigate how managers disclose regulatory and ethical violations other than those involving bribery and corruption. It would also be interesting to see how the updated enforcement guidance may alter future FCPA-related disclosures. Finally, researchers may consider how regulatory and ethical strategies could mitigate disclosure manipulation.

## REFERENCES

- Aerts, W. (2005). Picking up the pieces: Impression management in the retrospective attributional framing of accounting outcomes. *Accounting, Organizations and Society*, 30(6), 493–517. Doi: 10.1016/j.aos.2004.07.001
- Aviad, N., Hahn, D. A., Kramer, A. J., & Schwartz, L. (2025). FCPA under fire: What companies need to consider after Trump’s executive order. *Criminal Justice*, 40(2), 18–23.
- Baker, H. K., Kumar, S., Goyal, N., & Gaur, V. (2018). How financial literacy and demographic variables relate to behavioral biases. *Managerial Finance*. doi.org/10.1108/MF-01-2018-0003
- Bassyouny, H., Abdelfattah, T., & Tao, L. (2020). Beyond narrative disclosure tone: The upper echelons theory perspective. *International Review of Financial Analysis*, 70, 101499. doi.org/10.1016/j.irfa.2020.101499
- Bassyouny, H., Abdelfattah, T., & Tao, L. (2022). Narrative disclosure tone: A review and areas for future research. *Journal of International Accounting, Auditing and Taxation*, 49. Doi: 10.1016/j.intaccudtax.2022.100511
- Beatty, A., Cheng, L., & Zhang, H. (2019). Are risk factor disclosures still relevant? Evidence from market reactions to risk factor disclosures before and after the financial crisis. *Contemporary Accounting Research*, 36(2), 805-838. Doi: 10.1111/1911-3846.12444
- Belnap, A. (2022). The effect of intermediary coverage on disclosure: Evidence from a randomized field experiment. *Journal of Accounting and Economics*, 101522. Doi: 10.1016/j.jacceco.2022.101522
- Berkin, A., Aerts, W., & Van Caneghem, T. (2023). Feasibility analysis of machine learning for performance-related attributional statements. *International Journal of Accounting Information Systems*, 48, 100597.
- Billett, M. T., & Qian, Y. (2008). Are overconfident CEOs born or made? Evidence of self-attribution bias from frequent acquirers. *Management Science*, 54(6), 1037-1051. doi.org/10.1287/mnsc.1070.0830
- Billings, B. A., Crumbley, D. L., & Knott, C. L. (2022). How to avoid inadvertently violating the Foreign Corrupt Business Practices Act abroad. *Journal of Forensic and Investigative Accounting*, 14(1), 64–73. <https://www.jonesday.com/en/insights/2021/01/fcpa-2020-year-in-review>
- Bonsall, S., A. Leone, B. Miller, and K. Rennekamp. (2017). A plain English measure of financial reporting readability. *Journal of Accounting and Economics* 63(2-3): 329-357.
- Boudt, K., & Thewissen, J. (2019). Jockeying for position in CEO letters: Impression management and sentiment analytics. *Financial Management*, 48(1), 77–115. Doi: 10.1111/fima.12219
- Boyd, R. L., Ashokkumar, A., Seraj, S., & Pennebaker, J. W. (2022). The development and psychometric properties of LIWC-22. Austin, TX: University of Texas at Austin, 1-47.
- Brennan, N., & Merkl-Davies, D. M. (2013). Accounting narratives and impression management. In R. Jack, L. Davison, & J. Craig (Eds.), *The Routledge Companion to Accounting Communication* (pp. 109–132). Oxford, UK: Routledge
- Brochet, F., Miller, G. S., Naranjo, P., & Yu, G. (2019). Managers' cultural background and disclosure attributes. *The Accounting Review*, 94(3), 57-86. Doi: 10.2308/accr-52290
- Burke, J. J., & Gunny, K. (2022). SEC comment letters and 10-K accounting and linguistic reporting Complexity. *Journal of Accounting, Auditing & Finance*, 0148558X2211151. Doi: 10.1177/0148558X221115116

- Cannon, J. N., Ling, Z., Wang, Q., & Watanabe, O. v. (2020). 10-K disclosure of corporate social responsibility and firms' competitive advantages. *European Accounting Review*, 29(1), 85–113. Doi: 10.1080/09638180.2019.1670223
- Capus, N., & Bozinova, M. (2023). Impression management in corporate corruption settlements: The storied self of the prosecutorial authority. *International Journal of Law, Crime and Justice*, 73, 100578.
- Caserio, C., Panaro, D., & Trucco, S. (2019). Management discussion and analysis: a tone analysis on US financial listed companies. *Management Decision*, 58(3), 510-525. Doi: 10.1108/MD-10-2018-1155
- Cen, L., Chen, F., Hou, Y., & Richardson, G. D. (2018). Strategic disclosures of litigation loss contingencies when customer-supplier relationships are at risk. *Accounting Review*, 93(2), 137–159. Doi: 10.2308/accr-51869
- Chan, F., Gibbs, C., Boratto, R. *et al.* (2021) Understanding transnational bribery: a corporate crime framework. *Crime Law Soc Change*, 75 221–245. Doi: 10.1007/s10611-020-09924-z
- Chakrabarty, B., Seetharaman, A., Swanson, Z., & Wang, F. (2018). Management risk incentives and the readability of corporate annual reports. *Financial Management*, 47, 583–616. Doi: 10.1111/fima.12202
- Cho, S. J., Choi, C., & Chung, C. Y. (2024). Firm information and risk: Evidence from the role of 10-K report readability. *Bulletin of Economic Research*. [Online Early]. Doi: 10.1111/boer.12435
- Criminal Division of the U.S. Department of Justice & Enforcement Division of the U.S. Securities and Exchange Commission (2020). FCPA Resource Guide, Second Edition.
- D'Augusta, C., & DeAngelis, M. D. (2020). Tone concavity around expected earnings. *The Accounting Review*, 95(1), 133–164. Doi: 10.2308/accr-52448
- Dechow, P. M., Ge, W., Larson, C. R., and Sloan, R. G. (2011). Predicting material accounting misstatements. *Contemporary Accounting Research*, 28, 17–82.
- Demaline, C. J. (2019). Disclosure characteristics of firms being investigated by the SEC. *The Journal of Corporate Accounting & Finance.*, 30(4), 11–24. Doi: 10.1002/jcaf.22412
- Exec. Order No. 14,209, 90 Fed. Reg. 9587 (Feb. 14, 2025).
- Fabrizio, K. R., & Kim, E.-H. (2019). Reluctant disclosure and transparency: Evidence from environmental disclosures. *Organization Science*, July, orsc.2019.1298. Doi: 10.1287/orsc.2019.1298
- Files, R., Holcomb, A., Martin, G. S., & Mason, P. (2018). Damage control: Changes in disclosure tone after financial misconduct. *SSRN Electronic Journal*. Doi: 10.2139/ssrn.3209501
- Frankel, R., Jennings, J., & Lee, J. (2022). Disclosure sentiment: Machine learning vs. dictionary methods. *Management Science*, 68(7), 5514-5532.
- Frei, C., & Muethel, M. (2017). Antecedents and consequences of MNE bribery: A multilevel review. *Journal of Management Inquiry*, 26(4), 418–432. Doi: 10.1177/1056492617704305
- Goffman, E. (1959). *The presentation of self in everyday life*. New York, NY: Anchor Books.
- Guedes, M. J., & da Conceição Gonçalves, V. (2019). Top managers' characteristics as causal explanations for self-reported performance. *Journal of Business Research*, 101, 869-874. Doi: 10.1016/j.jbusres.2018.11.014
- Healy, P. M., & Palepu, K. G. (2001). Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of Accounting and Economics*, 31(1-3), 405-440. Doi: 10.1016/S0165-4101(01)00018-0

- Hemmings, D. R., Brennan, N., & Merkl-Davies, D. M. (2017). Explaining communication choices during equity offerings: Market timing or impression management? In A. V. Laskin (Ed.), *The Handbook of Financial Communication and Investor Relations*. Hoboken, NJ, USA: John Wiley & Sons, Inc.
- Hodgkinson, G. P., Burkhard, B., Foss, N. J., Grichnik, D., Sarala, R. M., Tang, Y., & van Essen, M. (2023). The Heuristics and Biases of Top Managers: Past, Present, and Future. *Journal of Management Studies*, 60(5), 1033–1063. Doi: 10.1111/joms.12937
- Hoffmann, A. O., & Post, T. (2014). Self-attribution bias in consumer financial decision-making: How investment returns affect individuals' belief in skill. *Journal of Behavioral and Experimental Economics*, 52, 23–28. Doi: 10.1016/j.socec.2014.05.005
- Huang H-Y, Lohwasser E, Yu Z, Chang H. (2022). Opportunistic avoidance of litigation loss accruals and the mitigating effects of auditors. *Journal of Accounting, Auditing & Finance*. December 2022. doi:10.1177/0148558X211068585
- Huang, X., Teoh, S. H., & Zhang, Y. (2014). Tone management. *Accounting Review*, 89(3), 1083–1113. Doi: 10.2308/accr-50684
- Jaeschke, R., Lopatta, K., & Yi, C. (2018). Managers' use of language in corrupt firms' financial disclosures: Evidence from FCPA violators. *Scandinavian Journal of Management*, 34(2), 170–192. Doi: 10.1016/j.scaman.2018.01.004
- Jia, J., Li, Z., & Munro, L. (2019). Risk management committee and risk management disclosure: evidence from Australia. *Pacific Accounting Review*, 31(3), 438–461. Doi: 10.1108/PAR-11-2018-0097
- Jia, J., & Li, Z. (2022). Risk management committees and readability of risk management disclosure. *Journal of Contemporary Accounting & Economics*, 18(3), doi.org/10.1016/j.jcae.2022.100336
- Jin, J., Li, H., & Hoskisson, R. (2022). The use of strategic noise in reactive impression management: how do market reactions matter? *The Academy of Management Journal*, 65(4), 1303–1326. Doi: 10.5465/amj.2018.1054
- Kang, T., Park, D.-H., & Han, I. (2018). Beyond the numbers: The effect of 10-K tone on firms' performance predictions using text analytics. *Telematics and Informatics*, 35(2), 370–381. Doi: 10.1016/j.tele.2017.12.014
- Kayed, S., & Meqbel, R. (2022). Earnings management and tone management: evidence from FTSE 350 companies. *Journal of Financial Reporting and Accounting*. [Ahead of Print]. Doi: 10.1108/JFRA-10-2021-0373
- Krupa, J., (2023). Managers' voluntary disclosure decisions and business press attention. [Working Paper]. <https://ssrn.com/abstract=3489326> or <http://dx.doi.org/10.2139/ssrn.34893260033>
- le Maux, J., & Smaili, N. (2024a). Bundle manipulation: the use of accounting and textual obfuscation. *Journal of Financial Reporting and Accounting*. <https://doi.org/10.1108/JFRA-09-2023-0549>, [Online early access].
- le Maux, J., & Smaili, N. (2024b). Do CEO gender and narcissism jointly affect CEO letter readability? *Journal of Corporate Accounting and Finance*, [Online early access]. <https://doi.org/10.1002/jcaf.22727>
- Li, F. (2012). Managers. Self-serving attribution bias and corporate financial policies. NY, USA: Social Science Research Network Rochester. Doi: 10.2139/ssrn.1639005.
- Libby, R., & Rennekamp, K. (2012). Self-serving attribution bias, overconfidence, and the issuance of management forecasts. *Journal of Accounting Research*, 50(1), 197–231.

- Lin, Y.-H., Cefaratti, M. A., Lee, C.-C., & Huang, H.-W. (2018). Internal control material weaknesses and Foreign Corrupt Practices Act violations. *Journal of Forensic Accounting Research*, 3(1), A80–A104. Doi: 10.2308/jfar-52296
- Liu, R., Huang, J., & Zhang, Z. (2022). Tracking disclosure change trajectories for financial fraud detection. *Production and Operations Management*, [Online early access]. <https://doi-org.ezproxy.liberty.edu/10.1111/poms.13888>
- Loughran, T., & McDonald, B. (2011). When is a liability not a liability? Textual analysis, dictionaries, and 10-Ks. *Journal of Finance*, 66(1), 35–65. Doi: 10.1111/j.1540-6261.2010.01625.x
- Loughran, T., & McDonald, B. (2014). Measuring readability in financial disclosures. *Journal of Finance*, 69(4), 1643–1671. Doi: 10.1111/jofi.12162
- Luo, Y., & Zhou, L. (2020). Textual tone in corporate financial disclosures: a survey of the literature. *International Journal of Disclosure and Governance*, 17(2), 101-110. Doi: 10.1057/s41310-020-00077-y
- Marinovic, I., & Varas, F. (2016). No news is good news: Voluntary disclosure in the face of litigation. *The RAND Journal of Economics*, 47(4), 822-856.
- Manry, D., Huang, H. W., & Yan, Y. C. (2023). Financial statement fraud litigation, material weaknesses, and board characteristics. *Accounting Research Journal*. Doi: 10.1108/ARJ-08-2022-0218
- Marketing Communications: Web // University of Notre Dame. (n.d.). Loughran-McDonald master Dictionary W/ sentiment word lists // software repository for accounting and Finance // University of Notre Dame. *Software Repository for Accounting and Finance*. <https://sraf.nd.edu>
- McClane, J. (2019). Boilerplate and the impact of disclosure in securities dealmaking. *Vanderbilt Law Review*, 72(1), 191–295.
- Melloni, G., Stacchezzini, R., & Lai, A. (2016). The tone of business model disclosure: An impression management analysis of the integrated reports. *Journal of Management & Governance*, 20(2), 295–320. Doi: 10.1007/s10997-015-9319-z
- Miller, B. P. (2023). Bog Data. <https://sites.google.com/iu.edu/professorbrianpmiller/bog-data>
- Miller, D. T., & Ross, M. (1975). Self-serving biases in the attribution of causality: Fact or fiction?. *Psychological bulletin*, 82(2), 213.
- Nguyen, P. T. T., & Kimura, A. (2018). Readability of annual reports : Evidence from foreign firms in the United States stock exchange. [Working Paper]. [http://www.rieb.kobe-u.ac.jp/tjar/conference/8th/CB2\\_PhuongThiThuyNGUYEN.pdf](http://www.rieb.kobe-u.ac.jp/tjar/conference/8th/CB2_PhuongThiThuyNGUYEN.pdf)
- Nguyen, P. T. T., & Kimura, A. (2023). Disclosure characteristics of annual reports and information asymmetry: Evidence from foreign firms listed on the us stock exchange. *Finance Research Letters*, 103776.
- Parsons, C. A., Sulaeman, J., & Titman, S. (2018). The geography of financial misconduct. *The Journal of Finance*, 73(5), 2087–2137. Doi: 10.1111/jofi.12704
- Persons, O. S. (2020). Corporate governance characteristics of FCPA violators. *Journal of Forensic and Investigative Accounting*, 12(1), 147–162.
- Phesa, M., & Sibanda, M. (2022). A manifestation of impression management in corporate reporting in JSE top 40 listed companies. *Journal of Business and Social Review in Emerging Economies*, 8(4), 669-682. Doi: 10.26710/jbsee.v8i3.2488
- Pitt, C., Berthon, P., & Kietzmann, J. (2020). From the 2019 ANZMAC conference: The language of 10-K reports, from the analytical to the post-emotional. *Journal of Strategic Marketing*, 1-13.

- Rich, K. T., Roberts, B. L., & Zhang, J. X. (2021). Linguistic tone of management discussion and analysis disclosures and the municipal debt market. *Journal of Public Budgeting, Accounting & Financial Management*, 33(4), 427-446.
- Roychowdhury, S., Shroff, N., & Verdi, R. S. (2019). The effects of financial reporting and disclosure on corporate investment: A review. *Journal of Accounting and Economics*, 68(2-3). Doi: 10.1016/j.jacceco.2019.101246
- Senave, E., Jans, M. J., & Srivastava, R. P. (2023). The application of text mining in accounting. *International Journal of Accounting Information Systems*, 50, 100624. Doi: 10.1016/j.accinf.2023.100624
- Sila Alan, N., Engle, R. F., & Karagozoglu, A. K. (2023). Impact of language complexity on volatility in financial markets: Evidence from textual analysis of earnings calls. *Journal of Portfolio Management*, 50(2).
- Smith, K. W. (2023). Tell me more: A content analysis of expanded auditor reporting in the United Kingdom. *Accounting, Organizations and Society*, 101456.
- Tsileponis, N., Stathopoulos, K., & Walker, M. (2020). The monitoring role of the financial press around corporate announcements. *Accounting and Business Research*, 50(6), 539-573. Doi: 10.1080/00014788.2020.1735290
- U.N. law & crime prevention, the costs of corruption: values, economic development under assault, trillions lost, says Guterres (Dec. 9, 2018). *U.N. News*.  
<https://news.un.org/en/story/2018/12/1027971>
- U.S. Department of Justice, Office of the Deputy Attorney General. (2025, June 9). *Memorandum for the head of the Criminal Division*.  
<https://www.justice.gov/dag/media/1403031/dl?inline>
- U.S. Securities and Exchange Commission (2014). *Investor Bulletin: SEC Investigations*.
- van Scotter, J. R., & Roglio, K. D. D. (2020). CEO Bright and Dark Personality: Effects on Ethical Misconduct. *Journal of Business Ethics*, 164(3), 451-475.  
<https://doi.org/10.1007/s10551-018-4061-5>
- Wang, K. (2021). Is the tone of risk disclosures in MD&As relevant to debt markets? Evidence from the pricing of credit default swaps. *Contemporary Accounting Research*, 38(2), 1465-1501.
- Whitehead, M., & Belghitar, Y. (2022). Responding to a corruption crisis through disclosure and responsive action: The case of Petrobras. *The British Accounting Review*, 101119. Doi: 10.1016/j.bar.2022.101119
- Wu, X., & Zhang, J. (2014). Stock market reaction to regulatory investigation announcements. *China Journal of Accounting Studies*, 2(1), 37-52. Doi: 10.1080/21697221.2014.891069

## **AN ADVANTAGEOUS ALIGNMENT: THE IMPACT OF ORGANIZATIONAL CULTURE FIT ON M&A SUCCESS IN THE BANKING INDUSTRY**

*Michael E. Dobbs*  
*Tate T. McKay*  
Eastern Illinois University

### ***ABSTRACT***

Organizations seeking growth through merger and acquisition (M&A) activities conduct multi-faceted target selection analyses of many factors, yet one recent study of 40,000+ mergers and acquisitions over a 40+ year period found that 70-75% failed to meet expectations (Lev & Gu, 2025). While the cultural alignment between the acquirer and target is often the most impactful part of acquisition integration success (Bouwman, 2013; Marks & Mirvis, 2011; Stahl & Voight, 2008), cultural alignment is often relegated to a less prominent role because acquiring organizations typically cannot access the information needed to make full culture assessments until late in the due diligence stage. Using the culture frameworks of Hofstede (2005) and Trompenaars (1994), we hypothesize about the fit of four cultural dimensions between acquiring and target firms. We test these hypotheses using M&A transactions completed from 2011 to 2017 by publicly traded U.S. banks that had less than \$50 billion in assets. We find evidence to support our hypothesis that similar levels of universalism or particularism of the target and acquirer are positively related to the success of an acquisition.

Keywords: Mergers and acquisitions (M&A), banking industry, organizational culture, culture fit, M&A success, cultural dimensions, cultural alignment.

### **INTRODUCTION**

Bank M&A in the United States has experienced a resurgence in 2025, supported by market factors and more favorable regulation. July 2025 alone, had the highest monthly number of deals, the largest aggregate deal value, the largest single M&A deal value, the priciest M&A deal, and the largest asset-size bank to strike a deal – since 2021 (S&P, 2025). Prior to 2025's turnaround, post-2021 M&A activity volumes from the U.S. banking industry had dropped to between 100-150 per year from a prior historical average of 200-300 per year (Morgan Stanley, 2025). Given that the U.S. banking industry is still one of the most fragmented in the world with 4,400+ banks at year-end 2024 (Morgan Stanley, 2025), it is anticipated that M&A activity will continue over the long-run and that acquirers will seek every possible angle to be best positioned for successful integration of future targets. As a well-aligned culture continues to be a primary driving force of merger success, early insights from publicly-available data would place potential acquirers in an advantageous position from the start of the decisioning process.

### **Acquiring Firms Are Underperforming**

Despite over 10,000 mergers and acquisitions occurring every year in the U.S. (IMMA, 2025), acquirers' stocks consistently underperform their peers for an extended period following these acquisitions. Overall, acquirers' composite shares returned 129% less than their Russell 3000 peer group from January 2001 to August 2016 (S&P Global, 2016) and long-run performance post-M&A is typically negative (Tuch & O'Sullivan, 2007). Lev & Gu (2025) examined more than 40,000 global acquisitions from 1980-2022 and found that more than 70% of the acquiring firms had below industry-average sales growth, negative stock returns, or goodwill write-offs three years post-acquisition. There is a prevalent lack of understanding for the reasons for this overall underperformance, with commonly referred to M&A conditions of conglomeration, relatedness, cash versus equity payments, and prior acquisition experience unable to be tied to post-merger performance (King, Dalton, Daily, & Covin, 2004). What is truly driving post-merger performance? Some believe the missing link is the cultural alignment between the target and acquirer (Bouwman, 2013; Marks & Mirvis, 2011; Stahl & Voight, 2008).

Although culture fit may initially appear to be a minor merger success factor, with the inability of research to firmly tie any strategic-based antecedents to merger success, cultural alignment emerges as a meaningful factor (Stahl & Voight, 2008). Poor cultural alignment is generally accepted as a reason for underperformance of merged organizations, but the resulting culture clashes remain less managed than they should be (Marks & Mirvis, 2011). Major culture clash avoidance seems widely practiced, with one comprehensive survey finding that 48% of executives would walk away from an acquisition if a misalignment of cultures was present (Graham, Harvey, Popadak, & Rajgopal, 2015). The concern appears reasonable, as unmanaged cultural differences have a significant negative impact on the stock market returns of an acquiring firm (Stahl & Voigt, 2008) and shareholder value is typically reduced even if an acquirer is able to cancel the M&A transaction once more information is obtained (Laibner & Varmaz, 2016).

### **Culture Fit Assessments as a Fix**

Acquiring firms are overwhelmingly focused on *strategic* fit rather than *organizational culture* fit in the pre-acquisition period (Jemison & Sitkin, 1986) and assessing culture in any systematic way during pre-acquisition stages remains rare (Weber, Belkin, & Tarba, 2011; Denison & Ko, 2016). The acquisition process itself is a primary driver of success (Jemison & Sitkin, 1986) and splitting this process into two sequential stages – screening, then negotiation – is essential to managing the process effectively (Greenwood, Hinings, & Brown, 1994). Inadequate target evaluation during the screening stage is a dominant attribute of unsuccessful acquisitions (Hitt, Harrison, Ireland, & Best, 1998); and pre-merger organizational identities of the merging institutions and the subsequent management of them is a primary moderator of the merger's success (Marks & Mirvis, 2011; Weber & Drori, 2011).

Similar cultures shared by the target and acquirer often result in an elevated likelihood of successful integration, but cultural differences can also generate greater learning and a more successful integration (Stahl & Voigt, 2008). The term cultural “distance” is more aptly defined as cultural “friction” as differences can have both positive and negative results (Shenkar, 2001). All cultural differences interact with M&A elements of integration, synergy realization, and shareholder value creation in varying ways depending on the dimension being measured and the degree of difference present (Stahl & Voigt, 2008) and the differences should be considered throughout the acquisition process (Teerikangas & Very, 2006).

Although the importance of examining this cultural friction in the screening stage is well-established (Haspeslagh & Jemison, 1991; Hitt, et al., 1998; Stahl & Voight, 2008; Weber, Shenkar, & Raveh, 1996), the friction often does not become apparent until integration (Greenwood, Hinings, & Brown, 1994). Merging institutions' employees first notice cultural differences rather than similarities (Marks & Mirvis, 2011) and forcing abandonment of pre-merger identity accelerates culture clashes (Weber & Drori, 2011). If not addressed at the onset, cultures tend to ossify and require expending energy and resources to shift. Complicating matters, an organizational culture is not a single shared identity, but rather a multitude of "native" micro-cultures that need to be considered from a cultural relativist viewpoint (Gregory, 1983). Properly managing conflicting culture styles can have an immense impact on successfully combining cultures (Gelfand, Leslie, Keller, & de Dreu, 2012) through tactics such as introducing conflicting micro-culture groupings to influence desired cultural shifts with those complementary micro-cultures leading to faster integration (Groysberg, Lee, Price, & Cheng 2018). Through various strategies, new cultural end-states need to be developed by unfreezing, moving, and refreezing employee mindsets (Marks & Mirvis, 2011). Tactics like celebrations or rituals can be effective in disjuncting a company culture from its past (Suddaby & Foster, 2017), but as with most unfreezing strategies requires use of significant resources. Defining the end-state upfront helps better prepare for the ensuing transition and integration stages (Denison & Ko, 2016), thereby saving organizational resources that can be more efficiently deployed to achieve synergy goals. Outlining the process and identifying culture differences during the screening stage is essential to guiding the determination of synergy potential (Denison & Ko, 2016; Weber, Belkin, & Tarba, 2011). This leads to a more accurate pricing of synergies during negotiation and a better integration plan to realize those synergies (Denison & Ko, 2016; Weber, Belkin, & Tarba, 2011).

### **Screening Challenges**

While it is extremely valuable for acquiring firms to review potential cultural friction points as soon as possible during the acquisition evaluation process, there is frequently insufficient data to measure culture during early screening and negotiation stages (Weber, Shenkar, & Raveh, 1996). The target typically provides limited access to data and it is difficult (and sometimes illegal) to interview employees of the target institution (Denison & Ko, 2016). Acquirers are consequently forced to attempt a broader cultural assessment later in the due diligence stage after extensive resources have already been committed and when speed and secrecy are driving factors (Haspeslagh & Jemison, 1991) as deal momentum takes hold. At this point, the process is often unlikely to slow in the face of culture-issue findings with internal decision makers heavily invested (Cartwright & Cooper, 2000; Jemison & Sitkin, 1986) and under the influence of external advisors whose incentives to complete the deal may not align with the acquirer (Jemison & Sitkin, 1986).

Overall, details on cultural alignment's effects are lacking substantial persuasive empirical support (Bouwman, 2013). M&A research is well developed for connecting known dimensions of organizational relatedness and ex-post employee dispositions to integration outcomes (Steigenberger, 2017), but there remains a need for identifying how the culture differences affect outcomes and performance (Teerikangas & Very, 2006; Steigenberger, 2017). Prior research suggested pre-acquisition evaluation of cultural friction should be unobtrusive, maximizing use of existing data (Denison & Ko, 2016), and use primary or secondary sources of information from the organization (Weber & Tarba, 2012). We seek to address the empirical-testing gap via assessment of pre-acquisition cultural dimensions using publicly available data and testing how that fit impacts subsequent performance of the merged entity.

## **THEORY & HYPOTHESES**

We develop hypotheses on how selected cultural dimensions relate to the success of the M&A transaction. Our thinking is that certain cultural dimension combinations for the target and acquirer will integrate better and have a significant positive impact on the success of the acquisition.

### **Cultural Dimensions**

At the forefront of identifying dimensions that affect culture was Geert Hofstede, who created a four-dimension model in his 1980 book *Culture's Consequences*, later expanded to six dimensions. Fons Trompenaars followed Hofstede's base and developed an expanded and alternative seven-dimension model in the release of his 1993 book *Riding the Waves of Culture*. Five of Trompenaars' dimensions were adopted from sociologist Talcott Parsons and two others were self-developed (Trompenaars, 1994).

Kirkman, Lowe, & Gibson (2006) examined 25 years of Hofstede-based research and discovered significant evidence that cultural friction, operationalized based on Hofstede's measures, was present at group and organizational levels. Regarding merger and acquisition activity, differences between target and acquiring firms on Hofstede's dimensions reduced the likelihood of mergers, both inter-regionally and internationally (Ahern, Daminelli, & Fracassi, 2015). Therefore, we use these well-established measures of culture to measure organizational culture and attempt to better understand the impact of cultural fit on acquisition success.

### **Income inequality (Power Distance)**

The cultural dimension of Power Distance (**PD**) is defined by Hofstede (2005) as the extent to which the less powerful members of organizations and institutions accept and expect power to be distributed unequally. In high PD societies, inequality is considered a normal part of society; but in small PD societies, inequality is seen as something that should be reduced, if possible. One consistent feature of high PD societies is more income inequality and higher centralization, while low PD societies are marked by less income inequality and more decentralization (Hofstede, 2005).

We expect target firms with a similar PD to the acquiring firm are more likely to be successfully integrated because core values of fairness are more consistent and will not need to be shifted significantly to promote acceptance of the new policies of the merged entity. The U.S. Securities and Exchange Commission's (SEC) requirement for companies to disclose CEO pay ratios provides a related example for this concept. If a firm with a CEO who earns 100 times the average employee acquires a firm whose CEO earns only 20 times as much as the average employee, employees of the target firm may have a difficult time accepting what is deemed "fair" at their new place of employment. Low morale, higher turnover, low cooperation, and other negative outcomes are more likely in such situations. Thus, we hypothesize:

*Hypothesis 1: Similar power distance levels of the target and acquirer will be positively related to the success of an acquisition.*

### **Fear of the Unknown (Uncertainty Avoidance)**

Hofstede's (2005) cultural dimension of Uncertainty Avoidance (UA) is the extent that members of a culture feel threatened by ambiguous or unknown situations. UA is not the same as risk avoidance; instead, UA's closest parallel is anxiety (Hofstede, 2005). A culture high in UA stresses over the general unknown nature of the future, versus high-risk avoidance being driven by a specific fear (Hofstede, 2005). Merger and acquisition activity typically imposes change that employees have not chosen and for which they are often psychologically unprepared, resulting in elevated stress and anxiety (Cartwright & Cooper, 2000). If both of the organizations involved in the merger have recent experience with significant corporate change, a successful merger is more likely (Hitt, et al., 1998) as the organizations will be in a cultural state of "unfreezing" that is beneficial for moving the respective cultures to the desired end-state combination (Marks & Mirvis, 2011). Thus, we hypothesize:

*Hypothesis 2: Similar uncertainty avoidance levels of the target and acquirer will be positively related to the success of an acquisition.*

### **Conservatism vs. aggressiveness (Long-Term vs. Short-Term)**

In follow-up studies to his initial four dimensions, Hofstede (2005) discovered a cultural dimension not previously considered – the long-term orientation vs. short-term orientation (LT/ST) of a firm. Long-term orientation in a firm is characterized by greater persistence, more funds retained in savings, and a proclivity to invest in assets such as real estate. In contrast, short-term orientation results in firms being more highly leveraged, with smaller savings, and investments in riskier asset classes (Hofstede, 2005). The right mix of LT and ST strategies may result in a greater likelihood of merger success. A ST oriented firm may benefit from the resources of a LT oriented firm and vice versa. Thus, we hypothesize that:

*Hypothesis 3: Complementary levels of long-term or short-term orientation of the target and acquirer will be positively related to the success of an acquisition.*

### **Rules or relationships (Universalism vs. Particularism)**

Trompenaars' (1994) universalism vs. particularism (U/P) encapsulates an organizational preference for rules versus relationships. At a universalist firm, the employees will tend to apply the same rules to every situation. Companies high on universalism believe the production, management, and distribution of their products should be universal while those higher in particularism may assume a more tailored approach (Trompenaars, 1994). Under particularism, exclusive deals may be agreed upon based on existing relationships between companies. Differences in U/P between a target and acquiring firm may lead to significant behavioral, attitudinal, and personal clashes as their distinct histories drive different expectations and perceptions of fairness. Once again, low morale, higher turnover, low cooperation, and other negative outcomes are more likely in such situations. Thus, we hypothesize that:

*Hypothesis 4: Similar levels of universalism or particularism of the target and acquirer will be positively related to the success of an acquisition.*

## RESEARCH DESIGN

Since the easing of interstate merger restrictions and other regulations in the mid-1980s, the banking industry in the U.S. has experienced an extreme amount of merger and acquisition activity (Wheelock & Wilson, 2004). Current drivers of increased bank M&A include 1) large investment requirements for technology to address customer speed/convenience and cybersecurity risk; 2) competition from fintech companies and digital deposit gatherers not tied to a brick and mortar branch network; 3) a supportive M&A approval environment from the Federal Reserve (Fed) and Office of the Comptroller of Currency (OCC); and 4) pressures to scale to certain asset thresholds to offset tiered regulatory expenses such as card interchange fees (kicking in when crossing \$10B, also known as the “Durbin Amendment”). Additional management-level M&A considerations include CEOs “empire building” activities to leave a lasting legacy, baby-boomer CEOs retiring without a suitable successor, and staving off being acquired by growing and temporarily diluting book value to become less desirable.

As established in our hypotheses above, an important aspect of managing this M&A boom successfully is appropriately blending cultures. To test these hypotheses, we operationalize them using proxies based on SEC filings and utilize multiple regression analysis (using STATA) where:

$$\text{Merged Bank Performance}_i = \beta_0 + \beta_1 x_{1i} + \dots + \beta_k x_{ki} + u_i$$

### Sample and Data

Our dataset consisted of publicly traded U.S. banks that engaged in M&A activity from 2011 – 2017, a particularly active period for M&A. The starting point of data collection was set to limit the confounding effects of the financial crisis, estimated to be mostly concluded by early 2011 (Federal Reserve Bank of St. Louis, n.d.). Sample banks were identified using transaction statistics from the S&P Global Market Intelligence platform. The complete sample criteria included: M&A announcement date between January 1, 2011 and December 31, 2017; target and acquirer both publicly traded at time of M&A announcement; U.S. transactions-only; acquisition was for the whole company; the transaction cost was \$50MM or more; and the acquiring bank had an asset size of less than \$50B. The \$50B or less asset size filter was set due to data skew present with the “super regional banks” that have a significantly different operating model at that scale. The 2010 Dodd-Frank Act identified the \$50B or greater asset size as a “Systemically Important Institution” (also known as “Too Big to Fail”), which required additional regulations. Excluding these banks avoided significant data skew and focused on the “community bank” level institutions that are often underrepresented in research.

To understand a bank’s position prior to the M&A transaction, data points were collected from the SEC’s EDGAR repository of filings for the fiscal year-end (FYE) that directly preceded the M&A announcement date. The Form 10-K is the annual financial report filed with the SEC and was our primary data source. Data were obtained from the 10-K’s balance sheet, income statement, cash flow statement, and select additional schedules. The DEF 14A filing, commonly known as the proxy statement, is issued prior to the annual shareholders meeting and was also collected for each bank in the sample. Starting with 282 total bank transactions over \$50MM that were announced between 2011-2017, the final sample resulted in 93 transactions in which all the previously noted criteria were met.

Descriptive statistics for all variables are included below in Table 1.

**TABLE 1**  
**Descriptive Statistics and Correlations\***

Variable	Mean	s.d.	Min	Max	1	2	3	4	5	6	7
1. Performance	-3.24	25.66	-65.67	88.25	1.00						
2. Power Distance	10.94	11.11	.01	55.81	-.12	1.00					
3. Uncertainty Avoidance	.02	.02	.00	.07	-.16	.07	1.00				
4. Long-Term/Short-Term Orientation	.12	.11	.00	.45	.01	.16	.32	1.00			
5. Universalism vs. Particularism	.10	.08	.00	.56	.32	.01	-.03	.06	1.00		
6. Announcement-until-Close Time Gap	205.08	111.98	61.00	1161.00	-.12	.27	.14	.18	.00	1.00	
7. Prior Acquisition Count	4.28	6.68	.00	38.00	-.11	.56	.22	.18	.06	.14	1.00
8. In-State	.49	.50	.00	1.00	-.10	.23	.07	-.03	.03	.12	.25

\* Coefficients greater in magnitude than .22 are significant at the .05 level.

### Dependent Variable: Post-Merger Performance

The initial effects of an acquisition can negatively skew return on equity [ROE] for the first three years post-acquisition but the capital markets understand initial challenges and have a longer-term view of the impacts of the transaction (Cetorelli, Jacobides, & Stern, 2017). Another common dependent variable used to examine bank returns is a modified SHARPE ratio (i.e. ROE vs. a risk-free rate). A robustness test by DeYoung & Rice (2004a) found market-based results were consistent with SHARPE accounting-based results, with the market potentially more accurate overall considering the complexities and historical shifts of accounting rules. Comparing the acquiring bank's returns to the market return aligns with cumulative abnormal return measures used in prior studies (Bereskin, et al., 2017; Laibner & Varmaz, 2016; Stahl & Voigt, 2008). Therefore, we chose to use a market-based measure of performance.

Specifically, we compared the total shareholder return for acquiring banks two years after the merger announcement (providing time for merger synergies to be realized and integration to be more complete) to the SNL U.S. Bank index. Comparison of individual bank returns to the SNL U.S. Bank index neutralizes most banking industry-related return trends. The total return measures include dividend reinvestment, and the bank and index's returns both start at "zero" as of the merger announcement date. Because we use a two-year lagged variable, our number of observations dropped to 85.

### Independent variables

CEO compensation has been used as a proxy for PD (Tosi & Greckhamer, 2004); and building on this, we created a ratio of named executive officer (NEO) compensation to non-executive officer compensation that provided an estimate of income inequality at the bank. The DEF 14A includes total compensation information for the company's NEOs -- the CEO, the CFO, and the three other most highly compensated executive officers. We use a standardized mean employee calculation with total remaining compensation (after removal of NEO total) divided by the number of employees (omitting NEO count). Our measure of PD was the absolute difference between the ratios of average NEO compensation/average non-NEO compensation at the acquiring and target banks.

The proxy we used for UA was a ratio of the goodwill reported on the bank's balance sheet to the total assets on the balance sheet. Goodwill is an intangible asset reported because of prior acquisition activity by the bank. The acquisition price paid by the acquirer primarily consists of the fair market value of the target bank and the goodwill representing the value of the synergies and growth expected from the deal (Mehran & Thakor, 2011). With most of the subject sample of transactions costing 150%-200% of target bank tangible book value, much of what is being acquired is the target's knowledge and leadership, both intangible assets encoded in the target's culture (Jones, 2008). This premium paid to acquire a bank – goodwill – is tested for impairment annually for publicly traded companies (Financial Accounting Standards Board, 2001), with impairment determined if the projected synergies are no longer expected to be realized, resulting in a write-down of the goodwill intangible asset.

The level of goodwill reported on a bank's balance sheet serves as a representation of expected change in a bank. Elevated levels of goodwill indicate increased uncertainty because of the added pressures to achieve those higher levels of synergies and growth. Pushing for higher levels of integration can result in more synergies but also increases the chances of integration failures that result in less than expected synergies (Stahl & Voight, 2008). Additionally, when firms believe their share price is overvalued, they appear to be more aggressive with paying premiums in excess of realized synergies and racking up larger amounts of goodwill, a reflection of riskier management strategies and a resulting in a higher likelihood of subsequent goodwill write-downs (Gu & Lev, 2011). Pursuit of these riskier strategies made goodwill was one of eight factors statistically associated with an increased chance of bank failure during the financial crisis (DeYoung & Torna, 2013). Banks with higher levels of goodwill have lower UA, as they have been indoctrinated to be more accepting of change, the unknown, and acclimated to the anxiety that accompanies them. Banks with lower levels of goodwill have higher UA, as there is less unknown and change present, and the employee base has historically not been threatened by change. Our measure of UA was the absolute difference between the ratios of goodwill to total assets at the acquiring and target banks.

We used the ratio of real estate loans to total loans in the bank's portfolio as a proxy for long-term vs. short-term orientation. When a bank drives generation of real estate loans in lieu of non-real estate commercial and retail loans, the strategic plan tends to focus on a lengthier business cycle. Real estate interest rates are more likely to be fixed (vs. adjustable) and loan maturity dates longer, leaving the bank to consider how long-term financial outlooks would affect its portfolio's profitability. Real estate at its core has a much longer useful life than loans financing such items as equipment, working capital, and other lines of credit. Commercial real estate [CRE] loans typically are the largest subset of the real estate loan portfolio due to the sheer size of many of the projects. Bank competition for CRE loans is present from real estate investment trusts, insurance companies, and pension funds. Also, much CRE held in the portfolio and not sold to secondary markets are more likely to have been underwritten to non-standard, riskier terms (Black, Krainer, & Nichols, 2016). These factors put extra pressure on examining the long-term viability of these loans, more so than in alternative commercial lending segments.

Real estate loans as identified in the portfolio loans addendum to the 10-K balance sheet include CRE (encompassing apartments, retail space, office, warehouses, etc.), real estate construction (financing the build-out or improvements of the CRE properties), retail real estate (mortgage loans for primary residences and vacation homes of individuals), and home equity loans (loans used for various purposes but secured by real estate). Anything not explicitly identified as real estate in the portfolio loan breakdown was assumed as non-real estate.

We argue that the higher the real estate concentration in a bank's total loan portfolio, the more long-term oriented the bank is. Employees of these banks deal with real estate loans and customers focused on real estate more often, leading the bank's culture to identify strongly with a longer-term outlook on transactions. With the multiple layers of competition and implied Government restrictions on large-scale CRE growth (Friend, Glenos & Nichols, 2013), the real estate loan portfolio held by banks is firmly tied to the long-term, established aspects sought in this proxy. Our measure of long-term vs. short-term orientation was the absolute difference between the ratios of real estate loans to total loans at the acquiring and target banks.

To measure U/P, we used a ratio of noninterest income to total revenues (also cited as total income). Bank profitability historically focused on the balance sheet items of loans and deposits, but the income statement has now been amplified with increases in noninterest income (DeYoung & Rice, 2004b). Certain banks place a greater emphasis on the amount of transactions processed versus "traditional banking," where the profitability of the financial intermediation within individual product transactions is the focus (DeYoung & Rice, 2004a). A transactional bank is less focused on making loans (a traditional banking activity) and transactional banking profits depend significantly on transaction volume (Ciarrapico & Cosci, 2011). The volume is important as banks with assets over \$1B cross-subsidize lending (offering below market rates) with noninterest income (Abedifar, Molyneux & Tarazi, 2018). The cross-selling moves the bank's strategy from an individual product-oriented model to a customer-centric model (Jarrar & Neely, 2002) that involves obtaining more intimate customer information and performing repeated interactions with that established set of customers (Boot & Ratnovski, 2016).

Banks that engage fully in cross-selling are utilizing a "relationship marketing" strategy versus the "relationship lending" strategy imposed by traditional banks (Ciarrapico & Cosci, 2011). We aligned bank cultures high on particularism with "relationship marketing" and therefore transactional banks. Transactional banking can be directly identified by higher levels of noninterest income at a bank (DeYoung & Rice, 2004a). Noninterest income often consists of income streams from bank services that are unrelated to the traditional banking core services where profits are primarily made on the spread between rates on loans disbursed to borrowers and rates paid to customers on deposits.

However, one component of noninterest income is customer service charges, consisting of fees for customer actions like account overdrafts, external ATM usage, and use of other services. Customer service charges are related to traditional banking (DeYoung & Rice, 2004b) and are inherently less volatile than other noninterest income (DeYoung & Roland, 2001). The customer service fees remain a significant portion of noninterest income at most banks and we excluded it from the noninterest income in our calculations. Noninterest income is included on the income statement of the 10-K and further detail is provided on the noninterest income addendum which breaks down the income category's components. The noninterest income levels and this U/P measure are important as combining a traditional-focused bank (high universalism) with a transactional-focused bank (high particularism) can undermine synergy goals and lead to an "identity crisis" for banks (Boot & Ratnovski, 2016). Our measure of U/P was the absolute difference between the ratios of noninterest income (excluding customer service fees) to total income at the acquiring and target banks.

We also included several control variables in our regression equations. The number of days from announcement of the transaction to the closing of the transaction was used as a control variable

since lengthier regulatory approval timeframes can occur with more complex transactions. We also control for prior M&A transactions (by the acquiring bank). Companies with more M&A experience are more successful than companies that are less experienced in M&A (Gomes, Angwin, Weber, & Tarba, 2013; Steigenberger, 2017). Additionally, there have been negative relationships observed between the number of prior acquisitions and the resultant performance of the current acquisition when too much change too quickly causes chaos (Hitt, et al., 1998) and when the acquirer hasn't codified knowledge from their past M&A experience (Zollo & Singh, 2004). Finally, we control for geographical distance. In-market bank mergers tend to generate higher cost efficiencies than out-of-market bank mergers (Sapienza, 2012). Additionally, the chances of successful M&A increases in regions where significant M&A activity has recently occurred because of bank managers obtaining knowledge spillover from the prior activity in their region (DeLong & DeYoung, 2007). To encompass these geographical factors, a dummy variable was included to denote the acquisition as intrastate ("1") or interstate ("0").

## RESULTS & DISCUSSION

We constructed several regression models to test our hypotheses, and the results are depicted in Table 2.

**TABLE 2**  
**Results of Regression Analysis for Post-Merger Performance<sup>a</sup>**

Variables	Models				
	1	2	3	4	5
Power Distance		-.09 (.33)			-.18 (.33)
Uncertainty Avoidance			-165.96 (146.00)		-170.85 (149.04)
Long-Term/Short-Term Orientation				9.31 (26.91)	11.45 (27.48)
Universalism vs. Particularism				95.61* (31.18)	93.14 (31.61)
Announcement-until-Close Time Gap	-.02 (.02)	-.02 (.02)	-.02 (.02)	-.06 (.05)	-.05 (.05)
Prior Acquisition Count	-.19 (.50)	-.18 (.42)	-.28 (.42)	-.23 (.40)	-.03 (.50)
In-State	-3.01 (5.94)	-3.01 (5.82)	-3.03 (5.90)	-4.43 (5.58)	-3.26 (5.82)
Constant	4.58 (6.16)	7.46 (6.65)	3.53 (6.65)	2.53 (10.45)	4.50 (11.33)
R-squared	.02	.04	.03	.14	.15
Adjusted R-squared	-.02	.00	-.02	.09	.07
No. observations	85				

Standard errors are reported in parentheses.

\* indicates significance at the .05 level

The first four models included the three control variables with each of the four theoretical variables by themselves. The fifth model included all seven of the independent variables (4 theoretical and 3 control). Support for our first three hypotheses was not evident in our models due to the fact that

our measures of PD, UA, and LT/ST orientation each failed to meet statistically significant levels. However, we did find support for our Universalism/Particularism hypothesis at a  $p > .05$  significance level. We interpret this to mean there is evidence that the more similar an acquirer and target bank are regarding their universalism or particularism, the more successful the merger will be.

We defined a bank with a more customer relationship focus (i.e., cross-selling activities and higher number of transactions) as having a culture higher in particularism vs. a bank engaged in more traditional banking activities having a culture higher in universalism. It seems there is evidence that whether a bank leans more toward universalism or particularism, it may be more successful at integrating a target bank with a similar cultural perspective. Such a merger avoids significant behavioral, attitudinal, and personal clashes as their distinct histories have similar expectations and perceptions of fairness. Lower morale, higher turnover, lower cooperation, and other negative outcomes are more likely to be avoided in such situations leading to higher shareholder returns for the acquiring bank.

## CONCLUSION

We sought to better understand the impact of organizational culture fit in M&A activities and their effects on firm performance. While several of our hypotheses were not supported by our models, we did find support that more closely aligning the universalism/particularism orientations of target and acquiring banks was associated with higher shareholder returns vs. the banking industry as a whole. We are encouraged by our findings and are hopeful that more research on culture fit for mergers in the banking sector and others will be forthcoming. As noted by Bond (2016) and (Kirkman, Lowe, & Gibson, 2006), the cultural dimensions of Hofstede are ripe for reinvention and fresh application across the organization level. We believe the theoretical components of the cultural dimensions are strong and should be applied in novel ways to test for interactions that can provide some semblance of an idea of culture fit prior to engaging in merger negotiations. Even a small piece of explanatory power could have a tremendous impact, given the wholly unexplained nature of merger performance (King, 2002; Stahl & Voight, 2008). The vast amount of resources that are expended in these failed negotiations, and sometimes failed completed acquisitions, would be of much greater benefit to society if deployed in more productive ways.

## ANNOTATED REFERENCES

- Abedifar, P., Molyneux, P., & Tarazi, A. (2018). Non-interest income and bank lending. *Journal of Banking & Finance*, 87(Feb.), 411–426.
- Ahern, K. R., Daminelli, D., & Fracassi, C. (2015). Lost in translation? The effect of cultural values on mergers around the world. *Journal of Financial Economics*, 117(1), 165–189. doi:10.1016/j.jfineco.2012.08.006
- Bereskin, F., Byun, S. K., Officer, M. S., & Oh, J.-M. (2017). The effect of cultural similarity on mergers and acquisitions: Evidence from corporate social responsibility. *Journal of Financial and Quantitative Analysis (JFQA)*, Advance Online Publication. doi:10.2139/ssrn.2920129

- Black, L., Krainer, J., & Nichols, J. (2017). From origination to renegotiation: A comparison of portfolio and securitized real estate loans. *The Journal of Real Estate Finance and Economics*, 55(1), 1-31. doi:10.1007/s11146-016-9548-1
- Bond, M. (2016). Reclaiming the individual from Hofstede's ecological analysis - a 20-year odyssey: Comment on Oyserman et al. (2002). *Psychological Bulletin*, 128(1), 73-77. doi:10.1037//0033-2909.128.1.73
- Boot, A. W. A., & Ratnovski, L. (2016). Banking and trading. *Review of Finance*, 20(6), 2219–2246.
- Bouwman, C. H. S. (2013). The role of corporate culture in mergers & acquisitions. In E. Perrault (Ed.), *Mergers and Acquisitions: Practices, Performance and Perspectives*. NOVA Science Publishers. Retrieved from <https://ssrn.com/abstract=2307740>
- Cartwright, S., & Cooper, C. (2000). HR know-how in mergers and acquisitions. London: Chartered Institute of Personnel and Development.
- Cetorelli, N., Jacobides, M., & Stern, S. (2017). *Unpacking the dynamics of scope transformation in US banks, 1992-2006* (Federal Reserve Bank of New York Staff Reports, 813). New York: Federal Reserve Bank of New York. Retrieved from [https://www.newyorkfed.org/research/staff\\_reports/sr813.html](https://www.newyorkfed.org/research/staff_reports/sr813.html)
- Ciarrapico, A. M., & Cosci, S. (2011). European banks and cross-selling. *Applied Economics Letters*, 18(6), 555–559.
- DeLong, G., & DeYoung, R. (2007). Learning by observing: Information spillovers in the execution and valuation of commercial bank M&As. *The Journal of Finance*, 52, 181–216.
- Denison, D., & Ko, I. (2016). Cultural due diligence in mergers and acquisitions. In *Advances in Mergers and Acquisitions, Volume 15* (p. 53-72). Emerald Group Publishing Limited.
- DeYoung, R., & Rice, T. (2004a). How do banks make money? A variety of business strategies. Federal Reserve Bank of Chicago: Economic Perspectives, (Fourth Quarter), 52–67.
- DeYoung, R., & Rice, T. (2004b). How do banks make money? The fallacies of fee income. Federal Reserve Bank of Chicago: Economic Perspectives, (Fourth Quarter), 34–51.
- DeYoung, R., & Roland, K. (2001). Product mix and earnings volatility at commercial banks: Evidence from a degree of leverage model (FRB Chicago Working Paper No. 1999-06). Chicago: Federal Reserve Bank of Chicago.
- Federal Reserve Bank of St. Louis. (n.d.). *Financial crisis timeline*. Retrieved from <https://www.stlouisfed.org/financial-crisis/full-timeline>
- Financial Accounting Standards Board. (2001, June). Statement of financial accounting standards no. 142. Retrieved from <https://www.fasb.org/resources/ccurl/731/820/fas142.pdf>

- Friend, K., Glenos, H., Nichols, J. (2013, April). *An analysis of the impact of the commercial real estate concentration guidance*. Washington, DC: Board of Governors of the Federal Reserve System. Retrieved from <https://www.federalreserve.gov/bankinforeg/cre-20130403a.pdf>
- Gelfand, M. J., Leslie, L. M., Keller, K., & de Dreu, C. (2012). Conflict cultures in organizations: How leaders shape conflict cultures and their organizational-level consequences. *Journal of Applied Psychology, 97*(6), 1131–1147. doi:10.1037/a0029993
- Gomes, E., Angwin, D., Weber, Y., & Tarba, S. (2013). Critical success factors through the mergers and acquisitions process: Revealing pre- and post-M&A connections for improved performance. *Thunderbird International Business Review, 55*(1), 13–35. doi:10.1002/tie
- Graham, J. R., Harvey, C. R., Popadak, J., & Rajgopal, S. (2015, October 14). Corporate Culture: Evidence from the Field. Federal Reserve Bank of New York. Retrieved from [https://www.newyorkfed.org/medialibrary/media/research/conference/2015/econ\\_culture/Graham\\_Harvey\\_Popadak\\_Rajgopal.pdf](https://www.newyorkfed.org/medialibrary/media/research/conference/2015/econ_culture/Graham_Harvey_Popadak_Rajgopal.pdf)
- Greenwood, R., Hinings, C.R., & Brown, J. (1994). Merging professional service firms. *Organization Science, 5*(2), 239-257. Retrieved from <http://www.jstor.org/stable/2635017>
- Gregory, K. L. (1983). Native-view paradigms: Multiple cultures and culture conflicts in organizations. *Administrative Science Quarterly, 28*(3), 359–376. Retrieved from <http://www.jstor.org/stable/2392247>
- Groysberg, B., Lee, J., Price, J., & Cheng, J. Y.-J. (2018). The Culture Factor. *Harvard Business Review*. Retrieved from <https://hbr.org/2018/01/the-culture-factor>
- Gu, F., & Lev, B. (2011). Overpriced shares, ill-advised acquisitions, and goodwill impairment. *The Accounting Review, 86*(6), 1995–2022.
- Hitt, M., Harrison, J., Ireland, R., & Best, A. (1998). Attributes of successful and unsuccessful acquisitions of US firms. *British Journal of Management, 9*, 91–114.
- Hofstede, G., & Hofstede, G. J. (2005). *Cultures and organizations: Software of the mind* (2nd ed.). New York, NY: McGraw-Hill.
- IMMA Institute for Mergers, Acquisitions & Alliances (2025). *United States M&A Statistics*. Retrieved from: <https://imaa-institute.org/mergers-and-acquisitions-statistics/united-states-ma-statistics/>
- Jarrar, Y., & Neely, A. (2002). Cross-selling in the financial sector: Customer profitability is key. *Journal of Targeting, Measurement, and Analysis for Marketing, 10*(3), 282–296.
- Jemison, D., & Sitkin, S. (1986). Corporate acquisitions: A process perspective. *The Academy of Management Review, 11*(1), 145-163.

Journal of Business and Accounting

- Jones, G. (2008). Enhancing due diligence – examination of the organisational culture of a merger and acquisition target. *Journal of Business & Economics Research*, 6(1), 11-16.
- King, D., Dalton, D., Daily, C., & Covin, J. (2004). Meta-analyses of post-acquisition performance: Indications of unidentified moderators. *Strategic Management Journal*, 25(2), 187–200. doi:10.1002/smj.371
- Kirkman, B. L., Lowe, K. B. & Gibson, C. (2006). A quarter century of Culture's Consequences: A review of the empirical research incorporating Hofstede's cultural value framework. *Journal of International Business Studies*, 36(3), 285-320.
- Laibner, J., & Varmaz, A. (2016). Announced versus canceled bank mergers and acquisitions: Evidence from the European banking industry. *The Journal of Risk Finance*, 17, 510–544. doi:10.1108/JRF-05-2016-0069
- Lev, B. & Gu, F. (2025). *The M&A failure trap: Why most mergers and acquisitions fail and how the few succeed*. Hoboken, New Jersey: Wiley.
- Marks, M. L., & Mirvis, P. H. (2011). A framework for the human resources role in managing culture in mergers and acquisitions. *Human Resource Management*, 50(6), 859–877. doi:10.1002/hrm.20445
- Mehran, H., & Thakor, A. (2011). Bank capital and value in the cross-section. *The Review of Financial Studies*, 2(4), 1019–1067.
- Morgan Stanley. (2025). Bank M&A poised to pick up. Retrieved from: <https://www.morganstanley.com/insights/articles/banking-mergers-and-acquisitions-pick-up-2025>
- S&P Global. (2025). US bank M&A activity rises to 4-year high in July. Retrieved from: <https://www.spglobal.com/market-intelligence/en/news-insights/articles/2025/8/us-bank-ma-activity-rises-to-4year-high-in-july-91853782>
- S&P Global. (2016). Mergers & Acquisitions: The Good, the Bad, and the Ugly (and how to tell them apart). Retrieved from: <https://www.spglobal.com/marketintelligence/en/documents/mergers-and-acquisitions-the-good-the-bad-and-the-ugly-august-2016.pdf>
- Sapienza, P. (2012). The effects of banking mergers on loan contracts. *The Journal of Finance*, 57, 329–367.
- Shenkar, O. (2001). Cultural distance revisited: Towards a more rigorous conceptualization and measurement of cultural differences. *Journal of International Business Studies*, 32(3), 519-535.
- Suddaby, R., & Foster, W. M. (2017). History and organizational change. *Journal of Management*, 43(1), 19–38. doi:10.1177/0149206316675031

- Stahl, G., & Voigt, A. (2008). Do cultural differences matter in mergers and acquisitions? A tentative model and examination. *Organization Science*, *19*(1), 160-176. Retrieved from: <https://www.jstor.org/stable/25146169>
- Steigenberger, N. (2017). The challenge of integration: A review of the M&A integration literature. *International Journal of Management Reviews*, *19*, 408–431. doi:10.1111/ijmr.12099
- Teerikangas, S., & Very, P. (2006). The culture-performance relationship in M&A: From yes/no to how. *British Journal of Management*, *17*, S31-S48. doi: 10.1111/j.1467-8551.2006.00477
- Tosi, H., & Greckhamer, T. (2004). Culture and CEO compensation. *Organization Science*, *17*(6), 657-670. doi: 10.1287/orsc.1040.0099
- Tuch, C., & O'Sullivan, N. (2007). The impact of acquisitions on firm performance: A review of the evidence. *International Journal of Management Reviews*, *9*(2), 141-170. doi:10.1111/j.1468-2370.2007.00206.x
- Trompenaars, F. (1994). *Riding the waves of culture: Understanding diversity in global business*. Burr Ridge, IL: Irwin.
- Weber, Y., Belkin, T., & Tarba, S. (2011). Negotiation, cultural differences, and planning in mergers and acquisitions. *Journal of Transnational Management*, *16*, 107–115. doi:10.1080/15475778.2011.571640
- Weber, Y., & Drori, I. (2011). Integrating organizational and human behavior perspectives on mergers and acquisitions: Looking inside the black box. *International Studies of Management and Organization*, *41*(3), 76–95. doi:10.2753/IM00020-8825410305
- Weber, Y., Shenkar, O., & Raveh, A. (1996). National and corporate cultural fit in mergers /acquisitions: An exploratory study. *Management Science*, *42*(8), 1215-1227. Retrieved from: <https://www.jstor.org/stable/2634453>
- Weber, Y., & Tarba, S. (2012). Mergers and acquisitions process: the use of corporate culture analysis. *Cross Cultural Management: An International Journal*, *19*(3), 288-303.
- Wheelock, D. C., & Wilson, P. W. (2004). Consolidation in US banking: Which banks engage in mergers? *Review of Financial Economics*, *13*(1-2), 7–39. doi:10.1016/j.rfe.2003.09.001
- Zollo, M., & Singh, H. (2004). Deliberate learning in corporate acquisitions: Post-acquisition strategies and integration capability in U.S. bank mergers. *Strategic Management Journal*, *25*(13), 1233–1256. doi:10.1002/smj.426

## **ACCOUNTING FOR ENVIRONMENTAL CREDIT ASSETS AND OBLIGATIONS: HISTORY AND EMERGING GUIDANCE**

*Jesse Beeler*  
*Jonathan Panter*  
Millsaps College

### ***ABSTRACT***

While the topic of accounting for carbon and carbon credits is new, emerging over the last 25 years or so, issues surrounding accounting for remediation of environmental damage by businesses go back much further. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Superfund Amendments and Reauthorization Act (SASA) of 1986 are examples of early laws that govern the investigation and cleanup of contaminated air, water, and ground. These laws and the response to them caused the Financial Accounting Standards Board (FASB) to struggle to provide guidance on how to account for the expenses and liabilities associated with mandated environmental remediation (see Beeler 1997). Currently much of the focus relating to the environment has shifted from contaminated site remediation to the reduction of greenhouse gases in efforts to mitigate their warming effects on the planet's climate. Again, FASB and the International Accounting Standards Board (IASB) face finding ways to account for issues arising for the development of the new financial markets and instruments designed to facilitate the remediation of greenhouse gases. While the Kyoto Protocol lists six different greenhouse gases, it has become the convention to refer to these collectively as carbon. This paper briefly outlines the history of the measurement of carbon and the development of markets and protocols designed to facilitate the reduction of carbon. It also addresses the accounting issues that have arisen with the creation of new financial instruments, and outlines clarification that may be forthcoming from standard setters on how to account for these unique instruments.

Key Words: Carbon, Comprehensive Environmental Response, Compensation, and Liability Act, Superfund Amendments and Reauthorization Act, FASB, IASB

### **Background and History – Contextualizing Carbon**

In response to increasing concerns about global warming, scientists have identified seven greenhouse gases (GHGs) for which carbon reduction can be measured: carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (NO<sub>2</sub>), sulfur hexafluoride (SF<sub>6</sub>), perfluorocarbons (PFCs), nitrogen trifluoride (NF<sub>3</sub>), and hydrofluorocarbons (HFCs). For each of these gases, the global warming potential (GWP), as calculated by environmental scientists, is an expression of the atmospheric impact in terms of an equivalent amount of CO<sub>2</sub> over a particular time horizon. More specifically, but without wading into mathematical notation, these GWP expressions incorporate the radiative and absorptive behaviors of these gases benchmarked against those behaviors of CO<sub>2</sub>. As an example, using Table One below, one could state that one ton of methane is, as measured by the Sixth Assessment Report, twenty-seven times as effective as carbon dioxide at trapping heat (via

the absorption of radiation) over a 100-year period. That is, methane is more aggressively contributing to the greenhouse effect than an equal quantity of carbon dioxide. Environmental scientists refer to this ‘equal quantity’ as carbon dioxide equivalent and notate it as (tCO<sub>2e</sub>). The Intergovernmental Panel on Climate Change (IPCC) adjusts GWP values in successive Assessment Reports to reflect finer scientific understanding of these gases’ atmospheric behaviors.

Using these measurement techniques, the Kyoto Protocol developed models for carbon markets designed to reduce global warming greenhouse gases in the environment. Note that the IPCC’s definition and use of the term global warming potential differ from the way the Environmental Protection Agency (EPA) uses it; that agency thinks of potential in terms of the emissions generated by the production of something (EPA, 2025).

**Pre-Kyoto Protocol Markets**

A precursor to the current carbon markets was the American Sulfur Dioxide (Sox) and Nitrogen Oxides (NOx) markets. When SO<sub>2</sub> and NO<sub>2</sub> were posing hazardous impacts to public health and ecological integrity in the U.S., the Clean Air Act and subsequent amendments constructed a novel mechanism which allowed firms to pay others to offset their emissions increases through several trading programs (see, e.g., Beeler, 2018; Burtraw and Szembelan, 2009; Hansjurgens, 2011). The Kyoto Protocol drew upon these American innovations to devise three ‘flexible mechanisms’ in the hope of driving the trade of emission credits represented by financial instruments called credits, rights, or allowances. In 2005 the European Union (EU) created and implemented the European Union Emissions Trading Scheme.

Common chemical name or industrial designation	Chemical formula	Fourth Assessment Report (AR4)	Fifth Assessment Report (AR5)	Sixth Assessment Report (AR6)
Major Greenhouse Gases				
Carbon dioxide	CO <sub>2</sub>	1	1	1
Methane – non-fossil	CH <sub>4</sub>	25	28	27.0
Methane – fossil	CH <sub>4</sub>	N/A	30	29.8
Nitrous oxide	NO <sub>2</sub>	298	265	273
Nitrogen trifluoride	NF <sub>3</sub>	17,200	16,100	17,400
Sulfur hexafluoride	SF <sub>6</sub>	22,800	23,600	24,300

Table 1: IPCC Global Warming Potentials for a 100-year time horizon. Sources: IPCC (2008), IPCC (2014), IPCC (2023).

Graphic: Greenhouse Gas Protocol (2024), which also contains extended lists of HFCs, PFCs (pp. [24]).

### **Post-Kyoto Protocol Markets**

Three different approaches to the trading of emissions rights developed. They include: (1) Clean Development Mechanism which involves trading between a developed country and a developing country; (2) Joint Implementation which involves trading between one developed country and another developed country; and (3) International Emissions Trading (IET) which creates fungibility of Carbon Credits or Environmental Credits. (UNFCCC, 1997, pp. [11-12, 6-7, 15]).

There are two basic models for carbon credit markets - Compliance Markets and Voluntary Markets. In Compliance Markets (also called cap-and-trade markets) regulators place an aggregate GHG emissions cap over a geographical boundary and divide GHG emission rights among participating firms. Firms get allowances representing their share of the cap by volume. At the end of each period, they surrender allowances representing their actual emissions over the period. They must buy any shortfall of credits from others or can sell any surplus credits to others.

In *Voluntary Markets*, by contrast, there is no aggregate cap, and no obligation to surrender carbon credits. Under this model, businesses purchase credits to voluntarily 'offset' part or all of an entity's emissions. This is not to diminish the importance of Voluntary Markets. The lack of a regulatory burden that defines compliance markets has allowed voluntary markets to innovate and experiment with policy and methodology, with those results then informing compliance markets' practices.

Most carbon pricing schemes have developed in response to the Kyoto Protocol's requirements. This is true especially in the case of the European Union Emissions Trading System (EU ETS), which still stands as the most comprehensive and mature compliance carbon pricing scheme. Its formation was driven by the Kyoto Protocol's country-level emissions reductions targets (see European Commission, n.d.).

### **Issues Related to Accounting for Carbon and Carbon Credits**

The first issue concerns physical accounting for the development of emissions inventories and observance of changes in emission flows over time, over geographical or organizational boundaries, or because of projects, policy decisions, or actions. The second issue, which is the focus of this article, involves determining how to account for the financial instruments purporting to represent emissions.

### **Initial Financial Reporting**

The initial reporting of carbon credits in financial statements was accomplished primarily by providing non-financial information in disclosures related to corporate carbon targets. As the move toward corporate responsibility for addressing climate change accelerated and more companies became involved in carbon credit trading, the accounting profession grew concerned with how companies should report the financial instruments purporting to represent emission rights and obligations. Currently, companies may count acquired environmental credits as an inventory asset and often do so if the credit can be, and management expects it to be, traded on an active exchange. However, if a company acquires the credit to offset emissions in the future, the company accounts for the credit as an intangible asset. When accounted for in this manner the company must

determine if it should amortize the credit over time or charge the cost of the credit to expense currently. If the company chooses to amortize the credit, it must decide what amortization period to use. In either case the company must determine if the credit has suffered any impairment of value.

Members of the Accounting Profession have expressed concern with the lack of authoritative guidance in this area, the many measurement techniques currently being used, and the resulting implications for comparability of emissions data. The main questions that remain unanswered include how to classify emissions rights, how and when companies are to report environmental credits, and how to determine if those credits are assets, liabilities, revenues, or expenses. Additional uncertainty remains related to what measurement techniques are appropriate for valuing these environmental credits. As a result of FASB and IASB failures to provide effective guidance, firms have used different valuation, recognition, and presentation methods that produce information that is neither comparable nor consistent and has limited use for investors and creditors.

### **Incompleteness of Authoritative Guidance – Early FASB, IASB Efforts**

FASB's Emerging Issues Task Force made the first effort to provide guidance on accounting for carbon credits in 2003, but work halted over concerns that the proposed rules would have unwanted influence on other areas of accounting. The next year, the full FASB Board rejected the 2004 FASB draft Statement 153 (Exchanges of Nonmonetary Assets). Anticipating the European Union's adoption of the international emissions trading (IET) scheme, in 2004 the IASB developed three standards to provide guidance in accounting for Emission Rights. One of these standards was International Accounting Standard (IAS) 38 guidance which classified environmental credits as intangible assets. During this same time IASB promulgated IAS 20 which requires the grantee to treat any excess of fair value over value of allowances given by the government as grant income. Concurrently, IASB ruled that a company incurs liabilities as emissions occur (IAS 27). The IASB rescinded these standards in 2005 due to concerns of measurement and timing mismatches.

Beginning in early 2007 and continuing until late in 2010 FASB and IASB held joint meetings to address these issues. Disagreements remained over the treatment of emissions that exceeded the compliance cap a company was assigned, and balance sheet presentation. They reached agreement over treatment of voluntary market transactions and the Future Value measurement for both assets and liabilities. In early 2014 FASB and UASB abandoned the joint project on carbon credit accounting and until recently there has been almost complete silence from FASB on the issue.

In June of 2021, FASB issued an invitation to comment (ITC) in which they asked for input as to whether accounting related to environmental issues needed additional authoritative guidance. Members of the Accounting Profession who responded to the ITC recommended that, because of the increasing use of environmental credits by public firms, FASB should provide clear rules to guide the accounting for and reporting of environmental matters.

The response to this ITC prompted FASB to add a project to its May 2022 agenda that addressed the subject of accounting and reporting for issues related to environmental credits. Subsequently, in December of 2024, FASB issued an exposure draft (Topic 818) with a deadline of April 15, 2025, for comments on the issue.

### **Emerging Guidance**

#### Defining an Environmental Credit.

Under the proposed standard, FASB defines environmental credits as separately transferable enforceable rights to prevent, reduce, control, or reduce pollution. If adopted, the rule will affect all entities that acquire transferable environmental credits that the entity will use to settle obligations arising from regulatory compliance programs, or acquired with intention to sell or trade, or for credits obtained for compliance with voluntary carbon reduction schemes.

#### **Asset Treatment**

Under the proposed standard the acquiring entity will recognize the environmental credit as an asset when it is *probable* that the entity will use it in the future to settle an environmental obligation or to transfer credits to another entity in an exchange transaction. The entity will expense as incurred cost of all other environmental credits. Companies will value environmental credits at cost to acquire, except for credits given as a grant from a regulator, or internally generated credits which the firm will value at transaction costs. After acquisition, the acquiring entity will classify environmental credits as an asset valued according to management's intent. If the entity intends to use the credit to settle an environmental obligation in the future, it will value the credit on the balance sheet at cost with no impairment test required. If the entity is holding the credit for other than compliance, the firm will perform an impairment test on the credit at the end of each reporting period. If the fair value of the credit is less than the carrying value, the asset is impaired, and the entity will recognize an impairment loss in the period. The proposed standard does not allow reporting entities to report a reversal of impairment losses. However, management may choose an accounting policy for certain classes of noncompliant environmental credits, which makes them eligible for presentation using fair value with subsequent changes in fair value flowing through earnings.

#### **Liability Treatment.**

The proposed standard defines an environmental credit liability as an enforceable obligation related to environmental regulatory compliance programs aimed at pollution reduction. Obligations under voluntary programs do not meet the definition of an environmental credit liability.

Under this guideline, an environmental credit liability exists for the difference between the carrying value of the credits an entity holds and the fair value of unfunded difference of the credits it takes to settle the obligation. Reporting entities must recognize the environmental credit obligation in the period when events that create an environmental obligation occur. When the entity in possession of the environmental credits remits the credits to the regulator to settle the liabilities, the entity will take the credit and liability off the books.

#### **Financial Statement Presentation and Disclosure**

According to the Proposed Standard, reporting entities must present separately on the consolidated balance sheet Compliance Environmental Credit Assets and Liabilities. Additionally, firms are required by the Proposed Standard to provide disclosure for each interim and annual reporting period environmental credit holdings, cash paid for credits, revenues, gains and losses from the sale of those credits as well as any expenses from derecognition of credits that the company intends to use for noncompliance voluntary purposes. The standard also requires reporting entities to disclose

methods of acquisition of environmental credits and how the firm used the credits, as well as the judgments and methods used in their reporting of environmental credits.

### **Conclusion**

FASB is proposing an accounting standard designed to make accounting information relating to environmental credits possess the qualitative characteristics of understandability and comparability. FASB hopes to resolve fundamental issues of what these credits/liabilities represent and make clear demarcation between objects in compliance and voluntary settings. Responses to the exposure draft during the public comment period highlight opportunities for improvement to the proposed standard. For example, the Environmental Defense Fund suggests that environmental credits purchased for future offset of an obligation be accounted for as an intangible asset, while environmental credits generated internally be accounted for using an inventory model. Another suggestion, made by The Center for Environmental Accountability, proposes that only environmental credits acquired or created internally to provide compliance with federal or states laws be treated as assets (Sadovi, 2025).

Currently, the exact guidance provided by the proposed standard has not been determined. However, with the issuance of this standard, financial accounting and reporting for environmental credit offsets/liabilities should improve and provide financial statement users with a better understanding of the amount and nature of these assets/liabilities. It is important for regulators to learn from the experience of providing little to no guidance on this issue for over twenty years and in the future act proactively as new financial instruments develop, rather than waiting for problems to arise.

### **REFERENCES**

- Beeler, J., and Martin, J. (1997). The Need for Guidance in Accounting and Reporting for Environmental Issues. *Journal of Accounting and Finance Research*, Summer, 1997, Vol. 4, No. 2 pp.77-84.
- Beeler, J. and Panter, J. (2018). Green House Gases and Carbon Accounting. *International Journal of the Academic Business World*, Fall 2018, Vol. 12, Issue. 2: pp.59-66.
- Burtraw, D. and Szambelan, S.J. (2009). U.S. emissions trading for SO<sub>2</sub> NO<sub>x</sub>. Resources for the Future. Discussion Paper 09-40.
- Financial Accounting Standards Board (FASB). (2024). Proposed Accounting Standards Update: Environmental Credits and Environmental Credit Obligations Topic 818. [https://www.fasb.org/page/ShowPdf?path=Proposed%20ASU%E2%80%94Environmental%20Credits%20and%20Environmental%20Credit%20Obligations%20\(Topic%20818\).pdf&title=Proposed%20Accounting%20Standards%20Update%E2%80%94Environmental%20Credits%20and%20Environmental%20Credit%20Obligations%20](https://www.fasb.org/page/ShowPdf?path=Proposed%20ASU%E2%80%94Environmental%20Credits%20and%20Environmental%20Credit%20Obligations%20(Topic%20818).pdf&title=Proposed%20Accounting%20Standards%20Update%E2%80%94Environmental%20Credits%20and%20Environmental%20Credit%20Obligations%20).

- Environmental Protection Agency (EPA). (2025) Understanding Global Warming Potentials Retrieved: <https://www.epa.gov/ghgemissions/understanding-global-warmingpotentials#ISOdefinition>.
- European Commission. (n.d.). 'Development of EU ETS (2005 – 2020). Available from: [https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/development-eu-ets-20052020\\_en](https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/development-eu-ets-20052020_en).
- Glenk, Gunther. (2025). Corporate Carbon Accounting: Current Practices and Opportunities for Research. TRR 266 Accounting for Transparency Working Paper Series No. 177. <http://dx.doi.org/10.2139/ssrn.5150867>.
- Greenhouse Gas Protocol. (2024). 'IPCC Global Warming Potential Values.' Version No. 2.0. <https://ghgprotocol.org/sites/default/files/2024-08/Global-Warming-PotentialValues%20%28August%202024%29.pdf>.
- Hansjurgens, B. (2011). Markets for SO<sub>2</sub> and NO<sub>x</sub> – what can we learn for carbon trading? *Climate Change*, 2:635-646.
- Hazaea SA, Al-Matari EM, Alosaimi MH, Farhan NHS, Abubakar A and Zhu J. (2023), Past, present, and future of carbon accounting: Insights from scholarly research. *Front. Energy Res.* 10:958362. Available from: Doi: 10.3389/fenrg.2022.958362.
- Intergovernmental Panel on Climate Change (IPCC). 2007: *Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, Pachauri, R.K and Reisinger, A. (eds.)]. IPCC, Geneva, Switzerland, 104 pp.
- Intergovernmental Panel on Climate Change (IPCC). 2014: *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, R.K. Pachauri, and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp.
- Intergovernmental Panel on Climate Change (IPCC). 2023: *Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Core Writing Team, H. Lee, and J. Romero (eds.)]. IPCC, Geneva, Switzerland, 184 pp.
- Sadovi, Maura Webber. (2025). 'FASB's draft rules could harm environmental credit markets: Environmental Defense Fund.' <https://www.esgdiver.com/news/fasb-draft-rules-harm-environmental-credit-markets-edf/746753/>.

Beeler and Panter

United Nations Framework Convention on Climate Change (UNFCCC). (1997). Kyoto Protocol. <https://unfccc.int/resource/docs/convkp/kpeng.pdf>.

# **THE EXPANSION OF MOBILE BANKING-BASED FINTECH AND ITS IMPACT ON FINANCIAL LITERACY AND FINANCIAL SERVICES ACCESS FOR UNBANKED AND UNDERBANKED MINORITY HOUSEHOLDS IN THE UNITED STATES (2019 - 2024)**

*Lauryn Ramme*  
*Stacy Boyer-Davis*  
*Hunter Uhlbeck*

Northern Michigan University

## ***ABSTRACT***

In the United States, minority communities have faced large amounts of bank closures, especially following the Great Recession (Faber & Friedline, 2020). These individuals are already more likely to be unbanked (or underbanked) than their White counterparts (Barcellos & Zamarro, 2021). There is existing literature that discusses mobile banking as a vessel for financial inclusion and financial literacy; however, these studies primarily focus on developing economies (Chen et al., 2024; Ezzahid & Elouaourti, 2021). The main objective of this work is to analyze how mobile banking-based fintech has affected financial literacy and financial inclusion among U.S. minority households in the last five years. This narrative review incorporates sources published from 2020 to 2025, selected based on their discussions of the intersection of mobile banking, race, and fintech. This review finds that while mobile banking-based fintech improves access and convenience for some minority households, structural distrust, digital literacy gaps, and persistent algorithmic bias limit its capacity to achieve broad financial inclusion.

Key Words: Mobile banking; Fintech; Financial inclusion; Race.

## **INTRODUCTION**

In the U.S., access to financial services continues to be limited for many groups. In ethnic minority populations, this issue is significant. Banks are less likely to open branches in communities of color, making it difficult for these individuals to obtain their assistance (Faber & Friedline, 2020). The greater physical distance between branches adds another burden to those who are interested in doing so.

The lack of banks in communities of color has led to alternative financial services (AFS) becoming a substitute for traditional bank accounts (Faber & Friedline, 2020). These products are often predatory, and unnecessarily increase the cost of borrowing and banking. They prevent users from establishing a credit history and becoming familiar with other aspects of finance. In this way, AFS are not productive in developing useful financial skills.

Financial literacy refers to one's ability to use their judgment and understanding to make suitable monetary decisions. It involves both the amount of knowledge one has, and their proficiency in its application (Anwarul Islam & Saifuddin Khan, 2024). When individuals solely utilize AFS, they

are not provided with opportunities to gain familiarity with traditional financial institutions. This places them at a disadvantage when they seek these services in the future.

Minority populations are much more likely to use AFS than Whites, primarily due to their increased availability in neighborhoods of color (Barcellos & Zamarro, 2021). The combination of the lack of physical banks and the influx of AFS places another burden onto these communities. Members struggle to access traditional financial institutions, and must pay extra to make use of the options that do exist. In many cases, they remain unbanked.

## **THE PROMINENCE OF UNBANKED AND UNDERBANKED STATUS IN MINORITY COMMUNITIES**

The term ‘unbanked’ represents individuals who do not have a checking or savings account. Frequently forgotten are the underbanked, or individuals who rely on traditional bank accounts in tandem with AFS, such as payday loans, auto-title loans, and check cashing services (Chen & Friedline, 2022). In 2023, 5.6 million U.S. households were unbanked, with 19 million more being classified as underbanked (FDIC, 2023). The majority were members of minority groups.

It is estimated that up to half of unbanked individuals live in poverty (Creamer & Warren, 2024). This status compounds their struggles, delaying the receipt of necessary government payments and leaving their funds uninsured. During the COVID-19 pandemic, those without bank accounts experienced delayed receipts of stimulus payments, a demonstration of the issues that come with this status (Chen & Friedline, 2022). Though this situation exemplifies the hardships faced by these individuals, the underbanked continue to struggle as well.

Along with being unbanked, minority groups are more likely to be underserved by financial services providers (Chen & Friedline, 2022). When banks or credit unions fail to adequately address their needs, users supplement with AFS, increasing the costs of financial activities. Exclusion from these services does not always mean that they do not have access to them at all, causing their struggles to go unnoticed by academics and policymakers.

This is troubling, as those with underbanked status are often members of groups that are most vulnerable to financial hardships. Individuals who experience income volatility, as well as those who receive welfare payments, are more likely to be underbanked (Chen & Friedline, 2022). AFS use may be perceived as necessary to ensure financial stability. Though less research has been conducted regarding these consumers specifically, methods of facilitating financial services access have been analyzed at length.

Financial inclusion is a topic widely studied in the literature. As a whole, it refers to methods of increasing the number of underserved individuals participating in necessary financial services. For the unbanked, it includes bridging the gap between users and institutions, improving opportunities to create checking and savings accounts and facilitating formal borrowing. Research on the underbanked seeks to determine ways in which this population can be better supported by their current providers.

## FINANCIAL INCLUSION AND FINTECH

Financial technology, also known as fintech, has been introduced as a vessel for increased financial inclusion and literacy in minority groups. Mobile banking-based fintech allows users to conduct their banking transactions from their cellular devices, forgoing the need to attend a physical branch. Account information can be viewed anywhere, a benefit for those budgeting with variances in monthly income. This ease-of-access also promotes frequent use, encouraging consumers to monitor their situation and become confident in their fiscal abilities.

Along with creating a more convenient process, mobile banking-based fintech has been a proposed solution to other discriminatory practices associated with conducting transactions in-person; as individuals do not interact with employees face-to-face, many unconscious biases can be avoided. Due to their mobile nature, fintech providers also do not vary their lending practices based on geographic areas. This lack of physical branches may assist with eliminating certain systemic inequalities that come with banking as a person of color.

It is more expensive to be banked in minority communities (Faber & Friedline, 2020). These locations, on average, require higher minimum balances to open accounts, an issue frequently cited as a reason behind individuals maintaining unbanked status (Chen & Friedline, 2022). With many fintech-based mobile banking firms offering accounts with no minimum balances, this barrier ceases to exist (Collins et al., 2023). Within the last five years, more of these companies have emerged, resulting in a positive outlook for consumers that struggle to meet these requirements.

Despite the rapid expansion of mobile banking-based fintech, its effectiveness in addressing financial inclusion and literacy among U.S. minority communities remains contested. Digital services access is far from uniform throughout the U.S.; the opportunity to reach the internet is not afforded to all. Mobile applications also require a degree of digital literacy to be used properly, something that may pose a problem for those who already struggle to connect to the technological world. Furthermore, mobile banking fails to entice individuals who are already mistrustful of traditional financial institutions.

While many have theorized that these applications can reduce discriminatory practices in financial services, concerns have been raised that current patterns of injustice persist within them. These include unfair lending practices and fees that remain high, even without being specific to a certain physical location (Bartlett et al., 2022; Hauptert, 2022; Liu & Liang, 2025). The causes behind overreliance on AFS, a long-standing systemic issue, are far from uniform, and may vary from household to household. Numerous complex factors intertwine to create a problem that mobile banking alone may struggle to solve.

Though prior studies have examined fintech in relation to financial services access, few studies have focused primarily on minority communities, and none entirely on mobile banking. Much of the literature focuses on emerging markets, whose populations have needs that do not align with those living in the U.S. (Chen et al., 2024; Ezzahid & Elouaourti, 2021). This review synthesizes recent literature to evaluate whether mobile banking meaningfully reduces exclusion, or whether longstanding structural barriers persist in digital form. A focus on the last five years ensures that the findings of this review are relevant for current policymakers and individuals. This work contributes to the existing literature by analyzing mobile banking as a vessel for financial inclusion and literacy for minority communities in the U.S. from 2019 to 2024.

This work is structured as a narrative literature review. The inclusion criteria for all references required their publication to be from 2020 to 2025; keywords used in the search process included financial inclusion, fintech, mobile banking, and race. The vast majority of works have a geographic focus on the U.S., except when noted in the review. Most discuss minority populations broadly, instead of focusing specifically on Black, Hispanic, or Asian individuals; findings that are narrowed to a particular group have been outlined. Sources have been synthesized thematically, and then comparatively evaluated to analyze similarities and divergences across findings.

Fintech-based mobile banking is the primary focus of this review. This term refers to products offering deposit accounts, balance checking, and transfers; in addition to these common features, many fintech firms offer lending services, which have been analyzed alongside these conventional offerings. These services are compared to those provided by traditional financial institutions, including via their own online banking platforms. As fintech is an emerging industry, patterns of use involving broader fintech products, such as mobile payment systems, are discussed as well. Though they retain their differences, these services are collectively evaluated to assess the role of fintech in facilitating banking access.

## **MOBILE BANKING AND THE VOLUNTARY UNBANKED**

There are a multitude of factors that can inhibit access to banking. Frequently discussed problems are individual struggles to reach their banks due to time constraints, or lack of proper transportation. Though these issues abound, unbanked status is not always involuntary. Many consumers are unbanked by choice, presenting a challenge for facilitating mobile banking adoption.

Hayashi et al. (2024) observed that members of minority groups were more likely to have always been unbanked, and be uninterested in opening a bank account in the future. Distrust of financial institutions and privacy concerns were among the most common reasons mentioned behind their choice. A study by Nguyen et al. (2022) demonstrated that trust in formal monetary institutions positively influences consumer adoption of mobile banking. These two facts remain incongruent, as if individuals already struggle to trust their providers, they are unlikely to be moved by their mobile counterparts.

Even when users are amenable to working with fintech products, risks surrounding the technology still hinder their adoption. One study regarding mobile payment services, another common fintech product, discovered that consumers perceive online transactions as being less secure than those conducted in-person (Laksamana et al., 2023). The privacy concerns currently involved with traditional banking could be compounded in the mobile space, as the possibility of data breaches and hacking cannot be eliminated. Moreover, many unbanked minority individuals have issues regarding bank transparency, a fact that could continue to be unchanged with digital platforms.

After conducting interviews regarding banking with low-income parents, the majority of which were members of minority groups, Collins et al. (2023) noted that lack of fee transparency was a significant reason behind their distrust of banks. Overdraft fees were perceived to be unexpected and cruel, often serving to punish them after their situation had devolved. Many of these encounters led participants to close their accounts. Pending transactions were a particularly sore issue; if fintech companies are to reach these individuals, they must overcome these problems involved in traditional banking.

Some mobile banking services have begun to offer solutions to these concerns. The fintech bank Chime, which does not charge overdraft or account opening fees, was spoken highly of by many of the parents in the study (Collins et al., 2023). This study was limited by its sample size, including only 80 parents. In spite of this, it is valuable for sharing perspectives directly from affected individuals.

Policymakers should ensure that, when addressing barriers to financial services access, they determine the issues that are at the center of voluntarily being unbanked. Using Federal Deposit Insurance Corporation (FDIC) survey data, Hayashi et al. (2024) discovered that difficulty accessing bank locations was among the least cited reasons for being unbanked. These findings suggest that policies focused solely on service availability fail to address the deeper relational and trust-based barriers that shape financial behavior.

Fintech-based mobile banking should present new opportunities for users, instead of simply providing an online option for traditional institutions. Continuing with old patterns not only fails to differentiate fintech companies from other banks, but also may inhibit consumer adoption. Those who have had negative experiences with the industry are unlikely to embrace applications that cause them more of the same issues.

The privacy and transparency concerns that have materialized in the literature denote distrust as a mechanism that continues the nonadoption of mobile banking-based fintech. While these feelings range from being related to institutions to new technologies, these factors converge to create a large barrier to the adoption of these services. Institutional distrust is a nuanced issue that stems from a wide range of past experiences; it cannot be overcome in a simple manner. In contrast, technological fears can be easier to mitigate, especially when consumers are familiar with digital products.

## **ACCESS AND DIGITAL LITERACY**

Unsurprisingly, digital literacy has been observed to be a mediating variable between fintech use and financial services access (Amnas et al., 2024). For technology-based monetary products to be used effectively, consumers must have an understanding of how to use digital platforms. While fintech use can assist with developing this skill, it cannot be honed if individuals do not have the necessary components.

Low-income minority communities have significantly lower rates of internet services access than other neighborhoods (Friedline & Chen, 2021). To facilitate activities such as mobile banking, they may need to incur extra charges for faster connection and unlimited cellular data. While fintech applications remove the transportation costs associated with physical bank branches, it is important to note that they require initial investment in digital services to use.

Consistent with prior literature, Anwarul Islam and Saifuddin Khan (2024) determined that greater levels of digital literacy were associated with higher rates of fintech adoption. Notably, self-efficacy was an important part in this process. This presents a problem for older populations, as they may have little objective digital literacy and could lack the self-confidence to attempt to use fintech services. When encouraging mobile banking, policymakers should consider the digital literacy skills required to facilitate its adoption.

## **RISK, FRAUD, AND VULNERABILITY**

These skills are also necessary to navigate the potential dangers of mobile banking. Interviewees with Collins et al. (2023) mentioned past experiences with scams having moved them away from conducting their monetary transactions digitally. If individuals adopt mobile banking without any information on its pitfalls, they could be at risk of losing savings and sensitive information to bad actors. When recommending these services to participants, individuals should consider disseminating warnings and precautions.

This is especially critical in the fiscal realm, as credit and debit card fraud are the most common type of online scam reported by Americans (Gottfried et al., 2025). Minority adults appear to experience further negative effects when this occurs; they are more likely to report that they have been victims of multiple types of online fraud, and that they lost money from the encounter. There is the possibility that Whites do not frequently disclose when this happens to them, and that minorities are not sought out specifically. Regardless, this information is concerning.

The elderly, regardless of ethnicity, are frequently the target of online scams. As they are often less familiar with digital services, it is easy for them to become victims of fraud. Unbanked older adults are also more likely to be mistrustful of banks (Grable et al., 2023). These two factors combine to create significant impediments to mobile banking adoption to these individuals.

These factors pose more complex problems for these community members, as those who are affected would benefit the most from such services. Older adults of color live in the same neighborhoods where physical bank branches are sparse, but face added challenges related to mobility and access to transportation. Fintech-based mobile banking may be enough to clear these issues, but it is not helpful if the affected populations cannot use it. Digital literacy initiatives should be implemented, accounting for the needs of different demographics.

Components such as these can worsen other fiscal behaviors. A lack of digital knowledge, combined with a distrust of traditional financial institutions, can lead to continued reliance on AFS. This may persist even when mobile banking, fintech-based or otherwise, is presented as an option, due to the many individuals who are voluntarily unbanked. Mobile banking can also create a perceived threat to financial stability.

For individuals living paycheck-to-paycheck, the location of their cash at any time is critical. Being without funds could mean missed bills and suspended services, with many low-income families engaging in careful, complex balancing acts to ensure their payments are settled (Collins et al., 2023). Any loss of internet access means that they cannot view their money, which, due to budgeting complexity, could create a costly situation. The lack of physical bank branches in communities of color intensifies this effect. Due to this, mobile banking-based fintech could be viewed as riskier than AFS.

## **MOBILE BANKING AND ALTERNATIVE FINANCIAL SERVICES (AFS)**

Consumers may be less likely to use an unfamiliar new service, especially when AFS has been factored into their financial behavior. Many users are aware of the drawbacks, but believe that the

benefits outweigh any negative consequences. Depending on their priorities, mobile banking may not be sufficient to replace AFS. A major one is perceived autonomy compared to traditional financial institutions.

Individuals may feel a greater sense of control with AFS. Low-income populations may have employers that do not give them an option for direct deposit of paychecks; this could result in waiting periods before they can access their funds (Collins et al., 2023). Check-cashing services have arisen as a solution, but mobile banking cannot act as a substitute for these products. While it does allow them to view the status of their funds whenever they have an internet connection, it does not necessarily provide them faster.

Existing studies are limited in that they have not explored the effect of local bank access on AFS use in minority communities (Barcellos & Zamarro, 2021). It is possible that the lack of physical branches is a significant factor regarding the elevated use in these neighborhoods. If this is the case, mobile banking-based fintech would be incredibly beneficial. However, this does not align with many emerging reasons behind AFS use.

The persistence of individuals in using these products appears to be a strategic choice, caused by the constraints imposed on minority communities. The exclusionary aspect of AFS remains, but does not challenge the idea that consumers are choosing these services because they continue to be the best option, not the only one. Current mobile banking discussions fail to incorporate this nuance. Further research should be conducted to narrow the reasons behind AFS use, to ensure that the correct causes are being addressed.

Financial behavior stems from individuals' unique situations and experiences. These findings illustrate that, as increased AFS use appears to be perpetuated by systemic barriers, mobile banking does not suffice as a solution. Policymakers must work to improve these conditions, such as delayed wage receipt from employers. Though mobile banking cannot alleviate these issues, it may assist with other discriminatory aspects.

## **MOBILE BANKING AND DISCRIMINATION MITIGATION**

Unfair lending practices based on racial discrimination have been well-documented by existing literature. Black and Hispanic borrowers have been observed to receive higher interest rates and be approved less often than White borrowers, even with equal financial histories and creditworthiness (Liu & Liang, 2025). Mobile banking-based fintech has been proposed as a way to mitigate this issue, as the lack of in-person communication could prevent unconscious bias from emerging. Additionally, these services can help minority borrowers overcome other common hurdles that prevent banking access.

Fintech lenders often have less strict credit requirements compared to traditional institutions (Liu & Liang, 2025). This allows users to begin building a credit history, an important aspect of financial wellbeing; many of them might be turned away by other institutions, causing the problem to fester. In this way, a significant barrier to loan access is lifted. Even so, another practice continues to impede the building of a credit history.

Informal borrowing, or receiving loans from family or other members of one's support network, is more common in communities of color, particularly with women (Long, 2020). This not only

prevents them from creating relationships with monetary institutions, but also places further financial strain on the surrounding areas. Increased mobile banking use could decrease the frequency of this behavior, therefore assisting with wealth accumulation in these neighborhoods.

Minority populations have been observed to use mobile payments, another form of fintech, at greater rates than Whites (Nam et al., 2023). One proposed theory is that it is due to these applications not requiring users to disclose their credit history or legal status. Thus, fintech services appear, broadly, to be more accessible. While traditional financial institutions may still impose these restrictions on users, fintech-based mobile banking may be open to those who cannot use these services, such as undocumented individuals.

As this form of banking is conducted digitally, it could assist with eliminating aspects of in-person discrimination. Employees of financial institutions may have biases regarding applicants' past situations. Bryan and Collins (2024) found that formerly incarcerated individuals had higher rates of unbanked status following their release. Black and Hispanic individuals are more likely than Whites to be members of this group, further compounding their financial exclusion.

### **MOBILE BANKING: FAR FROM A PANACEA**

While mobile banking-based fintech can help individuals overcome these obstacles, it retains its own set of drawbacks. Due to the lower credit requirements, these firms, on average, impose higher fees and rates, making them more expensive than traditional banks (Liu & Liang, 2025). These costs accumulate over time, reducing the affordability of their services. Even if individuals can handle this strain, fintech lending is not a perfect solution; many of the biases present in traditional institutions appear to persist in this area.

Though fintech is an emerging field, numerous studies have investigated the fair lending practices of these firms. In a study of GSE and FHA mortgage loans, Bartlett et al. (2022) observed that fintech lenders continued to perpetuate these issues, with minority borrowers receiving higher rates than Whites. They noted that algorithmic bias appeared to be present, causing pricing discrimination based on the available data. Even when there is no physical aspect of the loan receival process, systemic biases persist.

In Black and Hispanic metropolitan areas, fintech firms have been found to engage in subprime lending practices, mirroring the patterns of discrimination observed in traditional financial institutions (Hauptert, 2022). While researchers noted that they did so less than these conventional establishments, borrowers were still affected. Given that algorithms have access to demographic data in their decision-making process, biases may continue to be prevalent.

Despite this, fintech firms have made strides toward equitable lending. Liu and Liang (2025) noted loan approval odds increased for minority borrowers who used fintech services compared to traditional banks. However, they have not been able to eliminate old patterns of discrimination entirely. Even if these issues are less prevalent, they persist within these institutions; the biases that have afflicted the banking industry for decades appear to follow mobile banking as well.

## **ALGORITHMIC INEQUALITY**

It has been noted that algorithms may perpetuate inequality in ways that are not easily discovered. In their analysis of the accuracy of race-prediction methods, Greenwald et al. (2024) found that Bayesian Improved Surname Geocoding (BISG), a prominent algorithm, frequently produced incorrect results; in many cases, false positives occurred, with White applicants being identified as minorities. This led to financial institutions appearing to be more in compliance with regulations than they were in reality.

Artificial intelligence, another proposed way to mitigate discrimination, retains similar problems. Fuster et al. (2022) noted that, even when applicant race was a restricted characteristic in mortgage lending, machine learning algorithms presented more favorable outcomes to Whites. Bias appears to remain entrenched in these systems, even if it does not initially seem to be. This indicates that reliance on flawed processes might mask, rather than correct, discriminatory outcomes.

Regulators and financial institutions alike should work to address this issue. The prominence of algorithms such as BISG could lead to a significant number of minority borrowers being left behind, without any awareness from lenders. This demonstrates a wider problem with technological solutions to discrimination: algorithms are not perfect. A lack of a human component does not mean that unfair practices cannot occur.

These drawbacks are unlikely to be mitigated by other factors, such as users' financial literacy. Nevertheless, this prior knowledge has emerged as a relevant aspect of the mobile banking-based fintech discussion. The level of proficiency individuals require to successfully adopt mobile banking remains uncertain. The existing literature has explored this intersection of past fiscal experience and mobile banking use.

## **INITIAL FINANCIAL LITERACY AND MOBILE BANKING**

Contrary to expectations, in the U.S., stronger financial literacy has been associated with less mobile banking use (Nam et al., 2023; Sinha et al., 2025; Zhang & Fan, 2024). This indicates that those with higher levels of financial education may be mistrustful of these services, and prefer to do their banking with traditional institutions. Notably, in global studies, the opposite has been observed (AlSuwaidi & Mertzanis, 2024; Anwarul Islam & Saifuddin Khan, 2024). Minority communities, which may include immigrant individuals, could have different responses than the wider population of the U.S.

The existing literature has not yet investigated how these neighborhoods specifically may be affected. The lack of trust that unbanked and underbanked individuals have with conventional institutions could prevent them from seeking their services, even if they do have great familiarity with financial concepts. This could indicate that stronger fiscal knowledge may not have the same effect as with other groups.

Similarly, the attitudes of those who have recently arrived in the U.S. may align more closely with global findings. Future studies should delve into these nuances and their potential impact on the relationship between initial financial literacy and mobile banking adoption. Though additional

research is necessary in this area, past experiences with monetary endeavors are useful in ensuring effective mobile banking adoption.

Greater understanding also assists individuals with choosing the best mobile banking products. Policymakers have raised concerns about the availability of FDIC insurance for many fintech applications, as they are not offered the same protections as traditional banks (Mason, 2024). Following the 2024 collapse of Synapse Financial Technologies, consumers were left with frozen funds after the company's recordkeeping was not sufficient for FDIC involvement. This situation underscores the risks that come with choosing a mobile banking provider. Not all services are created equal; proper vetting of firms is necessary, just as with traditional banking.

In order to effectively evaluate potential fintech companies, consumers must have some background with financial services. As a result, mobile banking may not be ideal for individuals with a limited monetary understanding. Researchers should consider searching for entry-level pathways of financial inclusion, to assist individuals with both building and improving financial literacy.

## **MOBILE BANKING ADOPTION AND CONTINUED USE**

Many individuals continue to face barriers that prevent them from being the ideal candidates for mobile banking adoption. Despite this, for most members of minority communities, it is a viable option. To ensure that these services can be easily accessed, aspects of successful adoption must be analyzed. Social influence has materialized as a significant factor, with Barcellos and Zamarro (2021) proposing that prominence of banked status within minority communities is a significant factor in determining whether an individual themselves is banked.

Arruda Filho et al. (2022) analyzed social influence in mobile banking, observing its impact on individuals' adoption of these services, particularly in areas where physical bank branches are scarce. They discovered that social networks helped to indirectly support mobile banking adoption. Individuals were hesitant to use these services, unsure of the amount of utility they would receive; community encouragement was instrumental in overcoming this hurdle. When users are unfamiliar with a product or service, observing adoption by members of their social networks is invaluable in gaining their support.

It must be noted that this study is limited by the geographic location in which it was conducted. The researchers focused on the Brazilian Amazon region, which restricts its applicability to the U.S. (Arruda Filho et al., 2022). Despite this, similarities exist between these two areas. Related to financial behavior, the role of support networks is significant in minority communities (Long, 2020).

In these neighborhoods, where households often assist each other with financial needs, the effects of social influence could be more pronounced (Long, 2020). Individuals tend to follow the fiscal behavior of others, especially concerning trust in institutions (Barcellos & Zamarro, 2021). An uptick in mobile banking use by valued community members could lead to widespread adoption of these services. To increase mobile banking use, policymakers should consider a community-wide focus, instead of prioritizing individual encouragement.

To receive the benefits of mobile banking, users must continue to employ the product past the initial adoption phase. Consumers are more likely to do so when applications are simple to navigate, keep their information private, and have a strong organizational reputation (Che et al., 2023). Previous experiences with the service are also important in maintaining trust. This underscores the need for quality in mobile banking platforms.

Ease-of-use has been a highlight of fintech-based mobile banking products (Collins et al., 2023). As these firms are relatively new, they must compete based on the functional aspects of their applications, compared to traditional lenders who can rely on organizational reputation. Established financial institutions remain aware of this; to compete, many have invested in their own online banking systems (Nguyen et al., 2022). Mobile banking can be a vessel for financial inclusion and literacy, but not if consumers are unable to navigate the platforms on the market; to encourage the adoption of mobile banking products, firms should ensure that their applications are usable to the average consumer.

## CONCLUSION

Mobile banking is able to assist with numerous exclusionary financial aspects affecting minority communities. It transcends the need for physical bank branches and eliminates discrimination that occurs face-to-face. It allows users to access their bank account data at all times, giving them more familiarity with monetary transactions and increasing fiscal acumen. Yet, no new service is without its faults, and mobile banking is no exception.

Many of the primary reasons behind users' unbanked status remain unaddressed by these products. A lack of a bank account signals underlying issues, ranging from negative past experiences to unfamiliarity with financial services. Until these problems are mitigated or solved entirely, a number of consumers will continue to avoid financial services. These issues are too complex to be overcome by fintech alone.

In a similar vein, mobile banking services are commonly geared toward individuals who already have trust and interest in traditional financial institutions; this excludes a crucial portion of the unbanked. In this way, mobile banking-based fintech is only ideal for the most willing participants. It is necessary for further research to be conducted to discover ways to instill confidence in these services. To better reach these individuals, researchers should analyze the reasons behind banking distrust and how mobile banking can be adapted to mitigate them.

Financial inclusion involves granting all people access to financial services, not only those who have prior knowledge. Along with determining avenues to overcome banking distrust, future research should determine the role of initial familiarity with financial systems in utilizing mobile banking, perhaps in combination with digital literacy. The digital landscape adds new challenges to the use of these services. Additional studies should focus on these factors together.

While the impact of digital literacy on mobile banking has been studied in previous literature, little research has been conducted on its necessity in avoiding online scams. Mobile banking can be an incredibly valuable tool in improving access to financial services, but for populations that lack digital literacy, it could leave them vulnerable to dangers. These applications should be promoted in tandem with digital literacy initiatives. However, they should not be lauded as platforms that are entirely free from discrimination.

Policymakers should consider addressing the systemic inequalities that continue to persist in fintech-based mobile banking. While discriminatory practices in banking have been widely studied, little attention has been granted to the inequalities that exist in these newer products. To ensure that all individuals are treated fairly when conducting financial transactions, regulators should begin to analyze the discriminatory practices that are currently being observed. The firms behind these services should take this criticism seriously, and ensure that their products are appropriate for all users.

The financial inclusion of minority communities in the U.S. is a topic that must be continuously researched and studied. Mobile banking-based fintech is only one proposed solution. The drawbacks of this practice could be addressed by other fintech products, such as mobile payments or robo-advisors. New technologies may offer more avenues for financial services access.

Nonetheless, this topic cannot be solved by only one method. Input from minority communities would benefit researchers in determining the best paths forward. Mobile banking-based fintech holds promise as one component of financial inclusion, but without parallel efforts to address trust, literacy, and systemic bias, its impact will remain uneven. To advance financial inclusion and literacy via mobile banking-based fintech, a broad, varied approach is necessary.

## **POLICY IMPLICATIONS**

The findings of this review have important implications for policymakers. The literature has outlined transparency in banking as a key concern for individuals. Despite fintech firms demonstrating improvement in this area, traditional financial institutions fail to meet consumer expectations. Regulations should be implemented to improve fee transparency, and disclosure of such costs should be required.

Regulators also must take notice of fintech firms and work to offer them the protections afforded to conventional banks. These companies continue to exist in a gray area regarding FDIC insurance (Mason, 2024). While the burden is on fintech platforms to communicate their status to consumers, this gap needs to be addressed by policymakers, particularly as this software becomes adopted by more individuals. Likewise, their attention should be directed to the technology that powers these systems.

Policymakers should implement fair lending auditing standards for algorithmic systems. Evidence suggests that the flaws of current methods may go unnoticed (Greenwald et al., 2024; Fuster et al., 2022). Compliance audits should be conducted to ensure that these standards are effective in their efforts to reduce discrimination.

## **LIMITATIONS AND OPPORTUNITIES FOR FUTURE RESEARCH**

As an emerging industry, mobile banking-based fintech has complex issues that require further research to fully understand. While it has clear benefits for financial inclusion and literacy in minority communities, there are nuances surrounding its potential implementation. This topic is intricate, and this paper offers only one perspective. This review provides opportunities for future studies to be conducted, adding to the existing literature.

Initial financial literacy was a notable variable that emerged in this analysis. While studies have analyzed mobile banking as a mechanism to increase familiarity with financial services, few have documented the level of beginning knowledge required to facilitate its adoption. Future studies are necessary to determine the amount of fiscal capability required to utilize mobile banking effectively, along with ways to augment the applications so that financially illiterate persons can be reached. A study focusing primarily on these individuals would be beneficial to the existing literature.

The relationship between digital literacy and fintech adoption has been studied in prior works. Still, the role of technological understanding in preventing fintech-based fraud has not been investigated. Minority groups have a higher likelihood of being victims of online fraud; though this fact has been studied, there is little research discussing why this may be the case (Gottfried et al., 2025). Further studies should be conducted to determine why this gap exists, and how it can be mitigated.

This review is limited in scope. Minority communities have been broadly analyzed, not accounting for differences between Black, Hispanic, or Asian individuals. These groups may have different needs, prior knowledge, and experiences that could affect how they approach mobile banking; the research that follows should delve into the unique factors that affect them in alternate ways. Moreover, an expansion in geographical regions would be highly beneficial to the existing literature.

This analysis focuses on individuals in the U.S. While mobile banking-based fintech has been examined in developing countries, particularly in Asia and Africa, other Western countries have not been included in these studies. Future researchers could analyze minority communities in places such as Canada or the United Kingdom. The focus of this research could also be broadened to focus on the implementation of mobile banking-based fintech in these areas in general.

## ANNOTATED REFERENCES

- AlSuwaidi, R. A., & Mertzanis, C. (2024). Financial literacy and FinTech market growth around the world. *International Review of Financial Analysis*, 95, 103481.  
<https://doi.org/10.1016/j.irfa.2024.103481>
- Amnas, M. B., Selvam, M., & Parayitam, S. (2024). Fintech and financial inclusion: Exploring the mediating role of digital financial literacy and the moderating influence of perceived regulatory support. *Journal of Risk and Financial Management*, 17(3), 108.  
<https://doi.org/10.3390/jrfm17030108>

- Anwarul Islam, K., & Saifuddin Khan, M. (2024). The role of financial literacy, digital literacy, and financial self-efficacy in FinTech adoption. *Investment Management & Financial Innovations*, 21(2), 370–380.  
[https://doi.org/10.21511/imfi.21\(2\).2024.30](https://doi.org/10.21511/imfi.21(2).2024.30)
- Arruda Filho, E. J. M., Nogueira, A. C. L., & Costa, E. M. S. D. (2022). Social influence effect on consumers' intention to adopt mobile banking services. *Information Systems Management*, 39(3), 269–285.  
<https://doi.org/10.1080/10580530.2021.1965678>
- Barcellos, S. H., & Zamarro, G. (2021). Unbanked status and use of alternative financial services among minority populations. *Journal of Pension Economics and Finance*, 20(4), 468–481.  
<https://doi.org/10.1017/S1474747219000052>
- Bartlett, R., Morse, A., Stanton, R., & Wallace, N. (2022). Consumer-lending discrimination in the FinTech Era. *Journal of Financial Economics*, 143(1), 30–56.  
<https://doi.org/10.1016/j.jfineco.2021.05.047>
- Bryan, B., & Collins, J. M. (2024). Locked out of banking: The limits of financial inclusion for formerly incarcerated individuals. *Social Science Research*, 122, 103050.  
<https://doi.org/10.1016/j.ssresearch.2024.103050>

- Che, M., Say, S. Y. A., Yu, H., Zhou, Q., Shu, J., Sun, W., Luo, X., & Xu, H. (2023). Investigating customers' continuous trust towards mobile banking apps. *Humanities and Social Sciences Communications*, *10*(1), 960. <https://doi.org/10.1057/s41599-023-02483-3>
- Chen, X., He, G., & Li, Q. (2024). Can Fintech development improve the financial inclusion of village and township banks? Evidence from China. *Pacific-Basin Finance Journal*, *85*, 102324. <https://doi.org/10.1016/j.pacfin.2024.102324>
- Chen, Z., & Friedline, T. (2022). Make the invisible underbanked visible: Who are the underbanked? *Journal of Financial Counseling and Planning*, *33*(2), 160–170. <https://doi.org/10.1891/JFCP-2021-0046>
- Collins, J. M., Halpern-Meekin, S., Harvey, M., & Hoiting, J. (2023). “I don’t like all those fees” pragmatism about financial services among low-income parents. *Journal of Family and Economic Issues*, *44*(4), 807–820. <https://doi.org/10.1007/s10834-022-09873-w>
- Creamer, J., & Warren, L. (2024). Unbanked and impoverished? Exploring banking and poverty interactions over time. *Journal of Consumer Affairs*, *58*(2), 506–537. <https://doi.org/10.1111/joca.12576>
- Ezzahid, E., & Elouaourti, Z. (2021). Financial inclusion, mobile banking, informal finance and financial exclusion: Micro-level evidence from Morocco. *International Journal of Social Economics*, *48*(7), 1060–1086. <https://doi.org/10.1108/IJSE-11-2020-0747>
- Faber, J. W., & Friedline, T. (2020). The racialized costs of “traditional” banking in segregated America: Evidence from entry-level checking accounts. *Race and Social Problems*, *12*(4), 344–361. <https://doi.org/10.1007/s12552-020-09296-y>
- FDIC. (2023). *2023 FDIC national survey of unbanked and underbanked households*. Gov. <https://www.fdic.gov/household-survey>
- Friedline, T., & Chen, Z. (2021). Digital redlining and the fintech marketplace: Evidence from US zip codes. *Journal of Consumer Affairs*, *55*(2), 366–388. <https://doi.org/10.1111/joca.12297>
- Fuster, A., Goldsmith-Pinkham, P., Ramadorai, T., & Walther, A. (2022). Predictably unequal? The effects of machine learning on credit markets. *The Journal of Finance*, *77*(1), 5–47. <https://doi.org/10.1111/jofi.13090>
- Gottfried, J., Park, E., & Anderson, M. (2025, July 31). Online scams and attacks in America today. *Pew Research Center*. <https://www.pewresearch.org/internet/2025/07/31/online-scams-and-attacks-in-america-today/>
- Grable, J., Kwak, E. J., & Archuleta, K. (2023). Distrust of banks among the unbanked and banked. *International Journal of Bank Marketing*, *41*(6), 1498–1520. <https://doi.org/10.1108/IJBM-10-2022-0441>

- Greenwald, D. L., Howell, S. T., Li, C., & Yimfor, E. (2024). Regulatory arbitrage or random errors? Implications of race prediction algorithms in fair lending analysis. *Journal of Financial Economics*, 157, 103857. <https://doi.org/10.1016/j.jfineco.2024.103857>
- Hauptert, T. (2022). New technology, old patterns: Fintech lending, metropolitan segregation, and subprime credit. *Race and Social Problems*, 14(4), 293–307. <https://doi.org/10.1007/s12552-021-09353-0>
- Hayashi, F., Routh, A., & Toh, Y. L. (2024). Heterogeneous unbanked households: Which types of households are more (or less) likely to open a bank account? *Journal of Economics and Business*, 129, 106156. <https://doi.org/10.1016/j.jeconbus.2023.106156>
- Laksamana, P., Suharyanto, S., & Cahaya, Y. F. (2023). Determining factors of continuance intention in mobile payment: Fintech industry perspective. *Asia Pacific Journal of Marketing and Logistics*, 35(7), 1699–1718. <https://doi.org/10.1108/APJML-11-2021-0851>
- Liu, Z., & Liang, H. (2025). Racial disparities in conforming mortgage lending: A comparative study of fintech and traditional lenders under regulatory oversight. *FinTech*, 4(1), 8. <https://doi.org/10.3390/fintech4010008>
- Long, M. G. (2020). Informal borrowers and financial exclusion: The invisible unbanked at the intersections of race and gender. *The Review of Black Political Economy*, 47(4), 363–403. <https://doi.org/10.1177/0034644620938620>
- Mason, E. (2024, June 17). *Is your money really safe in an 'FDIC-insured' fintech account?* Forbes. <https://www.forbes.com/sites/emilymason/2024/06/17/is-your-money-really-safe-in-an-fdic-insured-fintech-account/>
- Nam, Y., Lee, S. T., & Kim, K. T. (2023). Racial/ethnic differences in mobile payment usage: What do we know, and what do we need to know? *International Journal of Bank Marketing*, 41(1), 52–69. <https://doi.org/10.1108/IJBM-11-2021-0516>
- Nguyen, Y. T. H., Tapanainen, T., & Nguyen, H. T. T. (2022). Reputation and its consequences in Fintech services: The case of mobile banking. *International Journal of Bank Marketing*, 40(7), 1364–1397. <https://doi.org/10.1108/IJBM-08-2021-0371>
- Sinha, G. R., Mehta, R. C., Kaittila, A., & Viitasalo, K. (2025). Factors and patterns in mobile banking and payment services use in the United States. *Journal of Financial Services Marketing*, 30(4), 26. <https://doi.org/10.1057/s41264-025-00319-6>
- Zhang, Y., & Fan, L. (2024). The nexus of financial education, literacy and mobile fintech: Unraveling pathways to financial well-being. *International Journal of Bank Marketing*, 42(7), 1789–1812. <https://doi.org/10.1108/IJBM-09-2023-0531>

## **SOCIAL MEDIA AND SECURITIES FRAUD: DECEITFULLY PROMOTING ONE STOCK FOR ANOTHER**

*Stephen Blythe*  
Tarleton State University

### ***ABSTRACT***

This is a case study of fraud successfully investigated by the Securities and Exchange Commission (SEC). Legal motions aside, there are important lessons to be learned from the transactions that took place. On January 21, 2026, the SEC charged Brett Rosen (Rosen) and Deborah Braun (Braun) and their company, RB Capital Partners, Inc. (RB Capital), with securities fraud in connection with a scheme to misleadingly promote the stock of struggling microcap issuer Solar Integrated Roofing Corporation (Solar). Additionally, the SEC charged Solar's former CEO, David M. Massey (Massey), with securities fraud concerning false and misleading statements included in a company press release. According to the SEC's complaint, from January 2021 through June 2024, Rosen and RB Capital used Twitter to promote Solar's stock, while simultaneously selling 1.4 Billion shares of their own Solar stock at a profit of \$26 Million. In their Twitter posts, they deceitfully told the public that Solar was an attractive long-term investment while they sold their stock. Braun, the co-owner of RB Capital, provided substantial assistance to Rosen and RB Capital in carrying out the scheme by keeping a record of the sales of Solar stock. Massey directed Solar to issue a press release falsely claiming that Solar had secured a \$10 Million line of credit from a large national bank. As a result of that untrue statement, the next day Solar's stock price increased by 40% and the volume of Solar shares traded in the market increased by 500% compared to the previous day's trading. Defendants Rosen, Braun, Massey and RB Capital may have the opportunity to enter into a plea agreement with the SEC which would include the disgorgement of their gains from the alleged fraud scheme and the assessment of substantial fines against them.

**Key Words:** Social media, securities, fraud, law, violations, SEC

### **OBJECTIVES OF THIS ARTICLE**

1. Explain the facts of this securities fraud scheme.
2. Explain which securities laws were allegedly violated.
3. Describe the possible outcomes of the SEC's lawsuit against defendants.
4. Explain specific actions the SEC is demanding of the defendants.
5. List the civil penalties and fines which may be imposed by the SEC against defendants.
6. Tell what the following parties can learn from this case: publicly-traded firms, investors, accountants, auditors, SEC and aspiring fraudsters.

Blythe

## **INTRODUCTION**

This is a case study of an alleged fraud scheme successfully investigated by the Securities and Exchange Commission (“SEC”). Legal motions aside, there are important lessons to be learned from the transactions that took place.

## **THE COMPANIES**

RB Capital Partners, Inc. (RB Capital) was a California-based private investment firm that specialized in providing financing for small and microcap publicly-traded firms. Solar Integrated Roofing Corporation (Solar) was a struggling publicly-traded firm based in Henderson, Nevada. Solar was an integrated, single-source provider of solar power, roofing systems and EV charging for commercial and residential properties. Solar’s stock price has never exceeded \$5 per share (SEC, 2026).

## **THE DEFENDANTS**

Brett Rosen (Rosen) was a co-owner of RB Capital.

Deborah Braun (Braun) was a co-owner and secretary of RB Capital. Rosen and Braun are married.

David M. Massey (Massey) was CEO of Solar from March 2016 to May 2023 (SEC, 2026).

## **THE ALLEGED FRAUD SCHEME**

The relevant period of this alleged fraud scheme is from January 2021 through June 2024.

During the relevant period, RB Capital was in the business of acquiring low-price shares of microcap stock through convertible note agreements and quickly selling the shares into the market.

RB Capital is a multi-million-dollar enterprise, with its sales of Solar stock alone generating gross proceeds of at least \$33 Million during the relevant period.

In January 2021, RB Capital approached Solar about a potential investment by RB Capital in Solar.

Massey, acting on behalf of Solar, accepted RB Capital’s offer to provide capital funding to Solar and signed a contract. Pursuant to the agreement, RB Capital promised to purchase an agreed-upon amount of Solar convertible bonds with a conversion price of \$3 per share. At the date of the agreement, Solar stock was selling for 60 cents per share. Shortly thereafter, RB Capital loaned Solar \$1 Million in exchange for a convertible bond dated February 8, 2021. After making the February 8 investment, RB Capital made 5 additional convertible bond investments in Solar, from February 2021 through May 2023. The first four of these had a conversion price of \$3 per share, and the last two included a conversion price of \$4.50 per share. The total investment of RB Capital in Solar was \$11.3 Million (SEC, 2026).

### **RB CAPITAL CONVERTED THEIR BONDS TO SOLAR STOCK AT MUCH LOWER PRICES THAN THE STATED CONVERSION PRICES**

RB Capital directed Massey to lower the actual conversion price to a fraction of the stated conversion prices, and he complied. In reducing the conversion prices, Massey acted solely at RB Capital's direction and without corporate justification (SEC, 2026).

### **RB CAPITAL PURCHASED A VAST NUMBER OF SOLAR SHARES AT BARGAIN-BASEMENT PRICES**

RB Capital was able to obtain a very large number of Solar shares at very low prices ranging from \$0.14 to \$0.0045 per share. This was less than half a penny per share—1/1000 of the bonds' stated conversion price of \$4.50!

In addition to the six bonds, RB Capital also acquired older Solar bonds from an existing Solar creditor. The conversion price of those bonds was \$1.12 per share, but Solar allowed RB Capital to convert those older bonds at an extremely low price of \$0.001 per share—1/10 of a cent (SEC, 2026)

### **THE RESULT: RB CAPITAL HELD MORE THAN 1.6 BILLION SOLAR SHARES**

After acquiring the Solar bonds and converting them, RB Capital Held 1,662,162,142 shares of Solar stock (SEC, 2026)!

### **RB CAPITAL PROMOTED SOLAR STOCK IN SOCIAL MEDIA**

During the relevant period, Rosen held himself out in his Twitter account to be an active, experienced and careful investor.

In his Twitter account, Rosen promoted Solar stock as a good investment. His tweets generally promoted Solar as a valuable company with a bright future. For example, on March 1, 2021, Rosen tweeted: "Solar is disrupting the solar and EV markets with their new acquisitions, EV charging stations and uplist in the very near term!" Another example: Rosen stated "Solar is a sleeping giant with Nasdaq-style revenue and growth trajectory! Acquisitions like crazy adding to their bottom line everyday!" (SEC, 2026).

### **WHILE PROMOTING SOLAR STOCK, RB CAPITAL CONVERTED ITS SOLAR BONDS AND SOLD 1.4 BILLION SHARES OF SOLAR STOCK!**

At the same time that Rosen was promoting Solar stock, RB Capital was converting its Solar bonds into Solar stock, and turning around and selling more than 1.4 Billion shares of Solar stock!

This is the essence of RB Capital's alleged fraud scheme against the investors in Solar stock: RB Capital knew, or should have known, that its sale of a large number of shares of Solar stock

Blythe

would significantly deflate the value of that stock. Nevertheless, RB Capital continued to advise investors to buy Solar stock.

Apparently, Rosen had no qualms at all about duping the investors in Solar stock. While selling Solar stock, Rosen tweeted: “I invest millions in companies with my own money and stay in them for years!” This was not true (SEC, 2026).

### **RB CAPITAL MADE AN ENORMOUS PROFIT**

RB Capital acquired its Solar stock at an average price of \$0.0045 per share and later sold it at an average price of \$0.02 per share.

As a result of the alleged fraud scheme, RB Capital incurred gross proceeds of over \$33 Million and total illicit profit of over \$26 Million!

RB Capital did not publicly disclose any of its Solar stock sales; nor were they otherwise publicly disclosed.

Rosen was aware that he was acting illegally. Rosen knew it was illegal to simultaneously promote Solar stock on social media while failing to disclose that he was selling Solar shares. In June 2023, Rosen was recorded acknowledging that his practice of “Telling people you’re not selling the stock when you’re selling it—that’s a way to get banned for life” (SEC, 2026).

### **RB CAPITAL AND MASSEY PUBLICLY DISCLOSED FALSE INFORMATION**

In its periodic reports published at the website of the over-the-counter markets during the relevant period, Massey directed Solar to publicly disclose the existence of the convertible bonds held by RB Capital, including the \$3 or \$4.50 conversion price. Those reports were false and misleading because they failed to disclose the actual conversion prices, which were only a small fraction of the stated prices.

Furthermore, Rosen tweeted about the convertible bonds in his Twitter account, including referring specifically to their \$3 or \$4.50 stated conversion price. Those tweets were false and misleading because Rosen failed to disclose that he was simultaneously selling Solar stock that he had acquired at a fraction of the convertible bonds’ stated conversion prices.

Still further, Massey directed Solar to issue a false press release that the firm had secured a \$10 Million revolving line of credit from a top four national bank to finance the firm’s working capital requirements (SEC, 2026).

### **COMMON LAW FRAUD**

Common law fraud and the aiding and abetting of it are state laws, not federal laws. Those state laws seem to have been violated in this case but they were not alleged by the Securities and Exchange Commission (SEC) in its case because that case was filed in federal court, not state

court. The defendants' acts violated both federal and state law; however, the SEC, being a federal agency, filed the case in federal court pursuant to federal law. State law is included here to cover all of the violated laws.

Common Law Fraud. The elements are: (1) defendant made a material representation; (2) which was false; (3) which was known to be false when made or was made recklessly as a positive assertion without knowledge of its truth; (4) which was intended to be relied upon; (5) which was relied upon; and (6) which caused injury (Green, 1997).

For example, a plaintiff could allege common law Fraud if she believed an auditor had intentionally or recklessly made a materially false statement or omission in an audit report, and the plaintiff relied upon that information to her detriment. The only difference between common law and statutory fraud is that the latter does not require proof of knowledge or recklessness as a prerequisite to the recovery of damages. A plaintiff would allege statutory fraud if he believed the auditor had negligently disseminated a materially false statement or omission in an audit report, and the plaintiff had relied upon that information to his detriment. Note that the requisite mental element in statutory fraud—negligence—is less stringent and easier to prove than the common law fraud requirement, which is recklessness or with intent (Tex. Bus. Code, 1987).

Aiding and Abetting Common Law Fraud. Aiding and Abetting Fraud is occasionally used against an auditor for allegedly failing to detect a client's fraud (Woods, 1985). To establish a claim that an auditor committed the tort of Aiding and Abetting Fraud, a plaintiff must show: (1) the existence of an underlying fraud in the client firm; (2) knowledge of this fraud on the part of the auditor; and (3) substantial assistance by the auditor in the achievement of the fraud (Cupersmith, 2016).

### **STATUTORY LAW: SECURITIES ACT OF 1933**

Securities Act § 17(a). This section prohibits fraud in the initial offering or sale of securities. This includes using the mail or using other instruments of interstate commerce. The defendant must have (1) made a misstatement or omission (2) of material fact (3) with scienter (4) in connection with the purchase or sale of securities. Section 17(a) could be used to sue an auditor who had certified information in a corporate prospectus issued in an initial public offering of the corporation's securities (SEC, 2001).

### **STATUTORY LAW: SECURITIES AND EXCHANGE ACT OF 1934**

Exchange Act § 10A(b). An accountant who becomes aware of a possible "illegal act" carried out by the client firm's officers, which by definition includes a materially false or misleading statement or the omission of material facts, must ensure that the client's audit committee is "adequately informed" of the illegal act unless the illegal act is "clearly inconsequential" (Barsa, 2020).

Exchange Act § 10(b) and SEC Rule 10b-5.

Blythe

A chief executive officer (CEO) or chief financial officer (CFO) of a publicly-traded company commits fraud if he disseminates material misrepresentations regarding a firm's revenue in its Form 10-K or Form 8-K, in violation of Section 10(b) of the Exchange Act and Rule 10b-5. Section 10(b) makes it unlawful to "use or employ, in connection with the purchase or sale of any security. . . any manipulative or deceptive device or contrivance in contravention of" SEC rules (U.S. Code, 1934).

Rule 10b-5 states: "It shall be unlawful for any person, directly or indirectly, by the use of any means or instrumentality of interstate commerce, or of the mails or of any facility of any national securities exchange, (a) to employ any device, scheme, or artifice to defraud, (b) to make any untrue statement of a material fact or to omit to state a material fact necessary in order to make the statements made, in the light of the circumstances under which they were made, not misleading, or (c) to engage in any act, practice or course of business which operates or would operate as a fraud or deceit upon any person, in connection with the purchase or sale of any security" (CFR, 1934). The defendant must have an intent to deceive, manipulate or defraud. The element of intent requires a showing of actual intent or a showing of reckless disregard for the truth. Recklessness may be present when a defendant fails to review or check information that he has a duty to monitor, or ignores obvious signs of fraud (Gould, 2012).

A misstatement is material if, in the view of a reasonable investor, it "significantly alters the total mix of information made available" (Plumber, 2021). An omission is material if the omitted fact would have been viewed by the reasonable investor "as having significantly altered the total mix of information made available" (Alteio, 2021). Courts often rely upon SAB No. 99 as "persuasive guidance for evaluating the materiality of an alleged misrepresentation" (Ganino, 2000). SAB No. 99 states that a "quantitatively small misstatement of a financial statement item" may be material if it "hides a failure to meet analysts' expectations for the enterprise" or "masks a change in earnings or other trends" (SAB, 1999).

Section 10(b) makes it unlawful to use or employ, in connection with the purchase or sale of any security after the original offering, a manipulative or deceptive device or contrivance in contravention of such rules and regulations as the Securities and Exchange Commission may prescribe (Glickenhau, 2015).

To bring an action under SEC Rule 10b-5, the purchaser/seller requirement mandates that a private plaintiff must be either a buyer or a seller of the company's stock. Potential buyers who were defrauded into not buying stock may not bring an action under 10b-5. To succeed on a Rule 10b-5 claim, the plaintiff must establish: (1) a material misrepresentation or omission by a defendant; (2) made with scienter; (3) a connection between the misrepresentation or omission and the purchase or sale of a security; (4) reliance upon the misrepresentation or omission by plaintiff; (5) economic loss; and (6) loss causation. If an auditor is sued for violation of Rule 10b-5, the plaintiff will often be a purchaser of the client firm's stock alleging that he relied upon erroneous information in the auditor's report when he decided to buy the stock and that he incurred detriment when the stock value decreased (Cornielson, 2019).

Exchange Act § 18. This provision provides for a private cause of action against any defendant

making or causing to be made, false or misleading material facts in any application, report, or document filed with the SEC. The plaintiff must have relied upon the false or misleading material facts to its detriment. A purchaser of the client firm's stock could file a § 18 action against an auditor due to erroneous information the auditor filed with the SEC (Suprema, 2006).

Exchange Act § 20(a). This section provides for the "control person" liability of any person who, directly or indirectly, controls any person liable for violations of federal securities law. The elements of control person liability are: (1) a primary violation of federal securities law; and (2) that the defendant exercised actual power or control over the primary violator. If there is no primary violation of federal securities law, there can be no control person liability. If an auditor was a ringleader in a conspiracy with corporate officers or directors to defraud the corporation, then the auditor could be sued under § 20(a) (Cutera, 2010).

### **THE SEC'S ALLEGATIONS AGAINST THE DEFENDANTS**

In a federal lawsuit filed in the United States District Court for the Southern District of California on January 21, 2026, the SEC alleged that:

1. Rosen and RB Capital violated Section 17(a) of the Securities Act of 1933, which prohibits fraudulent conduct in connection with the purchase or sale of an initial public offering of securities;
2. Rosen and RB Capital violated Section 10(b) of the Securities and Exchange Act of 1934 and Rule 10b-5 thereunder, which prohibits fraudulent conduct in connection with the purchase or sale of a security after its initial public offering;
3. Braun violated Section 10(b) of the Securities and Exchange Act of 1934 and Rule 10b-5 thereunder, which prohibits fraudulent conduct in connection with the purchase or sale of a security after its initial public offering; Braun is liable as a Control Person pursuant to Section 20(a) of the Securities and Exchange Act of 1934;
4. Braun knowingly or recklessly aided and abetted Rosen and RB Capital in their violation of Section 17(a) (1) and (3) of the Securities and Exchange Act of 1934; she is allegedly also liable pursuant to Section 15(b) of the Securities and Exchange Act of 1934;
5. Braun knowingly or recklessly aided and abetted Rosen and RB Capital in their violation of Section 10(b)(3) of the Securities and Exchange Act of 1934 and Rules 10b-5(a) and (c) thereunder; she is liable pursuant to Section 20(e) of the Securities and Exchange Act of 1934; and
6. Massey violated Section 10(b) of the Securities and Exchange Act of 1934 and Rule 10b-5 thereunder, which prohibits fraudulent conduct in connection with the purchase or sale of a security after its initial public offering (SEC, 2026).

### **SPECIFIC RELIEF THE SEC IS REQUESTING**

The SEC requests the Court to Issue an Order requiring all Defendants to:

Blythe

1. Cease and desist henceforth from committing or causing to commit any violations of the Securities Act of 1933 and the Securities and Exchange Act of 1934.
2. Disgorge all ill-gotten gains they received directly or indirectly, with pre-judgment interest thereon, as a result of the alleged violations of the securities laws.
3. Be permanently prohibited from participating in any offering of a penny stock, including engaging in activities with a broker, dealer or issuer for purposes of issuing, trading, or inducing or attempting to induce the purchase or sale of any penny stock.
4. The SEC further requests the Court to issue an Order prohibiting Massey from serving as an officer or director of any company that has a class of securities registered under Section 12 of the Exchange Act or that is required to file reports pursuant to Section 15 of the Exchange Act (SEC, 2026).

### **EXPECTED OUTCOME OF THIS LITIGATION**

- A. All defendants may be required to pay a substantial fine to the U.S. Treasury.
- B. All defendants may be expected to be required to agree to cease and desist from violating federal securities law in the future.
- C. All defendants may be expected to be required to reimburse their respective firms for all illegal money received as a result of this alleged fraud scheme.  
Background: The members of Congress who wrote the Sarbanes-Oxley Act, enacted in 2002 after the Enron scandal, expressed concerns about “management benefitting from unsound financial statements, many of which ultimately result in corporate restatements” (SOA, 2002). Section 304 of the Sarbanes-Oxley Act requires the CEO and CFO to reimburse the firm for any bonus or incentive-based compensation received within 12 months after the issuance of restated financial statements (SOA, 2002). Accordingly, the defendants in this case are expected to be required to reimburse their respective employers for all money generated in this alleged fraud scheme.
- D. All defendants may be expected to be prohibited from future participation in the offering of a penny stock, to include participating with a broker or dealer in the offering of a penny stock.
- E. Massey may be expected to be prohibited from future service as an officer or director of any business firm that is regulated by federal securities law.
- F. The firms involved in this case may be required to conduct an internal review of their policies and procedures pertaining to quality control to determine whether they appear to be in compliance with Generally Accepted Accounting Principles. This internal review may also require the assessment of: (1) ethics and integrity training, including anti-retaliation and whistleblowing; (2) whether the firm’s culture is supportive of ethical conduct, including visible support and commitment by the firm’s management; (3) whether the firm has designed and implemented appropriate policies and procedures related to information requests; and (4) whether the firm has designed and implemented appropriate policies and procedures and deploys resources and oversight to comply with all professional standards, to include: monitoring to

detect non-compliance; reporting lines, compensation and rewards; assignment of responsibility for oversight of compliance to managers with access to relevant information and personnel; and ensuring consistent discipline (Ernst & Young, 2022).

G. The firms involved in this case may be required to hire a consultant to provide an independent review of the firm's policies and procedures relating to ethics and integrity. If present policies and procedures are found to be inappropriate, the consultant would prescribe changes to be made. Whereupon, the consultant would determine whether said changes are being implemented and would prepare a report to the Court (Ernst & Young, 2022).

H. The firms involved in this case may also be required to hire a second consultant to provide an independent review of the firm's disclosure failures. This consultant would prescribe corrective actions to be taken and would timely inform the Court as to whether defendants have complied with the prescription (Ernst & Young, 2022).

### **WHAT CAN MANAGERS OF PUBLICLY-TRADED FIRMS LEARN FROM THIS CASE?**

- A. Ethics and integrity training should be mandatory.
- B. The ethics and integrity training should be monitored to ensure it is effective and to detect non-compliance.
- C. Review policies and procedures designed to ensure compliance with all professional standards (including ethics and integrity standards), and amend them if necessary.
- D. If no whistleblower hotline exists, create one. If a hotline already exists, continually remind employees of its existence, emphasize its confidentiality, and encourage them to use it if they encounter wrongdoing.
- E. Review the culture of the organization and ensure that it is supportive of ethical behavior and integrity. If it is not, make changes in the existing culture.
- F. Always respond to inquiries from the SEC and other government agencies promptly, fully and honestly. Provide supplemental responses to those agencies if additional information is received at a later time.
- G. New employee orientation should emphasize the firm's adherence to the highest standards of ethics and integrity, and new employees should be informed that unethical behavior will not be tolerated.
- H. The firm should not condone cheating in any form. The firm should give special attention to ensuring that accountants prepare accurate and truthful financial statements (Twin, 2026).

### **WHAT CAN ACCOUNTANTS LEARN FROM THIS CASE?**

It is critically important for the accounting profession to maintain the highest ethical standards. Accountants prepare corporate financial statements. Investors and potential investors use the financial statements to analyze whether they should invest in those firms. Because of the high degree of reliance on information contained in financial statements, it is essential for those financial statements to be free of material misstatements and errors.

In response to the Watergate scandal, Congress enacted s 13(b)(2)(A) of the Exchange Act and Rule 13b2-1. These provisions require every publicly-traded firm to keep books "in reasonable

Blythe

detail” that accurately and fairly reflect the transactions of those firms. It also requires them to maintain a system of effective internal accounting controls to provide reasonable assurance that transactions are properly recorded. These provisions do not require proof of scienter. And there is no requirement that the information contained in the books be material. Perfection in keeping the books is not required, but they must be detailed enough so that the books will be in compliance with Generally Accepted Accounting Principles (Exchange Act, 1934).

Federal securities laws will punish accountants who deliberately violate their ethical obligations. In the *Synchronoss Technologies* case, the Controller aided and abetted the firm’s improper revenue recognition, falsified books and records, circumvented internal controls regarding several large transactions, and provided misleading information to the firm’s auditor. Without admitting or denying the SEC’s allegations, the Controller agreed to be permanently enjoined from violations of Rule 13b2-1 and to pay a fine of \$20,000 (SEC, 2022).

### **WHAT CAN AUDITORS LEARN FROM THIS CASE?**

- A. Ethics and integrity training are critically important and should be mandatory in CPA firms.
- B. Monitor ethics and integrity training to ensure it is effective and to detect non-compliance.
- C. Review policies and procedures designed to ensure compliance with Generally Accepted Auditing Standards and amend them if necessary.
- D. If no whistleblower hotline exists, create one. If a hotline already exists, continually remind employees of its existence, emphasize its confidentiality, and encourage them to use it if they encounter wrongdoing.
- E. Review the culture of the organization and ensure that it is supportive of ethical behavior and integrity. If it is not, make changes in the existing culture.
- F. Always respond to inquiries from the SEC and other government agencies promptly, fully and honestly. Provide supplemental responses to those agencies if additional information is received at a later time.
- G. New employee orientation should emphasize the firm’s adherence to the highest standards of ethics and integrity, and new employees should be informed that unethical behavior will not be tolerated.
- H. The firm should not condone cheating in any form. The firm should give special attention to ensuring that its employees do not cheat on the CPA ethics exam or on Continuing Professional Education requirements (Blythe, 2025).

Auditors must continually be attentive to the fulfillment of their professional duties and obligations. If they fail to carry out their duties and obligations, they become vulnerable to allegations of Professional Negligence.

Professional Negligence. This is one species of negligence. A negligence claim requires the plaintiff to establish: (1) a duty owed to the plaintiff or to a class of which the plaintiff is a member; (2) breach of that duty; (3) a causal relationship between the breach of the duty and the harm incurred by the plaintiff; and (4) damages suffered (Malinowski, 2015). Therefore, Professional Negligence requires a plaintiff to show that: (1) plaintiff contracted for the service, or the service ordinarily would be performed in the course of the professional performing its obligations under a contract; (2) defendant’s professional services departed from the accepted

standards of practice in the relevant field; and (3) the departure proximately caused the plaintiff's injuries (Wax, 2015).

When Does an Auditor Have a Duty to Investors and Shareholders of an Audited Company to Provide Accurate Information? If there is no contract between the auditor and the user of the financial information, then a close relationship of near-privity is required (Kingate, 2016). The test for near-privity was created by the New York Court of Appeals and requires three elements: (1) the auditor must have been aware that the information would be used for a particular purpose; (2) in furtherance of which a known party was intended to rely on; and (3) some conduct by the auditor linking him to that known party (Credit Alliance, 1985). If there is no privity or near-privity between the auditor and the user, the case must be dismissed (Admin. Comm., 2015).

Auditors' Duty to Search for Fraud. Ordinarily, auditors do not give clients a warranty or guarantee that they can prevent or detect fraud; they only provide reasonable assurance. However, the Sarbanes-Oxley Act requires each publicly-traded firm to have an annual integrated audit (SOA, s 404, 2002). This was enacted as a direct response to the four "Arthur Andersen frauds." SOA provided for the creation of the Public Company Accounting Oversight Board (PCAOB), responsible for the promulgation of General Accepted Audit Standards (GAAS) applicable to the integrated audits of all publicly-traded firms (Enron, 2002).

An auditor may be legally liable for failing to detect fraud only if it fails to follow fraud-related aspects of Generally Accepted Auditing Standards or ignores fraud risks in audit planning. Accordingly, an auditor is responsible for designing audit procedures to adequately address fraud risks and for obtaining sufficient evidence to support its audit opinion. It would be a mistake for an auditor to overly rely on management representations on fraud-related issues (FDIC, 2012).

Generally Accepted Auditing Standards (GAAS) Relating to Fraud: Highlights. The GAAS pertinent to fraud are contained in Auditing Standard 2401, "Consideration of Fraud in a Financial Statement Audit" (PCAOB, 2020). This standard applies to audits of publicly-traded entities whose fiscal years end on or after December 15, 2020. These are some of the most important points:

- Auditors have a responsibility to obtain reasonable assurance about whether the financial statements are free of material misstatement, *whether due to error or fraud*. (Emphasis added.) Absolute assurance is unattainable, so there is no guarantee that even a thorough audit will uncover a fraud.
- Notwithstanding the auditor's fraud responsibility, management is ultimately responsible for the design and implementation of programs and controls to prevent and detect fraud.
- Fraud is defined as "an intentional act that results in a material misstatement in financial statements." Two types of misstatements are relevant to the consideration of fraud: those due to fraudulent financial reporting and those due to misappropriation of assets. Management has a unique ability to perpetrate fraud because it frequently is in a position to directly or indirectly manipulate accounting records and present fraudulent financial information.
- Fraud is usually concealed, but these conditions may be indicative of fraud: missing significant documents, subsidiary ledgers not reconciled to control accounts or unexpected results of analytical procedures.
- An auditor should recognize the possibility that fraud may exist, despite a general belief

that management is honest. The auditor should be professionally skeptical and have an ongoing questioning of whether evidence gathered during the audit is indicative of fraud.

- The auditor should design and perform audit procedures in a manner that addresses the assessed risks of material misstatement due to error or fraud for each relevant assertion of each relevant account and disclosure.
- Audit procedures relating to fraud include: surprise inventory counts or cash counts, counting inventories at or near the end of the fiscal year, making oral inquiries of customers and suppliers in addition to written confirmations, performing substantive analytical procedures using disaggregated data, interviewing personnel working in locations with heightened fraud risk, and overseeing the fraud-related work of auditors in other subsidiaries, branches or divisions of the firm being audited.
- The audit procedures performed in response to a fraud risk relating to the misappropriation of assets will be directed toward those assets that are most susceptible to misappropriation.
- Audit procedures should also be developed to address the risk of management override of internal controls. These include the examination of journal entries for any evidence of material misstatement due to fraud; reviewing accounting estimates for biases that could result in material misstatement due to fraud; and evaluating whether the business purpose for significant unusual transactions indicates those transactions may have been entered into as part of a fraud scheme.
- The auditor is responsible for communicating about possible fraud to management, the audit committee, the Securities and Exchange Commission, and others.
- Meticulous documentation of all evidence of fraud is required. (PCAOB, 2020).

## **WHAT CAN THE SEC LEARN FROM THIS CASE?**

In order to improve the quality of its enforcement, the SEC should do the following:

1. Inform all regulated parties that a response to a voluntary information request from SEC must be promptly supplemented if the party acquires new information at a later time.
2. Make recommendations to state boards of public accountancy for the transformation of ethics test administration in order to make it more difficult for cheating to occur.
3. Make recommendations to state boards of public accountancy for changes in CPE reporting to make it more difficult for cheating to occur.
4. Encourage CPA firms and publicly-traded (regulated) firms to hire an ethics and integrity officer to oversee all ethics and integrity training in the firm. If a hotline does not already exist, this officer should create one and whistleblowing tips should be funneled to this officer.
5. Recommend to all regulated parties that ethics and integrity training should begin at orientation of new employees and continued thereafter on a regular basis. All employees should be informed that the organization will not tolerate cheating in any form.
6. Remind top management of CPA firms and publicly-traded (regulated) firms that they must stress the importance of ethical behavior if they want to achieve an ethical culture in their firm. It all begins with top management. The attitudes they exhibit will permeate the organization (Chen, 2025).
7. The SEC should not focus only on large firms. Fraud is not confined to big-cap firms. Small-cap firms are equally prone to fraud schemes, as the RB Capital case illustrates (SEC, 2026).

## **WHAT CAN INVESTORS LEARN FROM THIS CASE?**

Be skeptical of unverified statements made on social media!

## **WHAT CAN FRAUDSTERS LEARN FROM THIS CASE?**

“Thou shalt not steal.”

“The wages of sin is death.” (The Holy Bible)

## **SUMMARY AND CONCLUSIONS**

The Securities and Exchange Commission (SEC) filed a lawsuit in federal court on January 21, 2026. It alleged that Brett Rosen (Rosen) and Deborah Braun (Braun) and their company, RB Capital Partners, Inc. (RB Capital), committed securities fraud in connection with a scheme to misleadingly promote the stock of struggling microcap issuer Solar Integrated Roofing Corporation (Solar). Additionally, the SEC charged Solar’s former CEO, David M. Massey (Massey), with securities fraud concerning false and misleading statements included in a company press release. According to the SEC’s complaint, from January 2021 through June 2024, Rosen and RB Capital used Twitter to promote Solar’s stock, while simultaneously selling 1.4 Billion shares of their own Solar stock at a profit of \$26 Million. In their Twitter posts, they deceitfully told the public that Solar was an attractive long-term investment while they sold their stock. Braun, the co-owner of RB Capital, provided substantial assistance to Rosen and RB Capital in carrying out the scheme by keeping a record of the sales of Solar stock. Massey directed Solar to issue a press release falsely claiming that Solar had secured a \$10 Million line of credit from a large national bank. As a result of that untrue statement, the next day Solar’s stock price increased by 40% and the volume of Solar shares traded in the market increased by 500% compared to the previous day’s trading.

Defendants Rosen, Braun, Massey and RB Capital may be given an opportunity to enter into a plea agreement with the SEC which would include their agreement to cease and desist from further violations of federal securities law. Based on prior cases of this nature, there is a high probability that defendants would be disgorged of all financial gains incurred as a result of their fraud scheme. In all likelihood, they would be required to pay substantial fines to the U.S. Treasury. They could also expect to be prohibited from participating in any future offering of a penny stock or from serving as an officer or director of a publicly-traded company. They may be ordered to ensure that their firms have policies and procedures designed to: (a) achieve financial statements that comply with Generally Accepted Accounting Principles; (b) ensure there is ethics and integrity in managerial decision-making; and (c) provide proper disclosure of financial transactions to the public.

This case should teach: (a) managers of publicly-traded firms the importance of ethics and integrity in decision-making, the importance of creation of an ethical culture in the organization, and the value of creation of a hotline for the reporting of ethical violations; (b) accountants the importance of maintenance of the highest ethical standards, the keeping of books and records in

Blythe

detail, and the necessity of adherence to Generally Accepted Accounting Principles; (c) auditors the criticalness of adhering to the highest ethical standards, ensuring compliance with Generally Accepted Auditing Standards, the importance of professional skepticism and the need to be on the lookout for client fraud; (d) the SEC not to focus exclusively on fraud in large business firms, and that small business firms are often quite capable of carrying out multi-million dollar fraud schemes; and (e) investors to be skeptical of unverified statements made on social media.

## REFERENCES

- Admin. Comm. of the Am. Excelsior Co. v. GreatBanc Trust Co.*, 2015 U.S. Dist. LEXIS 133160 (No. D. Tx., Ft. Worth 2015);  
<https://www.casemine.com/judgement/us/5914e4e8add7b0493490254a> . A contractual disclaimer may be used by an auditor to avoid assuming a duty to any user or class of users. For example, if a client agrees in a contract that it will be solely responsible for prevention and detection of fraud, the auditor will avoid assuming that duty. *Id.*
- Altimeo Asset Mgmt. v. Qihoo 260 Tech. Co. Ltd.*, 19 F.4<sup>th</sup> 145, 151 (2d Cir. 2021);  
<https://law.justia.com/cases/federal/district-courts/new-york/nysdce/1:2019cv10067/525553/145/>
- Barsa v. Theseus Strategy Grp. (In re Old Bpsush, Inc.)*, Case No. 16-12373 (BLS) (B.R. Del. 2020);  
[https://www.deb.uscourts.gov/sites/deb/files/opinions/barsa-theseus-opinion-and-order\\_0.pdf](https://www.deb.uscourts.gov/sites/deb/files/opinions/barsa-theseus-opinion-and-order_0.pdf) .
- Blythe, Stephen E., “Ernst & Young’s \$100 Million SEC Penalty: A Case Study of Cheating on CPA Ethics Examinations and Cover-Up,” 32:1 *Journal of Accounting, Business and Management* 147-158 (2025). Abstract: <https://journal.stie-mce.ac.id/index.php/jabminternational/article/view/1231> .
- CFR (Code of Federal Regulations): 17 C.F.R. s 240.10b-5 (1934);  
<https://law.justia.com/cases/federal/appellate-courts/F3/238/559/515425/>
- Chen, Chuan *et al.*, “Assessing the Objective Function of the SEC Against Financial Misconduct: A Structural Approach,” 80:1 *Journal of Accounting and Economics* (2025);  
<https://www.sciencedirect.com/science/article/abs/pii/S0165410125000308> .
- Cornielson v. Infinium Capital Mgmt., LLC*, 916 F.3d 589, 598 (7th Cir. 2019); <https://case-law.vlex.com/vid/cornielson-v-infinium-capital-891735111> .
- Credit Alliance Corp. v. Arthur Andersen & Co.*, 483 N.E.2d 110 (N.Y. 1985);  
<https://law.justia.com/cases/new-york/court-of-appeals/1985/65-n-y-2d-536-493-n-y-s-2d-435-483-n-e-2d-110-1985.html> . Some states have adopted this test in a statute. See,

- e.g, *Pasqua v. Cnty. Of Hunterdon*, 2016 U.S. Dist. LEXIS 106143 (D. N.J. 2016); <https://www.law.com/decision/almID/1516159439NJ163585/> . *Pasqua* cited the New Jersey Accountant Liability Act, NJ Rev. Stat. § 2A: 53A-25 (2013); <https://law.justia.com/codes/new-jersey/title-2a/section-2a-53a-25/> . Some states have enacted regulatory requirements; e.g., in Louisiana, no suit may be filed against a CPA until after the claim has been reviewed by the state public accountant review panel and it has issued a written opinion. See, *Firefighters' Ret. Sys. v. Grant Thornton LLP*, 2017 U.S. Dist. LEXIS 37865 (M.D. La. 2017); <https://www.casemine.com/judgement/us/5914ac08add7b0493473ac0f> .
- Cupersmith v. Plaker & Lyons P.C.*, 2016 U.S. Dist. LEXIS 131849 (N.D.N.Y. 2016); <https://www.studicata.com/summaries/united-states-district-court-northern-district-of-new-york/cupersmith-v-piaker-lyons-p-c-2016-hfulyn/> .
- Cutera Sec. Litig.*, 610 F.3d 1103, 1113 n. 6 (9th Cir. 2010); <https://cebjournal.com/articles/recent-changes-ninth-circuits-jurisprudence> .
- DoubleLine Capital, LP v. Construora Norberto Odebrecht Finance, Ltd.*, No. 1: 2017cv04576-Document 298 (S.D.N.Y. 2024), 219-21; <https://law.justia.com/cases/federal/district-courts/new-york/nysdce/1:2017cv04576/476202/298/> .
- Enron Corporation Securities, Derivative & ERISA Litigation*, 235 F.Supp.2d 549, 563 (S.D. Tex. Houston Div., 2002); <https://law.justia.com/cases/federal/district-courts/FSupp2/188/684/2576970/> .
- Exchange Act, s13(b)(2)(A) and Rule 13b2-1 (1934); <https://www.sec.gov/spotlight/fcpa/fcpa-recordkeeping.pdf> .
- FDIC v. Ernst & Young LLP*, 2020 U.S. Dist. LEXIS 122153 (E.D. La. 2020); <https://www.kslaw.com/blog-posts/eastern-district-of-louisiana-grants-ey-motion-to-compel-arbitration-with-fdic-r> .
- Gould v. Winstar Comm., Inc.* 692 F.3d 148, 159 (2d Cir. 2012); <https://www.courtlistener.com/opinion/8441257/gould-v-winstar-communications-inc/> .
- Ganino v. Citizens Util. Co.*, 228 F.3d 154, 163 (2d. Cir. 2000); <https://case-law.vlex.com/vid/ganino-v-citizens-utilities-885763205> .
- Glickenhau & Co. v. Household Int'l, Inc.*, 787 F.3d 408, 414 (7<sup>th</sup> Cir. 2015); <https://case-law.vlex.com/vid/glickenhau-v-household-int-888965314> .
- Green Intern, Inc. v Solis*, 951 S.W.2d 384, 390 (Tex. 1997); <https://case-law.vlex.com/vid/green-intern-inc-v-885447165> .

Blythe

*Kingate Mgt. Ltd. Litig.*, 2016 U.S. Dist. LEXIS 129882 (S.D.N.Y. 2016);

<https://www.sdnyblog.com/files/2016/09/2016.09.21-In-re-Kingate-Management-Litigation-Opinion-on-Motion-to-Dismiss.pdf> .

*Malinowski v. Lichter Grp.*, LLC, 165 F.Supp.3d 328, 340 (D. Md. 2015); <https://case-law.vlex.com/vid/malinowski-v-lichter-grp-888984198> .

PCAOB (Public Company Accounting Oversight Board), *AS 2401: Consideration of Fraud in a Financial Statement Audit* (2020); <https://pcaobus.org/oversight/standards/auditing-standards/details/AS2401> . When performing an integrated audit of financial statements and internal control over financial reporting, an auditor should also comply with paragraphs .14-.15 of *AS 2201: An Audit of Internal Control Over Financial Reporting That Is Integrated with An Audit of Financial Statements*; <https://pcaobus.org/oversight/standards/auditing-standards/details/AS2201> . These paragraphs mandate the auditor to take his fraud risk assessment into account when evaluating the client's internal controls. The auditor should ask himself whether the internal controls in place are sufficient to address the risk of material misstatement due to fraud and whether internal controls designed to prevent management override of other controls are sufficient. Controls that might address these risks include: controls over significant transactions made outside the normal course of business, controls over adjusting entries made at the end of the fiscal year, controls over related party transactions, controls related to significant management estimates, and controls that mitigate pressure on management to manipulate financial statements. *Id.*

*Plumber & Steamfitters Local 773 Pension Fund v. Danske Bank A/S*, 11 F.4<sup>th</sup> 90, 100-01 (2d Cir. 2021); <https://case-law.vlex.com/vid/899545272> .

*Ramanan v. Cal. Bd. Of Accountancy*, 2019 Cal. App. Unpub. LEXIS 5696 (Cal. App., 6th Dist. 2019). In that case, a CPA lost his license after committing numerous violations of Generally Accepted Auditing Standards, including failing to make inquiries of management relating to fraud; <https://ijbms.net/assets/files/1628454761.pdf> .

SAB No. 99, 64 Fed. Reg. 45150, 45152 (Aug. 19, 1999); <https://www.govinfo.gov/content/pkg/FR-1999-08-19/pdf/99-21484.pdf> .

*Sarbanes-Oxley Act* (SOA), Pub. L. 107-204, 116 Stat. 745, 15 U.S. Code § 7201 et seq. (2002); [https://www.law.cornell.edu/wex/sarbanes-oxley\\_act](https://www.law.cornell.edu/wex/sarbanes-oxley_act) .

*SEC v. Sys. Software Assocs., Inc.*, 145 F. Supp. 2d 954, 957 (N.D. Ill. 2001); <https://law.justia.com/cases/federal/district-courts/FSupp2/145/954/2421479/> .

SEC, *In the Matter of Ernst & Young LLP, Respondent*, Administrative Proceeding File No. 3-20911 (June 28, 2022); <https://sec.gov/litigation/admin/2022/34-95167.pdf>

*SEC v. Rosen, Braun, Massey & RB Capital Partners, Inc.*, Case No. 26CV0361 AJB BJW, U.S. Dist. Ct. (So. Dist. Calif.), 2026; <https://www.sec.gov/files/litigation/complaints/2026/comp26475.pdf> .

*Suprema Specialties, Inc. Sec. Litig.*, 438 F.3d 256, 283-84 (3d Cir. 2006);

<https://law.justia.com/cases/federal/appellate-courts/F3/438/256/598340/> .

SEC, *In the Matter of Synchronoss Technologies, Inc.*, Admin. Proc. File No. 3-20884 (2022);

<https://www.sec.gov/enforcement-litigation/distributions-harmed-investors/synchronoss-technologies-inc>

Tex. Bus. & Com. Code Ann. § 27.01 (Vernon 1987);

<https://statutes.capitol.texas.gov/?tab=1&code=BC&chapter=BC.27&artSec=27.01> .

Twin, Alexandra, “Business Ethics: Key Principles and Their Importance in Today’s Market,”

*Investopedia* (March 9, 2026); <https://www.investopedia.com/terms/b/business-ethics.asp> .

*The Holy Bible (King James Version)*, Exodus 20:15 and Romans 6:23;

<https://www.bible.com/versions/1-kjv-king-james-version> .

U.S. Code, 15 U.S.C. s 78j(b), 1934; <https://law.justia.com/codes/us/title-15/chapter-2b/sec-78j/> .

*Wax NJ-2, LLC v. JFB Constr. & Dev.*, 111 F. Supp. 3d 434, 447 (S.D.N.Y. 2015); <https://case-law.vlex.com/vid/wax-nj-2-llc-888306757> .

*Woods v. Barnett Bank of Fort Lauderdale*, 765 F.2d 1004, 1010-11 (11<sup>th</sup> Cir. 1985);

<https://law.justia.com/cases/federal/appellate-courts/F2/765/1004/414672/> .

## **THE EFFECT OF OPERATING CASH FLOW ON SHARE PRICE IN THE RETAIL TRADE SECTOR**

*G. Todd Jackson*

*Brian K. Jackson*

*Gary Linn*

Rogers State University

### ***ABSTRACT***

Researchers in this study explore the extent to which movements in operating cash flows affect share prices for major firms in the retail trade industry. Prior to the current cash-flow reporting requirement for publicly traded corporations in the United States, investors often gave little heed to cash flow data. An infamous example was the case of the W.T. Grant Company in which investors overlooked deteriorating operating cash flows for three years before the company's eventual bankruptcy in 1976. In this paper, we utilize a time-series cross-sectional regression of share price on operating cash flows for the major firms in the very industry that contained W.T. Grant (Department Stores) to determine whether after nearly five decades following the Grant bankruptcy investors remember the lesson of that episode and if they factor in movements from operating cash flow in their pricing of corporate stock.

Key words: Cash flow, share price, operating income, financial distress, retail, stock returns

### **INTRODUCTION**

The purpose of this research is to explore the impact of operating cash flow data on stock prices for large corporations in a particular sector of the macroeconomy. Most major traditional stock valuation methods provide estimates based on the promise of future free cash flows (i.e., cash flow from assets) to investors. As free cash flow is the residual from operating cash flow after deducting net capital spending and changes in net working capital, an expected eventual positive operating cash flow trend is the sine qua non of true share valuation, and though free cash flow may indeed move oppositely from a declining operating cash flow trend for a significant period, rational investors will not intentionally feed an operating cash black hole forever.

Even in instances where accruals contributing to corporate income (accounts receivable, inventories, accounts payable, taxes payable, etc.) under Generally Accepted Accounting Principles mask an anemic movement in operating cash flows, equity holders are increasingly savvy today in discerning indicators of long-term firm performance on the cash flow statement from what is not so consequential on the income statement. Accordingly, we expect movements in operating cash flows to eventually lead those in share price for virtually all firms. Of course, for certain growth stocks the lag between cash flows and share price may be significant as investors remain patient for operations to generate cash, but in industries with mature technology the linkage should be tighter. Moreover, if in fact equity markets satisfy the assumptions of semi-strong efficiency, share prices for these firms should reflect operating cash flows rather quickly, or at least within a quarter spanned by a corporation's 10-K report.

In this study we examine the temporal effect of operating cash flows on share prices for the major firms that comprise the NAICS 452210 industry (Department Stores). This effort not only recalls Largay and Stickney's (1980) monumental investigation of the October 1975 bankruptcy of the nation's then-largest department store chain (W. T. Grant and Co.) wherein it was determined that investors failed to heed a persistent downtrend in operating cash flow, but it considers whether the lesson of that episode is lost on investors today. Are modern shareholders in this industry repeating the mistakes of the past? Further, as a basis for future analyses beyond this paper, we reason that if share prices for firms in the broader income-producing sector like Retail Trade and in others of the S&P sectors that are largely characterized by mature production technologies do not track operating cash flows in reasonably close fashion, then indeed, many of today's investors are ignoring or misapprehending critical cash flow data.

## LITERATURE REVIEW

We survey here a few significant works that detail the effects of operating cash flow data on market efficiency in the modern era. In the pre-Enron bankruptcy age, Dechow (1994) showed that accruals and cash flows have differential effects on stock returns. Cash flows are less prone to managerial manipulation, so markets tend to react more reliably to cash flow information. In more recent history, Gomez (2002), who produced one of the earliest cash flows analyses for Enron following its bankruptcy, makes the case that offsetting trends in cash flows from investing and financing activities masked anemic operating cash flows for that company as reported on its 10K reports for 1998 through 2000 and hence fended off suspicion that anything at that company was amiss. He presents figures for net cash from each of these activities in a panel that makes obvious to even casual observation the counteracting movements of these components. (Catanach and Roades-Catanach (2003) illustrate that Enron's reported earnings increase between 1997 and 2000 occurred simultaneously with a dramatic downturn in operating cash flow as well as in other common measures of performance.) The lesson from Gomez (2002) is that isolation of each activity (operating, investing, and financing) may in some instances be necessary for a cash flow analysis that provides real benefit to investors. Moreover, Luo (2008) demonstrates that a lack of detailed reporting of operating cash flow in current reporting practices often does mislead investors. He maintains that reporting of cash flows from unusual operations significantly increases the predictive ability of cash flow reporting.

Movements in accruals related to historical operating cash flow data as well as aggregate cash flow measures have been observed to predict share prices. Abarbanell and Bushee (1997) observe that fundamental analysis applied to contemporaneous changes in inventories, accounts receivable, and capital expenditures can produce 12-month cumulative size-adjusted abnormal returns. However, this approach does not seem to produce abnormal returns beyond one year. Arthur, N., Cheng, M., & Czernkowski, R. (2010) examine Australian Companies, as these companies were required to report cash flow by the direct method during their sample period, to determine that a cash flow components model more accurately predicts future earnings than an aggregate cash flow model. While each of these studies commend the predictive capabilities of time series models utilizing historical cash flows, certain studies have suggested otherwise. Greenberg et al. (1986) and Murdoch and Krause (1989) demonstrate that earnings forecast future cash flows with greater accuracy than do past cash flows. Finally, Sloan (1996) notes that stock prices seem to reflect investors' "fixation" on earnings more than their attention to accrual and cash flow components.

Several, more recent, studies have indicated that while markets are increasingly incorporating operating cash flow data in pricing stock, there is an underreaction to operating cash flow in the short run. Biddle, Bowen, and Wallace (1997) employ regression analysis to link economic value added (EVA), stock returns and cash flows to find that operating cash flow data significantly improve prediction of future returns beyond accounting earnings, but short run inefficiencies persist as markets often under-respond to operating cash flow signals. Collins and Hribar (2000) studied the incremental information content of cash flows versus accruals and found that operating cash flow contains unique information not fully captured in earnings, especially in predicting future stock returns. The study's implication for market efficiency is that markets do not fully incorporate operating cash flows immediately and that partial market efficiency exists. Healy and Palepu (2001) conclude that stock markets are semi-strong efficient with operating cash flow information incorporated only gradually. Chung, Elder, and Kim (2005) employ an event study to conclude that stock prices do in fact respond to unexpected cash flows, and that strong operating cash flows are associated with positive stock returns, but the response is somewhat muted in the short run. Ali, Chen and Radhakrishnan (2007) find that stocks for family firms in the S&P 500 likewise underreact to operating cash flow information though these firms report better earnings quality – as measured by earnings ability to predict future cash flows – than non-family firms. Their findings suggest that the corresponding market inefficiencies for such firms, though temporary, are nevertheless exploitable. Finally, Chen, Huang, and Lin (2025) examine operating cash flow predictions by machine learning approaches to observe that stock markets are not fully efficient because of the underpricing of operating cash flows. Certainly, the prospect of incorporating operating cash flows in advanced artificial learning contexts shows increasing promise for predicting stock values going forward.

In short, we may note that even in recent years market inefficiencies stemming from inadequate or delayed recognition of the value of operating cash flows remain for firms of virtually any size, but for small firms, in particular. With the forgoing limitations in mind, we recognize that historical cash flow valuation methods may have the potential to simply augment other valuation methods through hybrid approaches.

## **METHODOLOGY AND DATA**

We use a time-series cross-sectional regression to analyze panel data consisting of quarterly common stock returns and operating cash flows along with quarterly S&P 500 Consumer Discretionary Sector Index returns over the periods October 31, 1993, through October 31, 2022. For this study, we selected the eight largest companies in the National Retail Federation's *Top 100 Retailers 2022 List* (National Retail Federation, 2022) that belong to the same industry (Department Stores) as did the W.T. Grant Company. This allowed us to make an industry-controlled comparison of whether operating cash flow data has become more important to investors in their pricing of corporate stock over the time span beginning with the Grant bankruptcy event. Moreover, we desired to examine companies that share the same fiscal year-ending of January 31 and have monthly stock prices and quarterly financial data available from Yahoo! Finance over the previously specified period. The eight companies meeting these criteria along with their corresponding common stock ticker symbol are: Big Lots, Inc., (BIG); Dillard's Inc., (DDS); Nordstrom Inc., (JWN); Kohl's Corporation (KSS); Macy's Inc., (M); Target Corporation (TGT); TJX Companies Inc., (TJX); Walmart Inc., (WMT). Each panel consists of 117 quarters. Quarterly stock and sector index returns are determined from monthly stock and index prices. The first 113 quarters are used for model estimation and the last four quarters are used for examining model

predictive performance. Accordingly, the panel data used for model estimation consists of 904 observations (i.e., 8 companies  $\times$  113 quarters) and the panel data used to assess predictive performance consists of 32 observations (i.e., 8 companies  $\times$  4 quarters). The random effects lagged cash flows (LCF) model examined is as follows:

$$Ret_{it} = \alpha + \beta_0 SecRet_t + \delta_0 \Delta OCF_{it} + \delta_1 \Delta OCF_{i(t-1)} + \delta_2 \Delta OCF_{i(t-2)} + \delta_3 \Delta OCF_{i(t-3)} + e_t + \epsilon_{it} \quad (1)$$

where  $Ret_{it}$  is the quarterly return on the common stock of company  $i$  for quarter  $t$ , calculated by dividing the change in the adjusted price of the company  $i$  common stock by the adjusted price of the company  $i$  common stock at the beginning of the quarter;  $\alpha$  is the intercept or mean component;  $SecRet_t$  is the quarterly return on the S&P 500 Consumer Discretionary Index for quarter  $t$ , calculated by dividing the change in the index by the beginning of quarter index value;  $\Delta OCF_{it}$  is the change in the operating cash flow for company  $i$  in quarter  $t$  normalized by dividing by the sum of the book value of long-term debt and the market value of common stock at the beginning of quarter  $t$ ;  $\Delta OCF_{i(t-n)}$  is the  $n$ -period lagged value of  $\Delta OCF_{it}$ ;  $e_t$  is the time series variance component; and  $\epsilon_{it}$  is the error variance component.

The predictive performance of the model is assessed by comparing its forecast errors for the holdout sample against the errors of a simple contemporaneous sector return (CSR) model, which is effectively the previous model reduced to:

$$Ret_{it} = \alpha + \beta_1 SecRet_t + e_t + \epsilon_{it} \quad (2)$$

## RESULTS

Table 1 presents the simple statistics for the lagged cash flows model. Additionally, an examination of the off-diagonal elements to the Person correlation matrix for the variables in this table indicates that multicollinearity is not a concern

**Table 1** Sample summary statistics

Variable	$N$	Mean	Stdev	Sum	Minimum	Maximum
$SecRet_t$	904	0.0281	0.0837	25.4190	(0.2044)	0.2228
$\Delta OCF_{it}$	904	(0.0007)	0.0748	(0.5896)	(0.5237)	0.3140
$\Delta OCF_{i(t-1)}$	904	(0.0005)	0.0747	(0.4657)	(0.5237)	0.3140
$\Delta OCF_{i(t-2)}$	904	(0.0000)	0.0748	(0.0113)	(0.5237)	0.3140
$\Delta OCF_{i(t-3)}$	904	(0.0006)	0.0751	(0.5064)	(0.5237)	0.3140

A Breusch-Pagan Test for random effects yields an  $m$  value of 116.99 ( $p < 0.0001$ ), indicating that the null hypothesis of no random effects is appropriately rejected. Accordingly, a random effects model is confirmed applicable as opposed to a fixed effects model.

The parameter estimates of the LCF model are presented in Table 2. Although all the estimated coefficients for the explanatory variables are significant at the 0.01 level, the model's  $r$ -square is only 0.1454. Such would normally indicate that other variables potentially exist that would further explain the quarterly change in normalized stock returns across both companies and quarters. However, if stock markets have a high degree of market efficiency, as many maintain, we would

expect  $r$ -square to be a low value. That the coefficients of Table 2 are highly significant is well worth noting for what it implies regarding the limit of stock market efficiency in the Retail Trade Sector.

**Table 2** Lagged Cash Flows (LCF) model parameter estimates

	Dependent variable = $Ret_{it}$
$A$	0.0117 (1.1800)
$SecRet_t$	1.1711*** (10.3600)
$\Delta OCF_{it}$	0.4681*** (3.0000)
$\Delta OCF_{i(t-1)}$	0.9284*** (5.5100)
$\Delta OCF_{i(t-2)}$	0.6253*** (3.7600)
$\Delta OCF_{i(t-3)}$	0.4161*** (2.6600)

\*\*\* Significance at the 0.01 level

Figure 1 shows the residuals from applying the lagged cash flows model (LCM) to the one of the eight major companies in the Department Store Industry for this study having the largest variance in the residuals (Big Lots, Inc.). The observations are from the 113 quarters from October 31, 1993, through October 31, 2021. This residual plot is well centered about zero and exhibits reasonably constant variance suggesting that the residuals are indeed white noise. The plots for the remaining seven firms in the study are also zero-centered and even more reflective of white noise. This is strong evidence that all predictable patterns for end-of-quarter share prices appear to be captured by the model.

**Figure 1** Panel residuals from applying the LCM model the one firm in the study having the largest variance in the residuals

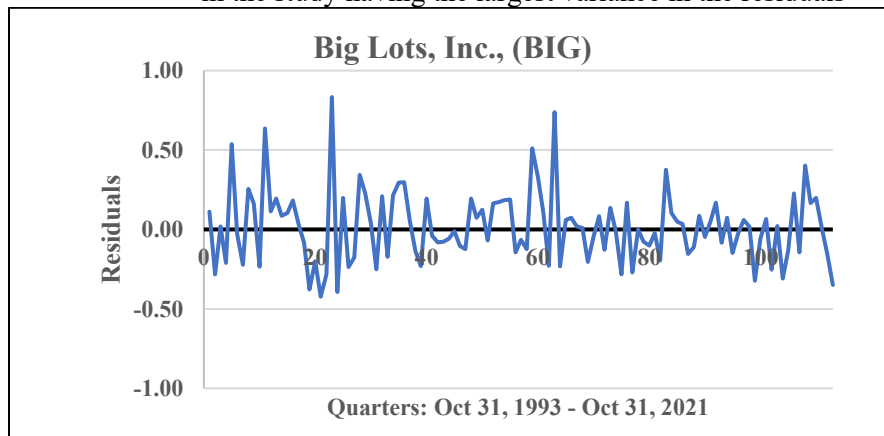
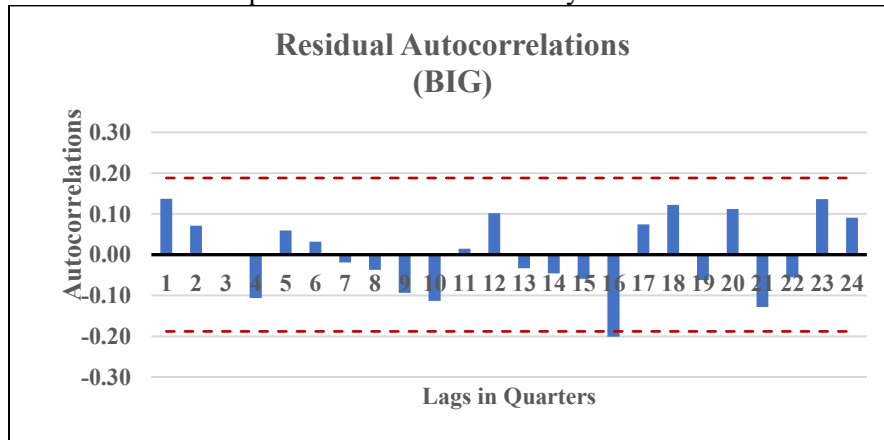


Figure 2 presents the autocorrelation functions with  $\pm 2/\sqrt{n}$  (app. 95%) confidence limits to test the null hypothesis that the residuals from applying the LCM model to the same firm (Big Lots) is a white noise sequence. In this case, as well as for the other seven, the null hypothesis is not rejected, indicating that autocorrelation in the residuals is not of concern. There are no trends, seasonality, or volatility clustering remaining in the errors.

**Figure 2** Autocorrelation functions of panel residuals from applying the LCM model to a sample of two firms in the study



Further evidence of white noise in the residuals can be noted by the values of the Ljung-Box statistic presented in Table 3 for each of the eight sample firms over the 24 lags indicated in Figures 1 and 2. The Ljung-Box statistic tests the null hypothesis that autocorrelations up to a certain lag in a time series are zero. As each  $p$ -value in this table is greater than 0.05, we conclude that there are no autocorrelations in any of the eight residual series. The residuals for each firm appear to be white noise indicating that the LCF model of (1) needs no adjustment.

**Table 3** Ljung-Box statistics for each firm

Firm	Ljung-Box $Q$ ( $df = 24$ )	$p$ -value
<i>BIG</i>	26.908	0.3087
<i>DDS</i>	13.920	0.9484
<i>JWN</i>	13.431	0.9585
<i>KSS</i>	14.140	0.9434
<i>M</i>	12.391	0.9751
<i>TGT</i>	17.093	0.8447
<i>TJX</i>	12.391	0.9751
<i>WMT</i>	17.749	0.8150

Alternatively, the estimation of the contemporary sector returns (CSR) model yielded the parameter values in Table 4. The model’s  $r$ -square is 0.1145. Again, the low  $r$ -square is indicative of stock market efficiency. However, that the  $r$ -square value for the LCF model is almost 27% higher  $((0.1454 - 0.1145) / 0.1145)$  suggests that the LCF model has significantly higher value for predicting returns.

**Table 4** Contemporaneous Sector Returns model parameter estimates

Dependent variable = $Ret_{it}$	
$A$	0.0092 (0.9200)
$SecRet_t$	1.2248*** (10.8000)

We now compare the abilities of the LCF and CSR models to predict the 2022 quarterly returns for the eight sample companies. This is accomplished by taking the predicted returns from each model along with the actual quarterly returns to compute the sum of the squared prediction errors for each sample company. The sign of the difference between the sum of the squared prediction errors (i.e.,  $SSE_{LCF} - SSE_{CSR}$ ) for each company is also determined. The results are shown in Table 5.

**Table 5** Sum of squared prediction errors

Panel	<u>LCF Model</u> (1)	<u>CSR Model</u> (2)	Sign of Difference
<i>BIG</i>	0.1373	0.1534	-
<i>DDS</i>	0.5713	0.5813	-
<i>JWN</i>	0.0831	0.1034	-
<i>KSS</i>	0.3696	0.4043	-
<i>M</i>	0.1798	0.1960	-
<i>TGT</i>	0.1393	0.1429	-
<i>TJX</i>	0.1301	0.1332	-
<i>WMT</i>	0.1207	0.1187	+
TOTALS	1.7313	1.8331	

For seven of the eight companies, the LCF Model provided better return predictions than the CSR model. A nonparametric sign test is applied to yield a  $p$ -value of 0.0352 which rejects the null hypothesis that the CSR model yields panel prediction errors less than or equal to those of the LCF model. The one company that the LCF model did not predict better – WMT – has a higher percentage of groceries (>50%) in their sales. This could be a factor for why the LCF model did not predict better.

## CONCLUSION

The time-series model obtained by regressing quarterly common stock returns on three trailing quarter-lagged operating cash flows and the contemporaneous operating cash flow and quarterly S&P 500 Consumer Discretionary Sector Index over the periods from October 31, 1993 through October 31, 2021 has significantly superior ability to predict future stock returns than the simpler model developed by regressing the stock returns on the contemporaneous operating cash flow and sector index alone. This result indicates that there is additional predictive power for corporate stock returns obtainable by including the current and lagged operating cash flows. Accordingly, there seems to be information in these cash flows that is not fully included in current share prices. The use of the Lagged Cash-Flow model would have produced returns to investors over 2022 that exceeded those for the relevant sector index in seven of the eight firms examined. This result points to some degree of market inefficiency and suggests that the Lagged Cash-Flow model could produce additional returns for investors in the Consumer Discretionary Sector and, perhaps, in

others of the 11 S&P sectors as well. As in the era of the W.T. Grant bankruptcy, recent investors in the Department Store industry could have increased their returns by giving more attention to operating cash flow data in their pricing of common stock. We hope to consider this question as it applies to the other sectors as a follow-up investigation to this paper. Finally, as the eventual goal, we hope to assess the prediction power of an augmentation of the model of (1) formed by including Principal Components constructed from important independent variables that are typically included in fundamental analysis.

## REFERENCES

- Abarbanell, J., & Bushee, B. (1997). Fundamental analysis, future earnings, and stock prices. *Journal of Accounting Research*, 35(Spring), 1–24.
- Ali, A., Chen, T., & Radhakrishnan, S. (2007). Corporate disclosures by family firms. *Journal of Accounting and Economics*, 44, 238–286.
- Arthur, N., Cheng, M., & Czerkowski, R. (2010). Cash flow disaggregation and the prediction of future earnings. *Accounting & Finance*, 50(1), 1–30.  
<https://doi.org/10.1111/j.1467-629x.2009.00316.x>
- Ball, R., & Watts, R. (1972). Some time series properties of accounting income. *The Journal of Finance*, 27(3), 663–681.  
<https://doi.org/10.1111/j.1540-6261.1972.tb00991.x>
- Beaver, W. H. (1970). The Time series behavior of earnings. *Journal of Accounting Research*, 8, 62 – 69. <https://doi.org/10.2307/2674693>
- Biddle, G., Bowen, R., and Wallace, J. (1997). Does EVA™ beat earnings? Evidence on associations with stock returns and firm values. *Journal of Accounting and Economics*, 24(3), 301–336.
- Catanach, A. H., & Rhoades, S. C. (2003). Enron: A Financial Reporting Failure? *SSRN Electronic Journal*, 48(4). 1057–1076. <https://doi.org/10.2139/ssrn.418920>
- Chen, Y. W., Huang, M. N., & Lin., C. B. (2025). Stock mispricing and SEO decisions: How does the market respond to the timing behavior? *The European Journal of Finance*, 31(10), 1338–1367. <https://doi.org/10.1080/1351847X.2025.2479635>
- Chung, R., Elder, R., & Kim, J. (2005). Investment opportunities and market reaction to cash flows. *Journal of Accounting, Auditing & Finance*, 20(1), 1–32.
- Collins, D. W., & Hribar., P. (2000). Earnings-based and accrual-based anomalies: Implications for the relation between earnings and cash flows. *Accounting Review*, 75(2), 145–166.
- 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(1), 3–42.

Jackson, Jackson and Linn

Gomez, L. (2002). Enron - A Case for Better Understanding of Cash Flows. *Business Credit*, 104(July-August), 12–13.

Greenberg, R. R., Johnson, G. L., & Ramesh, K. (1986). Earnings versus Cash Flow as a Predictor of Future Cash Flow Measures. *Journal of Accounting, Auditing & Finance*, 1(4), 266–277. <https://doi.org/10.1177/0148558x8600100402>

Jackson, B. and Briley, J. (2015). The Responsiveness of Share Price to Operating Cash Flow in Modern Corporate Bankruptcies. *Research in Finance*, 31(1), 135–140.

Healy, P. M., & Palepu, K. (2001). Information Asymmetry, Corporate Disclosure and the Capital Markets: A Review of the Empirical Disclosure Literature. *SSRN Electronic Journal*, 31(1-3). <https://doi.org/10.2139/ssrn.258514>

Largay, J. A., & Stickney, C. P. (1980). Cash Flows, Ratio Analysis and the W.T. Grant Company Bankruptcy. *Financial Analysts Journal*, 36(4), 51–54. <https://doi.org/10.2469/faj.v36.n4.51>

Luo, M. (2008). Unusual operating cash flows and stock returns. *Journal of Accounting and Public Policy*, 27(September), 420–429.

Murdoch, B., and Krause, P. (1989). An empirical investigation of the predictive power of accrual and cash flow data in forecasting operating cash flow. *Akron Business and Economic Review*, 20(3), 100–113.

National Retail Federation. (2022). *Top 100 Retailers 2022 List*. <https://nrf.com/research-insights/top-retailers/top-100-retailers/top-100-retailers-2022-list>

Ou, J., and Penman, S. (1989). Financial statement analysis and the prediction of stock Returns. *Journal of Accounting and Economics*, 11(4), 295–329.

Penman, S. H. (2003). The Quality of Financial Statements: Perspectives from the Recent Stock Market Bubble. *Accounting Horizons*, 17(s-1), 77–96. <https://doi.org/10.2308/acch.2003.17.s-1.77>

Sloan, R. (1996). Do stock prices fully reflect information in accruals and cash flows about future earnings? *The Accounting Review*, 71(3), 289–315.

*Virtual Student Services – Health Info | The University of Alabama*. (n.d.). [Healthinfo.ua.edu](https://healthinfo.ua.edu/virtual-student-services/). <https://healthinfo.ua.edu/virtual-student-services/>

Wahlen, J., Baginski, S., & Bradshaw, M. (2010). Financial Reporting, Financial Statement Analysis and Valuation: A Strategic Perspective (7<sup>th</sup> ed.). *Thomson Publishing*.

Yahoo finance. (2025). *Yahoo Finance - Business Finance, Stock Market, Quotes, News*. YahooFinance. <https://finance.yahoo.com>

## THE IMPACT OF ESG DISCLOSURE TYPE ON INVESTMENT BEHAVIOR ACROSS GENERATIONAL COHORTS

*Theodore Andrews*

*Leah Hall*

*Joshua Nyantakyi*

*Arthur Wharton*

Virginia State University

### **ABSTRACT**

This study investigated how different types of Environmental, Social, and Governance (ESG) disclosures affect investment behavior across Generation Z, Y, X, and Baby Boomers. Using a 1x4 experimental design, 441 participants were randomly assigned to receive full ESG and segmented ESG information about a hypothetical company. The findings revealed Gen Z and Gen Y perceived lower risk and showed greater willingness to invest. They also invested more, especially with targeted environmental, governance, or social information, suggesting that younger generations are more responsive to specific ESG disclosures. Conversely, Baby Boomers consistently reported higher risk perception, lower willingness, and smaller investment amounts across conditions.

**Keywords:** Disclosures, Environmental, Social, Governance, ESG, Generational Cohort

### **Introduction**

A generational cohort is defined as a group of people born around the same time. Given their shared experiences and exposure to the same historical events during the same phases of life, they will generally have similar values and behaviors. These similar behaviors lead to shared perspectives and even approaches to and perceptions of information. There are several generational cohorts beginning in the early 20<sup>th</sup> century to the present that have been identified in specific and largely accepted clusters starting with the Greatest Generation (1901-1927), Silent Generation (1928-1945), the Baby Boomer Generation (1946-1964), Generation X (1965-1980), Generation Y Millennials (1981-1996), Generation Z (1997-2010) and finally Generation Alpha (after 2010).

While these are generalizations, the cohorts have been observed to possess distinct differences that have been chronicled in both the academic literature and the popular press. Baby Boomers have a strong work ethic, rebellious and challenging to institutions and conformity with a strong sense of entitlement to a “good life” and belief in continuous progress. (Crestcom, 2018; Lee and Kiley, 2005) Their decision-making tends to be calculated, rooted in pragmatism, and discipline. Their investment philosophy is cautious, conservative, and leery of debt. (Solsten, 2025)

Generation X rejects their elders, Baby Boomers, and have a more cynical view of institutions. They are more prone to self-reliance and skeptical of authority. They prize authenticity, transparency and work-life balance. (Divrsity 2024; Eisner, 2005; Gorrell, 2008) Their decision-making values pragmatism, realism and a results (get it done) orientation. They are comfortable with ambiguity are open to learning and prefer manageable risk. (Solsten, 2025)

Generation Y Millennials are civic-minded, optimistic, idealistic and social-cause oriented (Eisner, 2005; Gerristen, 2008) technology savvy, desire purpose and meaning in their work and personal lives. They value diversity, inclusion and are color-blind in their relationships with others. (AllVoices, n.d; Stone, et al, 2001) Their decision-making is driven by their comfort with and proficiency in technology. They seek out investment options that align with their personal values. They prefer brands that support social causes. (First Merchants Bank, 2024).

Generation Z are a “digital native” generation whose formative years were in a hyper-connected globalized world that faced social and environmental challenges and economic shifts. (Telefonica, 2024). They place a premium on authenticity, sustainability and personal well-being. Their financial posture is ambitious, goal-oriented valuing financial stability, but they are eager early adopters of financial planning and budgeting tools that are available as computer applications ie. apps. (The Campus Agency, n.d.; Labi, 2008a)

These varied experiences and world views are likely also reflected in their approaches to and perceptions of investment and financial information. In particular new information requirements for publicly traded companies. The Securities and Exchange Commission finalized the Environmental, Social and Governance (ESG) disclosures requirement in March 2024 after the 2022 release of a proposal on ESG reporting requirements.

Prior literature has examined, in general, how ESG disclosures influence investment decisions, however, there has been limited attention to how ESG disclosures affect investment behavior within and across different generational cohorts. Understanding these nuances is vital for firms as they seek to develop their ESG communications for a diverse investor population. This study examines the impact of ESG disclosures across generations. We posit that these generational differences will be reflected in how ESG disclosures will be perceived by the generational cohorts, Baby Boomers, Generation X, Generation Y Millennials and Generation Z. The findings will contribute to the literature on investor psychology by providing insights for those seeking to shape corporate communications to a broader range of potential investors.

## **Literature Review**

In Altaf (2022) a study was conducted with 516 millennial investors reveal their investing behavior is significantly influenced by generational biases. These include fear of missing

out (FOMO), leading them to pursue opportunities their peers are enjoying; a strong inclination towards socially responsible investing (SRI), favoring companies with ethical practices; overconfidence in their investment abilities, resulting in higher risk-taking; and herding behavior, where they mimic the investment decisions of their peers. The paper proposes a generational theory of behavioral biases, suggesting that these collective tendencies are crucial for understanding market anomalies. Investment managers should cater to these biases by offering avenues to mitigate FOMO, promoting socially responsible portfolios, and enhancing millennials' financial literacy.

Pašiušiene et al (2024) A study reveals Generation Z students are theoretically keen on green investments but hesitant to commit financially. While they grasp the societal benefits of sustainable investing and are digitally savvy, their investment behavior doesn't always align with their green ideals. The research, using the Pompien MBTI model on 379 students, aimed to categorize investor types and assess their willingness to choose green investments, simultaneously educating them on responsible decision-making. Despite high expressed interest in "greening the world," a gap exists between their understanding and practical investment actions. This highlights the need for educational initiatives to bridge this divide, encouraging Gen Z to translate their values into actual sustainable financial choices.

Patil, Gokhale (2022) A study highlights that Millennials and Generation Z share similar investment patterns, largely due to their common exposure to technology and awareness of sustainability. Both generations are proactive and financially savvy, favoring equity, stocks, and mutual funds, and increasingly exploring cryptocurrency. They prioritize future security and high returns, with many investing monthly. While both show strong interest in sustainable investing for its societal and long-term benefits, this preference isn't gender-biased. Key obstacles include market uncertainties and a lack of financial knowledge, suggesting a need for enhanced financial literacy and personalized guidance.

Okere et al (2008) A study examining the period from 1984 to 2006 found that Baby Boomers significantly influence socially responsible investing (SRI). Lacking direct SRI data, researchers used expenditure on retirement savings as a proxy, given the strong correlation between increased savings and greater interest in SRI. The findings indicate that higher income and education expenditure among Baby Boomers strongly drive their retirement savings, and consequently, their engagement in SRI. This highlights the importance for investment managers to consider Baby Boomers' financial power and ethical concerns when developing strategies, as these investors increasingly seek to align their portfolios with social and environmental values.

Christian, Bidayati (2025) A study conducted in Yogyakarta analyzed intergenerational differences in financial literacy, planning, and management among Gen-X, Gen-Y (Millennials), and Gen-Z. Using a sample of 60 respondents per generation and the Kruskal-Wallis test, the research found no significant differences in financial literacy or financial planning across the three groups. However, there were significant differences in

financial management, with Gen-Z demonstrating superior financial management behavior compared to both Gen-X and Gen-Y. This suggests that while financial knowledge and planning intent may be similar across generations, the practical application of managing finances differs, with the youngest generation showing the most advanced skills in this area.

Nio et al (2019) A study examining residents of Yogyakarta found no significant differences in financial literacy or financial planning across Generation X, Generation Y (Millennials), and Generation Z. However, a notable distinction emerged in financial management, where Generation Z demonstrated superior practices compared to the older generations. This suggests that while all three generations may possess similar financial knowledge and intentions for planning, the youngest generation is more adept at practical money management. This could be attributed to Gen Z's greater exposure to and comfort with digital financial tools and a heightened awareness of financial responsibility stemming from contemporary economic challenges.

Hall et (2024) This study investigated the impact of different ESG disclosure types on investor decisions and capital allocation using a behavioral experiment with 363 participants. Participants received either single (environmental, social, or governance) or full ESG information about a hypothetical company. The findings indicate that full ESG disclosures significantly increase investors' willingness to invest and lead to larger capital allocations. Crucially, comprehensive ESG information was also associated with reduced perceived investment risk. Among individual ESG factors, social disclosures garnered the highest investment, followed by governance, and then environmental disclosures. These results underscore the importance of transparent and comprehensive ESG reporting in influencing investment behavior and mitigating risk perceptions, offering insights for companies seeking socially responsible investments and policymakers developing ESG standards.

## **Methodology**

We initially employed a  $1 \times 4$  between-subjects experimental design to collect data for this analysis. The main independent variable, ESG information, was manipulated into four distinct experimental conditions. In the full ESG disclosure condition, participants received comprehensive information encompassing the company's environmental impact, social practices, and governance structure. In the environmental disclosure condition, participants were provided only with information related to the company's environmental performance. In the social disclosure condition, the focus was on how the company manages relationships with individuals and communities. In the governance disclosure condition, participants received information about the company's leadership, oversight mechanisms, and internal controls.

Using Qualtrics, participants were randomly assigned to one of these four conditions. A total of 643 responses were collected. These responses were subsequently segmented into

four generational cohorts—Generation Z, Generation Y, Generation X, and Baby Boomers—to examine the impact of ESG disclosure type on investment behavior across these cohorts.

### Participants

Following data cleaning procedures, all incomplete responses were removed, resulting in a final sample of 441 completed and usable responses for analysis. Of these, 113 participants were assigned to the Full ESG Disclosure condition, 107 to the Environmental-Only condition, 110 to the Social-Only condition, and 111 to the Governance-Only condition. Table 1 presents a detailed breakdown of the number of participants from each generational cohort within each experimental condition.

Table 1

Generational cohort	Experimental Condition			
	Full ESG	Environmental	Social	Governance
Gen Z	31	29	30	29
Gen Y	30	28	29	29
Gen X	22	22	23	25
Boomer	30	28	29	27
<b>Total number of participants</b>	<b>113</b>	<b>107</b>	<b>110</b>	<b>111</b>

The age range of Gen Z investors included in the analysis was 16 to 27 years, with the majority falling between 21 and 26 years. In terms of investment roles, most individuals identified themselves as personal investors, managing their own portfolios. A smaller proportion reported roles as professional investors (investing on behalf of others), stock brokers, or selected “other” as their role.

A wide variety of investment vehicles were reported, with common choices including retirement accounts, individual stocks, mutual funds, and cash deposits. Others indicated involvement in more complex financial instruments such as corporate bonds, U.S. Treasury bonds, derivatives, and private equity. Investment activity spanned several industries, including technology, finance, healthcare, consumer goods, real estate, energy, and manufacturing. Among these, technology and finance were the most frequently selected sectors. In terms of portfolio value, a large proportion reported holdings under \$50,000, while others indicated portfolios ranging from \$50,000 to \$100,000. A smaller segment held portfolios exceeding \$100,000. Concerning professional designation, some individuals held certifications such as Certified Financial Analyst (CFA), Certified Public Accountant (CPA), Certified Investment Banker (CIB), and Certified Management Accountant (CMA). However, a significant number reported no current professional designation, reflecting the early career stage typical of this age group.

The age range of Generation Y (Millennial) investors in the sample spanned from 28 to 44 years, with the majority falling between 30 and 40 years, indicating a sample composed primarily of early- to mid-career adults actively engaged in investment decisions. Most individuals identified as personal investors, managing their own portfolios. A smaller proportion reported roles as professional investors (investing on behalf of others), stock brokers, or selected “other” as their investment role. A broad array of investment vehicles was reported. Common choices included retirement accounts, individual stocks, mutual funds, and cash deposits. Some also indicated involvement in more sophisticated instruments such as corporate bonds, U.S. Treasury bonds, derivatives, and private equity. Investment activity was distributed across various industries, including technology, finance, healthcare, consumer goods, real estate, energy, and manufacturing, with technology and finance being the most frequently selected sectors.

In terms of portfolio value, a significant portion reported holdings under \$50,000, while others indicated values between \$50,000 and \$100,000. A smaller group reported portfolios exceeding \$100,000. Regarding professional designations, some individuals held credentials such as Certified Financial Analyst (CFA), Certified Public Accountant (CPA), Certified Investment Banker (CIB), and Certified Management Accountant (CMA). However, a notable proportion reported no current professional designation, consistent with the varied professional stages within this generational cohort.

The Gen X cohort consisted of adult investors whose ages ranged from 44 to 59 years. The distribution of ages was heavily concentrated in the early to mid-40s, with the most frequent responses being between 44 and 46 years old. In terms of investment roles, the majority of respondents identified themselves as personal investors, meaning they primarily invest for their benefit. A smaller proportion identified as professional investors, who manage investments on behalf of others, followed by a limited number who indicated roles as stock brokers or selected "other." Participants reported being actively involved in a diverse range of industries. The most commonly reported sectors included technology, finance, healthcare, real estate, energy, consumer goods, and manufacturing. Many investors selected multiple industries, with technology and finance emerging as the most frequently chosen areas of investment.

Regarding investment portfolio size, responses varied. A substantial portion of participants reported portfolio values of less than \$50,000. Others indicated portfolios ranging from \$50,000 to \$100,000, while a smaller but significant group reported portfolios exceeding \$100,000. This distribution suggests a sample comprising entry-level investors as well as those with more established financial assets. Finally, when asked about professional designations, the majority of participants indicated that they held no current certification. However, a noteworthy segment reported professional credentials, including Certified Financial Analyst (CFA), Certified Investment Banker (CIB), Certified Public Accountant (CPA), and Certified Management Accountant (CMA). A small number of participants selected "Other" to describe their professional background.

The Baby Boomers were older adult participants, with ages ranging from 60 to 79 years. This cohort is often associated with significant wealth accumulation and investment experience, making them particularly relevant to studies involving personal finance and investment behavior. The majority of respondents identified their role in investing as personal investors, indicating they manage their own investment portfolios. A small proportion of participants reported alternative roles, such as professional investors, stockbrokers, or those involved in other capacities. In terms of professional designation, the vast majority of participants reported no current professional designation, suggesting that while they are active investors, most are not credentialed finance professionals. However, a small subset held designations such as Certified Financial Analyst (CFA), Certified Public Accountant (CPA), Certified Management Accountant (CMA), or Certified Investment Banker, indicating some professional investment or financial expertise within the sample.

Participants reported a wide range of portfolio values. While a notable number of respondents reported portfolios valued above \$100,000, a considerable proportion had portfolios in the \$50,000–100,000 range or below \$50,000, reflecting varying levels of investment engagement and financial capacity within the cohort. The participants also demonstrated diversified investment interests. Most were invested in multiple industries, with Technology, Healthcare, Finance, Energy, and Consumer Goods being the most frequently selected sectors. Real Estate and Manufacturing were also commonly cited, along with some respondents indicating investments in "Other" industries not explicitly listed. Overall, this sample reflects a financially active, Baby Boomer investor population with diverse investment portfolios and predominantly personal investment roles.

### **Dependent variables**

This study examined three primary dependent variables related to participants' investment decisions. First, **risk assessment** evaluated how participants perceived the risk associated with investing in the hypothetical company, LAWJ Inc., based on the information provided. Participants were asked, "What is your risk assessment regarding your investment in LAWJ Inc.?" Responses were recorded using a Likert scale ranging from 1 (very low risk) to 5 (neutral risk) to 9 (very high risk).

Second, **willingness to invest** measured participants' inclination to invest in the company after considering the associated risks. To assess this, participants responded to the question, "Based on the information presented in the case, how willing are you to invest in LAWJ Inc.?" using a Likert scale where 1 indicated "not at all willing," 5 indicated "undecided," and 9 indicated "very willing." Finally, the **amount to invest** captured the monetary value participants were willing to allocate to the investment. Participants were asked, "Assume you have \$5,000 to invest. How much of the \$5,000 would you invest in LAWJ Inc.? (Please use round numbers, no decimals)."

### **Data Analysis and Findings**

## Risk Assessment

Perceptions of investment risk can vary widely depending on the type of information investors receive. In recent years, companies have increasingly shared Environmental, Social, and Governance (ESG) information to help investors make informed decisions. However, it is still unclear how different generations assess risk based on the type of ESG information disclosed.

This study hypothesizes that (H1): there are significant differences in the perceived investment risk of LAWJ, Inc. across generational cohorts, and that these differences vary depending on the type of ESG (Environmental, Social, and Governance) information disclosed.

**Table 2**

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
FDRiskAsses	Between Groups	19.746	3	6.582	3.417	.020
	Within Groups	209.971	109	1.926		
	Total	229.717	112			
EDRiskAssess	Between Groups	9.992	3	3.331	1.527	.212
	Within Groups	226.860	104	2.181		
	Total	236.852	107			
GovRiskAssess	Between Groups	22.475	3	7.492	3.096	.030
	Within Groups	258.895	107	2.420		
	Total	281.369	110			
SoRiskAssess	Between Groups	12.310	3	4.103	1.968	.123
	Within Groups	220.963	106	2.085		
	Total	233.273	109			

To test this, participants were asked to assess the investment risk of LAWJ, Inc. after reviewing different ESG disclosure conditions: full disclosure (FDRiskAssess), environmental-only (EDRiskAssess), governance-only (GovRiskAssess), and social-only (SoRiskAssess). Participants were categorized into four generational cohorts: Gen Z, Gen Y, Gen X, and Baby Boomers.

The results in Table 2 revealed generational differences in perceived investment risk across ESG disclosure types. Under full disclosure, Gen Z and Gen Y reported lower risk perceptions (means = 4.32 and 4.53) not reported, while Gen X and Boomers assessed higher risk (means = 5.23 and 5.27) not reported. This difference was statistically significant,  $F(3, 109) = 3.417, p = .020$ . In the governance-only condition, a similar pattern emerged with younger cohorts perceiving less risk than older ones (Gen Z = 4.63; Boomers = 5.76) not reported, again yielding a significant result,  $F(3, 107) = 3.096, p = .030$ .

However, no statistically significant differences were found in the environmental-only  $F(3, 104) = 1.527, p = .212$  or social-only  $F(3, 106) = 1.968, p = .123$  conditions, despite visible trends of increasing risk perception with age. These findings suggest that generational differences in perceived investment risk are more pronounced when comprehensive or governance-specific ESG information is provided, highlighting the nuanced role of disclosure type in shaping investor perceptions across age groups.

### **Willingness to Invest**

In recent years, Environmental, Social, and Governance (ESG) factors have gained prominence as critical components in investment decision-making. Investors increasingly evaluate non-financial disclosures to assess organizational risk and long-term value. However, the impact of ESG information may vary across demographic groups, particularly among different generational cohorts. Understanding how specific types of ESG disclosures affect investment behavior across different age groups is crucial for tailoring corporate communication strategies effectively.

To explore the generational differences in willingness to invest in a company based on the type of ESG information provided—environmental, social, governance, or a comprehensive ESG, this study hypothesized that (H2): There are significant interaction between generational cohort and type of ESG disclosure on willingness to invest in LAWJ Inc., such that Gen Z participants will report higher investment willingness than older generations across disclosure conditions.

**Table 3**

ANOVA		Sum of Squares	df	Mean Square	F	Sig.
FDWiltoInvt	Between Groups	30.392	3	10.131	3.125	.029
	Within Groups	333.870	103	3.241		
	Total	364.262	106			
EDWiltoInvt	Between Groups	67.939	3	22.646	5.494	.002
	Within Groups	420.438	102	4.122		
	Total	488.377	105			
GovWiltoInvt	Between Groups	103.410	3	34.470	8.244	<.001
	Within Groups	447.400	107	4.181		
	Total	550.811	110			
SoWiltoInvt	Between Groups	44.350	3	14.783	3.069	.031
	Within Groups	510.523	106	4.816		
	Total	554.873	109			

To assess how different forms of ESG (Environmental, Social, and Governance) disclosure influence investors' willingness to invest across generational cohorts, participants were randomly assigned to one of four experimental conditions. Each group received only one type of ESG-related information about LAWJ Inc.: (1) full ESG disclosure (FDWiltoInvt), (2) environmental-only disclosure (EDWiltoInvt), (3) governance-only disclosure (GovWiltoInvt), or (4) social-only disclosure (SoWiltoInvt). Following the disclosure, participants were asked: "Based on the information presented in the case, how willing are you to invest in LAWJ Inc.?" Responses were recorded on a 9-point Likert scale (1 = not willing at all, 9 = very willing). Participants were categorized into four generational cohorts: Gen Z, Gen Y, Gen X, and Baby Boomers.

In Table 3 the one-way ANOVA results revealed a significant effect of generation on willingness to invest among participants exposed to full ESG disclosure,  $F(3, 103) = 3.125$ ,  $p = .029$ . Gen Z participants reported the highest willingness to invest ( $M = 6.38$ ,  $SD = 1.70$ ) not reported, followed by Gen Y ( $M = 6.11$ ,  $SD = 1.81$ ) not reported, Gen X ( $M = 5.73$ ,  $SD = 1.98$ ) not reported, and Baby Boomers ( $M = 5.00$ ,  $SD = 1.74$ ) not reported. This pattern suggests that full ESG transparency may be more persuasive for younger investors.

Significant generational differences were also found in the environmental-only disclosure condition,  $F(3, 102) = 5.494$ ,  $p = .002$ . Participants in Gen Z again exhibited the highest investment willingness ( $M = 6.52$ ,  $SD = 1.72$ ), compared to Gen Y ( $M = 5.41$ ,  $SD = 2.47$ ) not reported, Gen X ( $M = 5.00$ ,  $SD = 2.00$ ) not reported, and Baby Boomers ( $M = 4.39$ ,  $SD = 1.87$ ) not reported. These results suggest that environmental sustainability information may resonate more strongly with younger cohorts when considered in isolation. A robust generational effect emerged in the governance-only disclosure condition,  $F(3, 107) = 8.244$ ,  $p < .001$ . Gen Z participants demonstrated the highest mean willingness to invest ( $M = 6.70$ ,  $SD = 1.77$ ) not reported, followed closely by Gen Y ( $M = 6.48$ ,  $SD = 2.61$ ) not reported. Gen X ( $M = 5.57$ ,  $SD = 1.88$ ) not reported, and Baby Boomers ( $M = 4.31$ ,  $SD = 1.78$ ) not reported, reported lower willingness. These findings indicate that governance-related disclosures may be a particularly influential form of non-financial risk assessment information for younger generations.

In the social-only condition, a significant effect of generation was also observed,  $F(3, 106) = 3.069$ ,  $p = .031$ . Gen Z again reported the highest willingness to invest ( $M = 6.10$ ,  $SD = 2.29$ ) not reported, followed by Gen Y ( $M = 5.69$ ,  $SD = 2.02$ ) not reported, Gen X ( $M = 5.04$ ,  $SD = 2.42$ ) not reported, and Baby Boomers ( $M = 4.44$ ,  $SD = 2.04$ ) not reported. Although this pattern mirrors the other conditions, the effect size was comparatively smaller. Across all four experimental groups, Gen Z participants consistently reported the highest willingness to invest in LAWJ Inc., regardless of the type of ESG disclosure presented. Baby Boomers consistently reported the lowest levels of willingness to invest. These findings suggest that generational cohorts differ in how they perceive and respond to ESG information, with younger generations appearing more receptive to non-financial disclosures, especially those related to governance and environmental performance. The results underscore the importance of tailoring risk and value communication strategies to generational profiles in investment contexts.

### **Amount to Invest**

As environmental, social, and governance (ESG) factors gain prominence in corporate communications, it is essential to understand how different types of ESG disclosures impact investment behavior across generational cohorts. This study investigates how the amount individuals choose to invest in a hypothetical company, LAWJ, Inc., varies based on the type of ESG information disclosed—whether full, environmental-only, governance-only, or social-only—and across four generational groups: Gen Z, Gen Y, Gen X, and Baby Boomers.

This study suggests that (*H3*): Gen Z participants will invest significantly more in LAWJ, Inc. when presented with a single dimension of ESG information (i.e., governance-only, social-only, or environmental-only), compared to when they are presented with full ESG disclosure.

Participants were asked to indicate how much of a hypothetical \$5,000 they would invest in LAWJ, Inc., based on varying levels of ESG (Environmental, Social, and Governance) information disclosure. Four experimental conditions were established: full disclosure of all ESG information (FDAmttoInvt), disclosure of only environmental information (EDAmttoInvt.), disclosure of only governance information (GovAmttoInvt), and disclosure of only social information (SoAmttoInvt).

Participants were further categorized into generational cohorts: Gen Z, Gen Y, Gen X, and Baby Boomers. As stated earlier, it was hypothesized that there would be significant differences in the amount participants are willing to invest across generational cohorts, and that these differences would vary based on the type of ESG information disclosed.

In Table 4, ANOVA results provide strong support for this hypothesis. While the full disclosure condition did not produce statistically significant differences across generations,  $F(3, 109) = 2.005, p = .118$ , the other disclosure types did. Environmental-only disclosure yielded substantial generational differences,  $F(3, 101) = 4.739, p = .004$ , with Gen Y and Gen Z investing more than older cohorts.

**Table 4**

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
FDAmttoInvt	Between Groups	15923562.494	3	5307854.165	2.005	.118
	Within Groups	288619542.409	109	2647885.710		
	Total	304543104.903	112			
EDAmttoInvt	Between Groups	45217072.945	3	15072357.648	4.739	.004
	Within Groups	321207623.245	101	3180273.497		
	Total	366424696.190	104			
GovAmttoInvt	Between Groups	69953454.343	3	23317818.114	9.898	<.001

	Within Groups	252074642.432	107	2355837.780		
	Total	322028096.775	110			
SoAmttoInv	Between Groups	51151063.459	3	17050354.486	7.829	<.001
	Within Groups	230844343.959	106	2177776.830		
	Total	281995407.418	109			

The governance-only and social-only conditions produced the most substantial generational effects,  $F(3, 107) = 9.898, p < .001$ , and  $F(3, 106) = 7.829, p < .001$ , respectively, with Gen Z consistently reporting the highest investment levels. These findings suggest that Gen Z is exceptionally responsive to targeted ESG disclosures, especially those related to governance and social information, and may exhibit reduced engagement when presented with comprehensive ESG disclosure, potentially due to information overload or a less focused narrative. Overall, the results highlight the importance of tailoring ESG communication strategies to generational preferences, thereby better aligning them with investor behavior.

## Conclusion

All of the hypotheses (H1-H3) were supported by statistically significant margins. These findings suggest that investors are more likely to invest in companies that provide the full range of ESG disclosures. I.e. Environmental, social and governance disclosures. This further suggests that investors perceive the presence of full ESG disclosure as less risky. In line with this, investors are willing to allocate more capital to companies that provide full ESG disclosures as an expression of the perceived less risk.

The findings further suggest that the type of ESG disclosure will differentially influence investment decisions and allocation of capital. Investors allocated higher levels of capital in the following order (highest to the lowest): Social, Governance and Environmental. It is posited that investors preference for social disclosures was tied to being more familiar with social disclosures due to CSR reporting having a longer history of being provided by companies. With environmental disclosures ranking lowest in investment allocation, it is further posited that this type of disclosure is the least familiar to investors and having the shortest history of being provided by companies.

As global environmental concerns heighten due to concern for climate change etc., it is expected that environmental disclosures may likely move up in the ranking of influence in investor decision making with regard to capital allocation.

## Further Study

Given that environmental and governance disclosures consistently appear to be given the most or highest consideration by younger generational cohorts, areas for further study might explore more deeply what aspects of environmental and governance information resonate best with potential investors. Also, this effect may be more pronounced based on particular industries or sectors of the economy. Discovering which, if any, industries or sectors this may exhibit would be valuable in crafting corporate communications to enhance investor interest. In addition, these industry or sector effects may also vary similarly or differently across generational cohorts.

## REFERENCES

- AllVoices. (n.d.). *What is Generation Y? Definition and Explanation*. Retrieved from <https://www.allvoices.co/glossary/generation-y>
- Altaf, H., Jan, A. 2023. Generational Theory of Behavioral Biases in Investment Behavior. *Borsa Istanbul Review*, Vol. 23, (4) pp. 834-844.
- Bora, I., Duan, H.K., Vasarhelyi, M.A., & Zhang, C., 2021. The Transformation of Government Accountability and Reporting. *Journal of Emerging Technologies in Accounting*. 18(2): 1-21.
- Crestcom Leadership Training. (2018, January 16). *A Look at the Differing Worldviews Among Generations*. Retrieved from <https://crestcom.com/blog/2018/01/16/predictably-different-a-look-at-the-differing-worldviews-among-generations/>
- Divrsity. (2024, December 17). *Understanding Generation X: Uncovering Their Unique Perspective on DEIB in the Workplace*. Retrieved from <https://divrsity.team/blog75-gen-x-and-dei.html>
- Eisner, S.P. (2005). Managing Generation Y.S.A.M. *Advanced Management Journal*, 70(4) 4-16.
- First Merchants Bank. (2024, December 23). *Generational Spending Habits: How Gen X, Z and Millennials Compare*. Retrieved from <https://www.firstmerchants.com/resources/learn/blogs/blog-detail/resource-library/2024/12/23/generational-spending-habits--how-gen-x--z-and-millennials-compare>

- Gerritsen, A. (2008). Millennials: The New Brand of Creatives. <http://www.youtube.com/watch?gl=GB&hl=en-GB&v=SI91WDbYRbw>. Journal of Applied Business and Economics vol.11(2).
- Gorrell, M. (2008). When Marketing Tourism, Age Matters, Expert Says. The Salt Lake Tribune, May 13.
- Hall, L., Nyantakyi, J., Andrews, T. & Wharton, A. 2024. The Impact of ESG Factors on Investor Decisions: A Behavioral Experiment on Stock Selection and Capital Allocation. Working Paper.
- Labi, S. (2008a). Baby Boomers: Our New Age. Sunday Telegraph, December 14, 50.
- Lee, L. & D. Kiley (2005). Love Those Boomers. Business Week, October 24, 3956, 94.
- Okere, V., Latiff-Zaman, N., Malone, P. 2008. The Impact of Baby Boomer Generation on Socially Responsible Investing. Journal of International Business Strategy. Vol.8 (2). Pp. 72-81.
- Pasiusiene, I., Podviezko, A., Malakaite, D., Zarskiene, L., Liu-cvaitiene, A. & Martisiene, R. 2024. Exploring Generation Z's Investment Patterns and Attitudes Towards Greenness. Sustainability. Vol. 16, 352.
- Patil, Y., and Maharashtra, B. 2022. Investing in the Age of Millennials and Gen-Z: A Comparative Analysis. Innovision Journal of Management Research. Vol. 6 (2) pp. 15-28.
- Rechandy, A., Sukardi, C. & Utik, B. 2025. Financial Literacy, Financial Planning, Financial Management An Analysis of Intergenerational Behavior in Gen-X, Gen Y and Gen-Z. Journal of Management Studies and Development. Vol. 4 (2). Pp.143-156.
- Simon, M.M. (2009). What's a Tween? [http://www.onmission.com/site/c.cnKHIPNuEoG/b.829991/k.8FB4/Whats\\_a\\_Tween.htm](http://www.onmission.com/site/c.cnKHIPNuEoG/b.829991/k.8FB4/Whats_a_Tween.htm).
- Solsten. (2025, July 10). *8 Psychological Traits That Explain Baby Boomers In 2025*. Retrieved from <https://solsten.io/blog/psychological-traits-characteristics-baby-boomers-2025>
- Solsten. (2025, July 10). *The Psychological Traits That Explain Gen X In 2025*. Retrieved from <https://solsten.io/blog/psychological-traits-characteristics-gen-x>

Andrews, Hall, Nyantakyi and Wharton

Stone, M., Stanton, H., Kirkham, J., & Pyne, W. (2001). The Digerati: Generation Y Finds Its Voice. Why Can't Brands Do the Same? *Journal of Targeting, Measurement and Analysis for Marketing*, 10 (2), 158-168.

Telefonica. (2024, January 15). *To understand Generation Z today is to glimpse a radically different future*. Retrieved from <https://www.telefonica.com/en/communication-room/blog/to-understand-generation-z-today-is-to-glimpse-radically-different-future/>

The Campus Agency. (n.d.). *Understanding Gen Z Psychographics: Insights Into Values & Behaviors*. Retrieved from <https://thecampusagency.com/understanding-gen-z-psychographics-insights-into-values-behaviors/>

## **ROBOTIC PROCESS AUTOMATION AND FUTURE EMPLOYMENT OF ACCOUNTING PROFESSIONALS**

*Gladie Lui*

ESCP Business School

*Connie Shum*

Pittsburg State University

### ***ABSTRACT***

The COVID-19 pandemic created an increased need for companies to use Robotic Process Automation (RPA) for efficiency and cost cutting. Most companies that utilize RPA start with their accounting and finance departments because of the routine and rule-based nature of accounting and finance functions. Consequently, accounting job displacement by the implementation of RPA becomes unavoidable. This study has two objectives. First, it explores perceptions of accounting students regarding impact of RPA on the accounting profession. Results show that there is an expectation gap between students' expectations and the real-world scenario of accounting jobs being replaced by RPA. However, after engaging in learning activities in the accounting course used in this study, students realize that RPA can displace accountants. Their perceptions become more in line with that of the real-world scenario. Second, this study also explores how accounting education should be modified to help accounting students prepare for the working world with RPA, and how accountants already in the workforce can avoid being replaced by RPA.

Key Words: Automation, Robotic Process, job displacement, student perceptions

### **INTRODUCTION**

COVID-19 rapidly and irrevocably reshaped the global business climate. Siderska (2021) finds that, during the pandemic, half of the 110 companies surveyed have implemented new solutions in robotizing business processes. According to another study by Arden University, the professional, scientific and technical activities is set to lose over 760,000 jobs to automation and technology by 2030. The study also suggests that 30% of all jobs in the U.K. could be eradicated due to automation (Alberti, 2022).

The pandemic also accelerated the adoption of robotic process automation (RPA) in the accounting profession. Accounting firms were well aware of the economic value of RPA even before the pandemic. Inadvertently, the increasingly mobile workforce, the demand for better remote collaboration, and the need to contain costs as a result of the pandemic have sped up the adoption of RPA.

RPA replaces many types of manual processes. Accounting professionals have been using it successfully for a variety of routine tasks such as accounts payable, accounts receivable, financial closing, controller work, financial planning and analysis, expense management, and tax work. According to a survey conducted by Cooper, Holderness, Sorensen, and Wood (2019), all areas within many large accounting firms are adopting RPA, with tax services being the furthest along in implementation, followed by advisory services, and assurance services.

Accountants have valid reasons to worry about losing their jobs to robots. However, many university accounting students do not realize that RPA may eliminate many jobs in their future accounting employment. After investing much precious time and valuable financial resources in pursuing higher education for a promising future in their careers, are these future accounting graduates ready to cope with the reality that they may have difficulty finding their dream jobs in the field that they have been trained for? Because of the adoption of RPA, these students may not be prepared to face a world in which the accounting profession will be very different from what they expect because they are not trained and equipped to adapt to the changes and take on the new roles of accountants.

This study has two objectives. First, it explores perceptions of accounting students regarding impact of RPA on the accounting profession and examines if an expectation gap exists between the perception of the students and the real-world scenario of accounting jobs being replaced by RPA. Second, this study also explores how accounting education should be modified to help accounting students prepare for the working world with RPA, and how accountants already in the workforce can avoid being replaced by RPA.

## **ROBOTIC PROCESS AUTOMATION**

RPA uses software programs to automate repetitive, routine business processes. It enables the building, deployment, and management of software robots that emulate human actions interacting with digital systems and software. RPA is rule based. It is a form of business process automation that allows users to define a set of instructions for a robot to execute routine, pre-defined manual tasks. Software robots can do things that people do. They understand what is on a screen, complete the right keystrokes, navigate systems, identify and extract data, and perform a wide range of defined actions, and they do it faster, more consistently, and at higher volume than people can. Processes that are labor intensive, repetitive, high volume, rule based, in digital form using multiple systems and structured data are suitable tasks for automation with RPA (Kokina and Blanchette, 2019).

RPA is ultimately about automating some of the most mundane and repetitive computer-based tasks and processes in the workplace. It is an application of technology that aims at automating business processes that are governed by business logic and structured inputs. Software, or a “robot,” is configured to capture and interpret applications for processing transactions, manipulating data, triggering responses, and communicating with other digital systems.

Many organizations are investing in RPA today. Robots are expected to deliver a significant portion of current transactional activities, enabling human workers to be redeployed to perform activities that add more value to the organizations. According to statistics reported by 3Laws Robotics, 90% of businesses are implementing robotic automation in administrative processes, and 70-80% of administrative tasks are predicted to be automated in the next decade (3Laws Robotics). The global RPA market, estimated at approximately \$4.68 billion in 2025, is experiencing rapid growth, with projections suggesting it could reach \$35.84 billion by 2033. Driven by an increasing demand for operational efficiency and cost reduction in businesses, as well as AI integration and digital transformation, the market is expanding at a high Compound Annual Growth Rate (CAGR) of 29% from 2026 to 2033 (Grand View Research). In addition, Allied Market Research reported that the online accounting software market was valued at \$5.2 billion in 2023, and is estimated to reach

\$10.1 billion by 2033, growing at a CAGR of 6.6% from 2024 to 2033 (Allied Market Research, 2024).

As of 2025, 35% of workers reported that robots or AI are already performing better than humans in administrative tasks. Companies are seeing up to a 40% increase in efficiency and a budget saving from \$5 million to \$10 million annually from automation (3Laws Robotics). RPA continues to out-perform expectations on non-financial benefits such as accuracy, timeliness, flexibility, and improved compliance. Since RPA streamlines workflows, organizations will be more profitable, flexible, and responsive. According to a report published by Deloitte (Wright, Witherick, and Gordeeva, 2017), a Fortune 1000 organization with around \$20 billion revenue and 50,000 employees could improve its net profit by over \$30 million each year if it automates 20% of its addressable activity through RPA. In addition to financial benefits, removing mundane tasks from employees' workdays will also increase employee satisfaction, engagement, and productivity. Robots can also enable companies to free up employees for more meaningful work, which will advance the organizations' digital transformation efforts.

## **HOW ROBOTIC PROCESS AUTOMATION WILL IMPACT ACCOUNTING— LITERATURE REVIEW**

Manual processes in accounting tend to be time-consuming. Boyle (2020) points out five primary areas where manual accounting processes require and consume significant resources: time, cost, risk, audit and compliance, and talent. Boyle states that with automation and behavioral change, 30 to 40 percent of time can be reduced, and by moving from manual processes to automation, organizations can achieve significant cost savings and reduce the chance of employees committing fraud. Furthermore, companies can attract and retain accounting talents by providing opportunities for employees to redirect their efforts toward analyzing data and being productive strategic advisors to the business. Kokina and Blanchette (2019) interview RPA users and find that along with cost savings, accounting firms experience improved process documentation, lower error rates, more accurate measurement of process performance, and better report quality.

RPA can handle many standard routine accounting tasks. It has the potential to remove a lot of the mundane aspects from certain accounting roles. A few leading accounting software providers (e.g. Xero, Intuit, Sage) incorporated technology into their software to automate basic accounting functions such as bank reconciliations, invoice categorization, risk assessment, audit processes, etc. Such automation can streamline processes, and turn inefficient, error-prone, labor-intensive processes into efficient, error-free processes that require very little human intervention. Moffitt, Rozario, and Vasarhelyi (2018) posit that with its capability to automate rules-based tasks that are repetitive and manual, RPA is expected to repurpose the role of auditors. Perfunctory tasks will be replaced, higher order thinking skills will be emphasized, leading to enhanced audit quality. The survey conducted by Cooper, Holderness, Sorensen, and Wood (2021) reveals that both Big 4 accounting firm leaders and lower-level employees generally find RPA to have a positive influence on the profession. They believe that RPA has and will change the work employees perform from mundane to more value-added tasks. Consequently, it will open new opportunities, thereby increasing job satisfaction. They also believe that career prospects within accounting firms will significantly improve, increasing the attractiveness of the accounting profession.

In a survey conducted by Kokina, Gilleran, Blanchette, and Stoddard (2021), experienced professionals interviewed comment that automation in the accounting profession is not simply already happening but also accelerating. Accountants must adapt in order to navigate these changes.

## **WILL ACCOUNTANTS BE REPLACED BY ROBOTIC PROCESS AUTOMATION**

Driven by the pandemic, many organizations transformed their entire workforces to working remotely virtually overnight. The digital workplace advanced by decades in a matter of weeks. In just two months, companies worldwide spent \$34.6 billion on cloud services, which is the equivalent of two years' worth of digital transformation (Marchi, 2021). The increasing use of RPA software in the accounting industry has many accountants across the country worried that RPA will replace the need for companies to work with accountants. Accountants are inevitably among those who will be affected. In fact, according to a calculator developed by Deloitte and Oxford University, there is a 95% chance that accountants will lose their jobs to robots within the next two decades ("Will a Robot Take Your Job?" 2015).

With modern technology leading the transformation of the future digital workplace, the organizational structure of the finance and accounting profession will gradually change from its current traditional pyramidal shape (Figure 1) to a diamond shape (Figure 2) ("Pyramids to Diamond," 2019). Traditionally, a Chief Financial Officer (CFO) is at the top of a pyramid. He/she is supported by a layer of leadership in functional areas such as treasury, reporting, and financial control and planning. Beneath them is a larger layer of technical experts who perform analysis to help the leaders create those

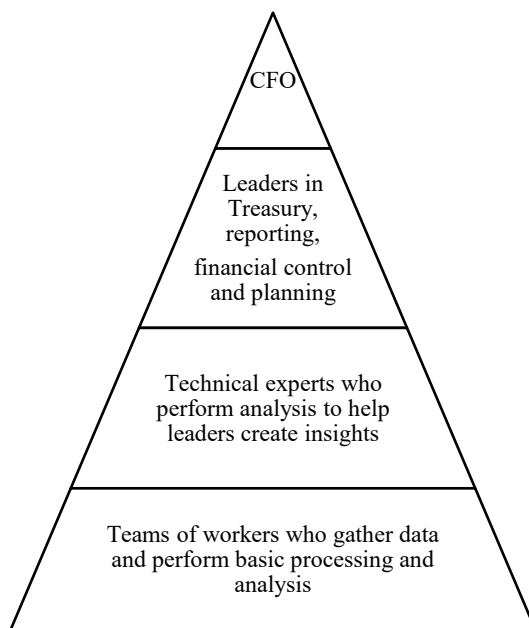


Figure 1. Traditional finance and accounting organizational structure.

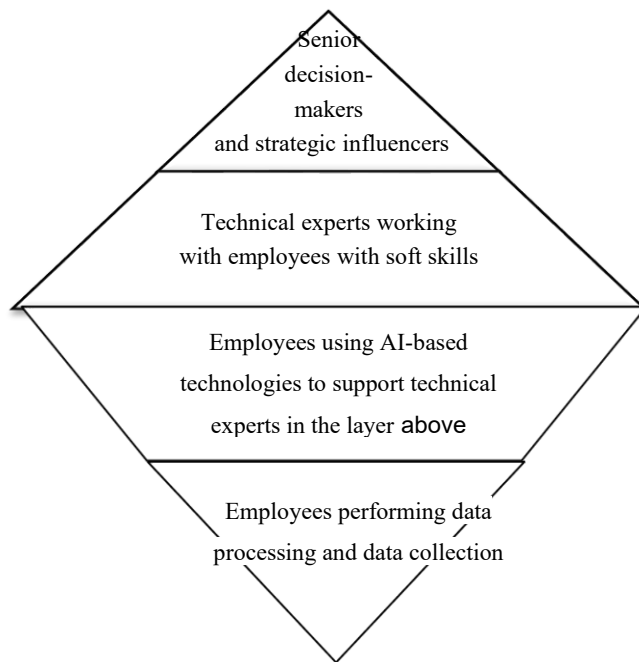


Figure 2. Diamond shape of future finance and accounting digital workplace.

insights. At the base of the pyramid are large teams of workers who gather data and perform basic processing and analysis. But with sophisticated technologies processing data automatically, the bottom layer of workers is not needed as much as before anymore. The pyramid now has a new shape that looks more like a diamond. Senior decision-makers and strategic influencers will occupy the small top layer. Technical experts in the layer beneath those leaders work together with employees who have softer skills – business partnering, influencing, and innovating. The experts and workers in this second layer are increasingly supported by a third layer of AI-based technologies that increase their ability to support other functions across the whole organization. The bottom layer of data processing and collection is now much smaller due to automation. And this bottom layer will continue to get smaller as new technologies become more commonplace.

As a result of the shrinking bottom layer of the organizational structure of the finance and accounting profession, many jobs that are repetitive and incorporate manual undertakings will be displaced. That means entry-level accountants will likely be replaced by RPA. Consequently, employment opportunities for prospective accounting graduates can be greatly hindered. Are university accounting students prepared for this unavoidable trend of future employment upon graduation? This study explores accounting students' perception of the impact of RPA on future accounting employment. It also investigates if an expectation gap exists between students' perception of the probability of accounting jobs being displaced by RPA and the real-world scenario. It further examines if college education narrows the expectation gap if it does exist.

## **HYPOTHESES**

A significant acceleration in the adoption of RPA for accounting tasks is expected, and substantial changes are on the horizon. Are accounting students aware that automation has been implemented

in accounting processes and has profoundly changed the nature of the profession? Do they realize that RPA may eliminate many jobs in their future accounting careers? This study aims to explore the perceptions of accounting students regarding the impact of RPA on the accounting profession. The following three hypotheses are examined in this study. Manufacturing and office clerical job sectors are selected for comparison because they are industries that have been hit hardest by automation in recent years (Coreen, 2026).

H1: There is no significant difference in students' perception of the probability that RPA Will replace humans in manufacturing, office clerical, and entry-level accounting jobs.

H2: There is no significant difference in students' perception and experienced accounting managers' perception of the probability that RPA will replace humans in entry-level accounting jobs.

H3: Accounting education/training alters students' perception of the probability that RPA Will replace humans in entry-level accounting jobs.

The verification of these three hypotheses will help determine whether or not accounting education/training may narrow the expectation gap between students' perception and real-world scenario of humans being displaced from accounting jobs by RPA.

## **METHODOLOGY**

The subjects in this study were first-year business students who enrolled in a year-one Accounting Principles course at a university in England in 2023. Two questionnaires were used in a survey to collect data from these students. The first questionnaire was a pre-test administered on the first day of the course, and the second was a post-test administered at the end of the course. In this study, students' responses from the pre-test and post-test were paired up. Responses from those students who did not complete both tests were discarded. To ensure anonymity, each student was asked to choose a secret code to identify himself/herself. The code was then used to match each student's responses to the two questionnaires. Paired Sample t-Test and Independent Sample t-Test were used for analyses.

### **Pre-test Survey**

To examine whether there is a difference in students' perception of the probability that RPA will replace humans in manufacturing, office clerical, and entry-level accounting jobs, students were asked the following three questions as a pre-test on the first day of the course:

Question 1: In your opinion, what is the probability that robots will replace manufacturing jobs?

Question 2: In your opinion, what is the probability that robots will replace office clerical jobs?

Question 3: In your opinion, what is the probability that robots will replace entry-level accounting jobs?

Paired Sample t-Test is used to examine if there is any significant difference in the students' perception of how probable these three types of jobs will be replaced by robots.

## Journal of Business and Accounting

With respect to learning, students engaged in the following activities during the twelve weeks of class meetings:

1. The focus of Module One (the first six classes of the course) was on Financial Accounting. In this Module, students were required to do homework assignments on accounting equations, journal entry, posting, trial balance, income statement, balance sheet, and statement of cash flows by using EXCEL spreadsheet. The objective of these assignments was to have students complete these basic accounting processes manually.
2. From week four to week six, students were introduced to Mind Your Own Business (MYOB), an Australian bookkeeping and accounting software. Students learned that such software could complete the accounting processes in a much more efficient and error-free manner than doing it manually using EXCEL spreadsheet.
3. At the end of Module One, students were required to work on a simulation case about Bach, a company that produces hair dryers. It included information on production, human resources, financing, and other aspects of company operation. Other forecasted information such as quantity produced and sold, selling price, marketing expenses, dividends, etc., was also given. Using EXCEL spreadsheet, students were asked to construct financial statements (balance sheet, income statement, statement of cash flows) for eight different scenarios. Based on these financial statements, students had to make business decisions such as whether equipment should be purchased, or hiring and termination of employees. Students again gained experience in manually completing basic accounting processes through this simulation case.
4. Module Two, week 7 to week 12 of the course, focused on Managerial Accounting. Each lesson started with a five- to seven-minute video provided by the publisher of the textbook. Real companies were used in the videos to reinforce principles and concepts of managerial accounting that students learned in class, demonstrating how relevant they are when making business decisions in the real world.
5. Students were required to answer case questions for each lesson in Module Two. Many of these questions were presented in the form of simulation games. Students were given EXCEL templates to help them evaluate multiple scenarios and assumptions before making any decisions.

### Post-test Survey

To examine whether or not accounting education/training alters students' perception of the impact of robots on the displacement of accounting jobs, students were asked the following post-test question at the end of the course:

Question 4: In your opinion, what is the probability that robots will replace entry-level accounting jobs?

Paired Sample t-Test is used to compare students' pre-test and post-test perceptions to assess if education plays a role in changing students' perception in regard to accounting jobs being replaced by robots.

To investigate if there is any expectation gap between students' perception of the probability of accountants being displaced by robots, responses from students' pre-test and post-test are compared with responses from experienced accounting managers currently in the workforce. Fifty-two

management-level accountants were surveyed. They were asked to indicate their perception of how probable robots would displace human workers at entry-level accounting jobs.

## RESULTS AND FINDINGS

### Descriptive Statistics

Descriptive statistics of respondents are presented in Table 1. As shown in Panel A, 126 students completed both the pre-test and post-test. Exactly half of the respondents are female and half of them are male. The average age of the students is 19.4 years. Their average work age is only 0.61 year. Panel B shows that of the 52 accounting managers in the survey, 29 (56%) are female and 23 (44%) are male. Their average age is 52.3 years. They are seasoned professionals, with an average of 29.26 years of working experience.

Table 1. Descriptive statistics of respondents.			
Panel A. Descriptive statistics of students (N=126).			
	Min.	Max.	Average
Age (year)	18	22	19.4
Work Age (year)	0.5	2	0.61
Gender	F = 63 (50%); M = 63 (50%)		
Panel B. Descriptive statistics of managers (N=52)			
	Min.	Max.	Average
Age (year)	35	65	52.3
Work Age (year)	12	42	29.26
Gender	F = 29 (56%); M = 23 (44%)		

Perception of the respondents regarding the probability that selected jobs will be replaced by RPA is presented in Table 2. As shown in Panel A, in the pre-test, students think there is a 20% to 100% probability (mean 56.53%, standard deviation 19.28%) that manufacturing jobs will be replaced by RPA. For office clerical jobs, the probability is between 6% and 90% (mean 36.99%, standard deviation 17.61%). And for entry-level accounting job, the probability is between 5% and 78% (mean 28.64%, standard deviation 18.04%). It appears that students consider manufacturing jobs the most likely to be replaced by RPA, whereas accounting jobs are the least likely to be replaced. But after receiving accounting education/training, their perception regarding accounting jobs changed. The perceived probability is now higher at between 10% and 90% (mean 44.24%, standard deviation 19.28%).

<b>Table 2. Perception of students and accounting managers: Probability of manufacturing, clerical, and accounting jobs being replaced by RPA.</b>				
<b>Panel A. Perception of students.</b>				
	Min.	Max.	Mean	Std. Dev.
Prob_pre-test_manufacturing (%)	20.00	100.00	56.53	19.28
Prob_pre-test_clerical (%)	6.00	90.00	36.99	17.61
Prob_pre-test_accounting (%)	5.00	78.00	28.64	18.04
Prob_post-test_accounting (%)	10.00	90.00	44.24	19.28
<b>Panel B. Perception of accounting managers.</b>				
	Min.	Max.	Mean	Std. Dev.
Manager_prob_accounting (%)	10.00	80.00	46.05	17.88

Panel B of Table 2 presents the perception of the accounting managers. They perceive that the probability of accounting jobs being replaced by RPA is between 10% and 80% (mean 46.05%, standard deviation 17.88%).

## Results

For the testing of H1, Paired Sample t-Test-is performed to examine if there is any significant difference in students' perception of how probable manufacturing, clerical, and accounting jobs will be replaced by robots. Table 3 shows the results of all possible pairwise comparisons of these three types of jobs.

As shown in Table 3, there are significant differences in pre-test means for manufacturing, office clerical, and entry-level accounting jobs. Therefore, H1 cannot be accepted. Results also reveal that students perceive that manufacturing jobs are the most likely to be replaced by RPA, followed by office clerical jobs, and then entry-level accounting jobs.

H2 states that there is no significant difference in students' perception and experienced managers' perception of the probability that RPA will replace humans in entry-level accounting jobs. To test if H2 is valid, pre-test data collected from students is compared with data collected from experienced accounting managers. Independent Sample t-test is used to examine if there is any difference in the variance between students' pre-test mean

	t	Sig.
Pair 1 Prob_pre-test_accounting versus Prob_pre-test_clerical	-6.39*	.000
Pair 2 Prob_pre-test_accounting versus Prob_pre-test_manufacturing	-15.49*	.000
Pair 3 Prob_pre-test_clerical versus Prob_pre-test_manufacturing	-11.92*	.000
*significant at the 0.01 level		

<b>Panel A. Comparison of students' perceptions in the pre-test and accounting managers' perceptions.</b>				
	N	Mean	Std. Dev.	Mean difference
Prob_pre-test_accounting (Student)	126	28.64	1.60	-17.41*
Manager_prob_accounting	52	46.05	2.48	
*mean difference is significant at the 0.01 level; t = 5.87; df = 176				
<b>Panel B. Comparison of students' perceptions in the pre-test and post-test.</b>				
Prob_pre-test_accounting (Student)	126	28.64	1.60	-15.6*
Prob_post-test_accounting (Student)	126	44.25	19.29	
*mean difference is significant at the 0.01 level; t = 10.545, df = 125				
<b>Panel C. Comparison of students' perceptions in the post-test and accounting managers' perceptions.</b>				
Prob_post-test_accounting Student)	126	44.14	19.28	-1.811
Manager_prob_accounting	52	46.05	2.48	
mean difference reports no statistical significance; t = 0.6; df = 176				

score and that of the managers' sample. Table 4 Panel A presents the results of the Independent Sample *t*-Test. Levene's Test for Equality of Variances is conducted to check the equality of variances.

Results shown in Panel A reveal that there is statistically significant difference between students' pre-test perceived probability of RPA replacing accounting jobs and the perception of the experienced accounting managers ( $t_{176}, p < .001$ ). Therefore, H2 cannot be accepted. This difference suggests that students underestimated how probable it is that RPA will displace accountants in the real world, and, therefore, an expectation gap exists between the students and the accounting professionals.

H3 states that accounting education/training alters students' perception of the probability that RPA will replace humans in entry-level accounting jobs. Using Paired-Sample t-Test, each student's pre-test and post-test perception regarding accounting jobs are paired up and compared to test this hypothesis. Results are presented in Table 4 Panel B. As shown in the results, there is significant difference in the pre-test and post-test mean scores. Therefore, H3 cannot be rejected. This difference suggests that education/training during the twelve-week course increases students' awareness of the probability of accounting jobs being replaced by RPA.

Further statistical test is conducted to examine if education/training leads to the narrowing of expectation gap between students' perception of the probability of RPA replacing accounting jobs. Using Independent Sample t-Test, students' post-test perception is compared to accounting managers' perception. Levene's Test for Equality of Variances is conducted to check the equality of variances in this statistical procedure. Table 4 Panel C shows the results of the test. Results suggest that education/training changes the students' perception. After engaging in twelve weeks of learning activities in the course, students become more aware that RPA can displace accountants. Their perception is now more realistic and in line with that of the experienced accounting managers, which serves as a proxy for the real-world scenario.

## DISCUSSIONS

Many repetitive and tedious tasks that are currently performed by humans are expected to be replaced by machines and robots. As the adoption of RPA increases in the accounting profession, more routine jobs normally performed by accountants will be done by machines instead. However, as revealed in the pre-test results in the survey conducted in this study, university accounting students did not fully comprehend the potential impact of automation on the accounting profession. Although they perceived that it is likely manufacturing jobs will very likely be replaced by automation (probability of 56.53%), they did not consider it very likely that accounting jobs would face the same fate (probability of 28.64%). However, after being introduced to both manual, tedious accounting tasks of the accounting process (from journal entry to the final products of financial statements) and MYOB (Mind Your Own Business), an accounting software that automates the same manual tasks, the students' perception changed. At the end of the course, they realized that the probability of accounting jobs being replaced by RPA (44.24%) was higher than they thought.

Will accounting jobs be replaced by RPA? It is unlikely that automation will eliminate all jobs in the future. Although there may not be any need for physical labor, and millions of low- and middle-level positions will be eliminated, more new jobs will be created because of automation. Gartner research firm predicts that, through 2028, automation-related investments can lead to a net headcount increase potentially as high as 30% within an enterprise (Poitevin & Suda, 2026). Technological adoption by companies will transform tasks, jobs, and skills. As a result, a large number of people may need to shift occupational categories and learn new skills in order to find their way into these new jobs.

Will accountants survive the world of RPA? Although RPA can handle many basic accounting tasks faster, more efficiently, and without human error, it does not mean that it will replace accountants altogether. The accounting profession will simply evolve, and the role of accountants will be changed. Automation will free accountants from mundane, repetitive tasks to devote more time to analyzing, interpreting and understanding information and data, and focus on other parts of their job that are more challenging. There will always be a need for human intelligence even with automation. Instead of displacing accountants, RPA will just transform the duties performed by accountants to a higher and more sophisticated intellectual level.

For those accountants who are already in the workforce, it is imperative for them to future-proof their jobs. They must embrace new technology and learn how to maximize its use for the enhancement of their ability to better serve their clients. They need to gain a better understanding of automation and coding, and have additional skill of understanding and operating robots. They must develop technical competence in the areas of data analytics, data science, business intelligence, and information systems in order to remain relevant. Those who learn technology effectively will be able to perform differentiating, value-added activities such as interpreting recommendations from cognitive tools, evaluating analytics, and providing clients with decision-making insights. Such vital knowledge and skills can be acquired through continuing education and professional development programs. Consequently, those who are willing to expand their skills and keen to adapt by learning how to work alongside machines and robots will be able to identify opportunities for growth and will not have to fear that they will be displaced by technologies.

Just as the responsibilities and duties of accountants will be transformed due to the implementation of RPA, accounting education programs will also need to adapt and be modified to assimilate the current trends and meet the needs of the working world. It is crucial for educational institutions to enhance their accounting curriculum in order to better prepare students for the changing profession. To equip graduating accounting students joining the workforce with skills that they need for future accounting work, many universities have already incorporated information technology and data management courses into their accounting curriculum. However, even with education, students might still not be ready to face the real world when they graduate because it is expected that 70% of skills used in most jobs will be different by 2030 (Malinsky, 2025). Therefore, current university accounting students need to understand that they have to be ready to re-skill when they join the workforce. They also need to be aware that in order to stay current and relevant in their future accounting profession, they will have to be trained and re-trained, and embrace a culture of lifelong learning.

## REFERENCES

- 3Laws Robotics. “Robotic Automation and the Future of Administrative and Support Services.” [https://3laws.io/pages/Robotic\\_Automation\\_and\\_the\\_Future\\_of\\_Administrative\\_and\\_Support\\_Services.html](https://3laws.io/pages/Robotic_Automation_and_the_Future_of_Administrative_and_Support_Services.html) retrieved on April 1, 2026
- Alberti, S. (October 21, 2022). “Upskilling Required by Firms to Offset ‘Threat’ of Accounting Qutomation.” *Accountancy Age*. <https://accountancyage.com/2022/10/21/upskilling-required-by-firms-to-offset-threat-of-accounting-automation/> retrieved on March 25, 2026

## Journal of Business and Accounting

- Allied Market Research. (August 2024). "Online Accounting Software Market Research, 2034." <https://www.alliedmarketresearch.com/online-accounting-software-market-A121386> retrieved on April 1, 2026
- Boyle, M. (September 1, 2020). "The Real Costs of Manual Accounting." <https://sfmagazine.com/post-entry/september-2020-the-real-costs-of-manual-accounting/> retrieved on June 6, 2022
- Cooper, L.A., Holderness, D.K. Jr., Sorensen, T.L., and Wood, D.A. (2019). "Robotic Process Automation in Public Accounting." *Accounting Horizons*, 33 (4), 15-35.
- Cooper, L.A., Holderness, D.K., Sorensen, T.L., and Wood, D.A. (2021). "Perceptions of Robotic Process Automation in Big 4 Public Accounting Firms: Do Firm Leaders and Lower-level Employees Agree?" *Journal of Emerging Technologies in Accounting*. <https://doi.org/10.2308/JETA-2020-085>.
- Coreen, D. (February 2026). "AI Job Replacement Statistics (2025-2030): Industries Most Affected." <https://www.davron.net/ai-job-replacement-statistics-2025-2030/> retrieved on April 8, 2026
- Grand View Research. "Robotic Process Automation Market (2026-2033)." <https://www.grandviewresearch.com/industry-analysis/robotic-process-automation-rpa-market> retrieved on April 1, 2026
- Kokina, J., and Blanchette, S. (2019). "Early Evidence of Digital Labor in Accounting: Innovation with Robotic Process Automation." *International Journal of Accounting Information Systems*, 35. <https://doi.org/10.1016/j.accinf.2019.100431>.
- Kokina, J., Gilleran, R., Blanchette, S., and Stoddard, D. (2021). "Accountant as Digital Innovator: Roles and Competencies in the Age of Automation." *Accounting Horizons*, 35(1), 153-184.
- Malinsky, G. (May 13, 2025). "Within 5 Years, '70% of Skills Used in Most Jobs Will Change,' LinkedIn Report Says—How You Can Keep Up." <https://www.nbcwashington.com/news/business/money-report/within-5-years-70-of-skills-used-in-most-jobs-will-change-linkedin-report-says-how-you-can-keep-up/3912412/> retrieved on April 1, 2026
- Marchi, J. (March 18, 2021). "The Role of the Digital Workplace." <https://www.workgrid.com/blog/2021/03/18/digital-workplace-trends-2021> retrieved on June 6, 2022
- Moffitt, K.C., Rozario, A.M., and Vasarhelyi, M.A. (2018). "Robotic Process Automation for Auditing." *Journal of Emerging Technologies in Accounting*, 15(1), 1-10.
- Poitevin, H., and Suda, N. (January 23, 2026). "Why Your Headcount Strategy Matters More than AI Downsizing." <https://www.gartner.com/en/articles/ai-caused-headcount-change> retrieved on April 8, 2026

Lui and Shum

“Pyramids to Diamond—What Finance Leaders Need to Know.” (January 22, 2019). <https://blogs.oracle.com/uki/pyramids-to-diamond-what-finance-leaders-need-to-know> retrieved on June 6, 2022

Siderska, J. (2021). “The Adoption of Robotic Process Automation Technology to Ensure Business Processes during the COVID-19 Pandemic.” *Sustainability*, 13. <https://doi.org/10.3390/su13148020>

“Will a Robot Take your Job?” (September 11, 2015). <https://www.bbc.com/news/technology-34066941> retrieved on June 6, 2022

Wright, D., Witherick, D., and Gordeeva, M. (2017). “The Robots are Ready. Are You?” <https://www2.deloitte.com/content/dam/Deloitte/tr/Documents/technology/deloitte-robots-are-ready.pdf> retrieved on June 6, 2022