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The Effect of 100 Percent Population Testing on the Perception of CPA Firms with Limited Liability Exposure

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The Effect of 100 Percent Population Testing on the Perception of CPA Firms with Limited Liability Exposure

by

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ABSTRACT

The present study investigates whether retail investors believe that a CPA firm's liability exposure or the type of evidence collected by the firm impacts their ability to remain unbiased during the audit. This study is inspired by calls for further research pertaining to the benefits and effectiveness that big data can provide to the audit industry or whether it could lead to more regulation. After receiving approval for the study by the Institutional Review Board, retail investors responded to an experiment in order to gather information for the study. The results indicate that retail investors believe that a CPA firm's decision will not be biased by neither the firm's liability exposure nor by the type of evidence the firm collects. These results are useful to accounting lawmakers who previously expressed concern that a reduction of liability would impair auditors' judgement during the audit. Similarly, these results may assist accounting lawmakers in deciding whether or how to change auditing standards to reflect the benefits of big data in auditing.

Keywords: *Audit Evidence, Limited Liability Agreement, Sampling, Full Population Testing, Big Data.*

DEDICATION

This thesis is dedicated to my family and friends whose continuous support and motivation was quintessential to my success. Additionally, special recognition to my grandfather Charles Jackson, who was the main influence on my decision to study business, and my brother Brandon Revels, who advocated for me to embark on the Honors College path. Also, in loving memory of Barbara Revels, Mickey Revels Sr., and Patricia Jackson.

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LIST OF ABBREVIATIONS

AICPA	American Institute of Certified Public Accountants
AS	Audit Standard
AU-C	Audit Unit-Clause
CPA	Certified Public Accountant
FDIC	Federal Deposit Insurance Corporation
IRB	Institutional Review Board
PCAOB	Public Company Accounting Oversight Board
SEC	Securities and Exchange Commission

CHAPTER I: Introduction

In the current audit accounting industry, there is a negative connotation surrounding limited liability engagements due to the perception that auditors and their associated accounting firms will not perform the audit to the best of their ability (Reinstein, 2013). As a result, the United States federal government, through the Securities and Exchange Commission (SEC), struck down the privilege to include a limited liability clause in the audit engagement letters of public companies (SEC, 2004). However, the American Institute of Certified Public Accountants (AICPA) did not explicitly interpret the SEC's ruling as banning all limited liability engagements – specifically for audits of nonpublic companies (AICPA, 2013). These two standards ,created by important accounting regulatory bodies, created a conflicting duality for audit firms of public and nonpublic companies and for their stakeholders.

Several studies such as Reinstein et al. (2009, 2013) have examined this phenomenon or the notion that auditors would not exert equal or more effort whilst engaged in a limitation of liability, but they have not been conclusive or encompassing. This current study expands on the literature surrounding audit effort and limited liability agreements to determine if increased audit effort in the form of 100 percent population testing – via big data – negates or drastically reduces the negative perceptions of limited liability agreements on financial reporting reliability among retail investors.

This study is inspired by calls for further research pertaining to the benefits and effectiveness that big data can provide to the audit industry or whether it could lead to more regulation. Appelbaum (2017) suggested further examination of the required audit evidence testing method – sampling or full population – and the effects or trade-offs that

could be required by investors. Currently, audit standards require audit evidence to only be a sufficient, relevant sample, which is less than 100 percent of available data, to come to an opinion on the financial statements of the company (AICPA, AU-C 530, 2020). Since the decision to test the entire data population is voluntary under the current audit evidence standards, auditor effort is a choice (AICPA, AU-C 150, 2001).

Yoon's (2015) definition of big data is data having the characteristics of veracity or a lot of "noise", which means that auditors will be required to exert more effort, skepticism, and professionalism to ensure the data complies with the required audit evidence standards. Likewise, since statistical analyses now allow for the testing of big data datasets, this should leave little to no margin for error on behalf of the audit conclusion. As such, investors may want auditors using this method to be more liable for their position. As a result, auditors could be hesitant to take on more liability for no reward under the current paradigm, even if there is accessible software that can automate the audit data analysis process easily. Dye (1993) suggests that auditors should reasonably act in a manner that will maximize their wealth.

Due to the dual standards that currently exist regarding limited liability clauses, an opportunity exists to examine whether 100 percent population testing – enabled through the analysis of big data datasets – would improve retail investors' perception of CPA firms who use litigation reduction strategies. The research questions in this study are tested in a 2 x 2 experiment that manipulates auditor effort (sampling versus full population testing) and the level of litigation exposure (full exposure versus limited liability exposure). The dependent variable being collected is the participants' opinions regarding a CPA firm's ability to be unbiased during the audit under these conditions.

The participants in this study are retail investors. Retail investors are common people who comprise the majority of investors; thus, they would be the key population affected by regulatory decisions that impact audits of publicly traded companies. The proxy for the retail investors were selected from a pool of students who at least have a general knowledge of auditing and investments. The results of the study suggest that no significant difference exists regarding perceptions of auditors' ability to make unbiased decisions, regardless of the type of audit evidence that they collected under either of the liability conditions.

The rest of the paper is as follows. The next section is the literature review, which builds upon the introduction to further develop the two hypotheses examined in this study. The methodology follows this section, along with an analysis of the results. Lastly, the conclusion is corroborated by the results, limitations of the research, and recommendations for any further research.

CHAPTER II: Literature Review

Taylor et al. (2003) state that the foundation of audit reliability principles in the current paradigm relies heavily on the CPA firm's independence. Auditor independence, along with integrity and expertise, are underlying traits that assist the auditor in maintaining objectivity during the audit (Taylor et al., 2003). The literature is inconclusive as to (1) the best way to help an auditor remain independent in the audit and (2) how to capture the degree to which an auditor is independent during the audit (Taylor et al., 2003).

Research proposes an industry shift to focus on what is truly valuable to people with a vested interest in companies – financial reporting reliability – with independence being a subsidiary factor (Reinstein, 2009, 2013; Taylor et al., 2003). The current study investigates this paradigm shift by exploring whether the use of limitation of liability clauses impair perceptions of a CPA firm's ability to make unbiased decisions during an audit. This research also investigates whether the type of audit evidence collected by the firms changes perceptions of the firms under varying liability exposure conditions.

Limitation of Liability Clauses (AU-C, §210.04)

According to the AICPA, Accounting Unit-Clause, AU-C, §210.04, a limited liability agreement is a clause embedded in an audit engagement letter that lays out the intent and scope of the audit with the subject company (AICPA, 2012). Ehrlich and Williams (2008) reasoned that the prevalence of limited liability clauses in engagement letters is due to the unlimited and increasing exposure to legal discourse that auditing firms face. This is especially true of auditors who deal with high-risk companies (Reinstein, 2009).

In spite of these concerns, the United States SEC changed the audit standards and forbade auditors of public companies to include liability limiting clauses in engagement letters (SEC, 2004), due to fears that it would facilitate languid practices (Reinstein, 2013). Furthermore, the Federal Deposit Insurance Corporation (FDIC), deemed that limited liability clauses impede the objectivity and independence that firms must maintain when engaging with the customer (FDIC, 2006). The main driving force behind the restrictive new accounting standards was to enhance auditor independence after many accounting scandals and failures throughout the 2000s.

Auditor independence is a critical factor in both the practice of auditing and the academic auditing field. DeAngelo (1981) and Simunic (1984) focus on the importance of auditors and their respective audit firms remaining independent of their clients by defining, quantifying, and valuing auditor independence. Their papers initiated an industry focus and reliance on auditor independence and the factors that affect the perception of independence.

In contrast to the standard setters of public company auditors, the AICPA allows auditors of private companies to include limited liability clauses in their engagement letters if they meet the appropriate criteria (AICPA, 2013). The dual auditing standards for public and non-public companies created conflicting perceptions regarding the perceived value of auditor independence, which may obscure the ostensible negative impact that limitation of liability clauses have on auditor independence. The lack of agreement between the dual auditor independence standards inspired a line of research that emphasized financial reporting reliability as a measure of the industry's confidence in the audit engagement (Wilson, 2015; Taylor et al., 2003). The current study examines

investors' perceptions of audit firms and the reliability of the financial statements when auditors of private companies incorporate limitation of liability clauses in their audit engagement letters. This is captured in the first hypothesis:

[H1]: Limitation of Liability Agreements do not impair retail investors' perceptions of a CPA firm's ability to make unbiased decisions during an audit.

Audit Accounting Standards

Khurana and Raman (2004) suggest that more extensive audit standards coupled with litigation risk improve the perception of audit quality among countries with similar economic and institutional designs. This research supports Seetharaman et al. (2002), who finds that an auditor's external environment wields enough tension to motivate actions that shield themselves from additional threats to their wealth. These studies are contradicted by Lennox's "deep-pocket" theory (1999) which proposes that firms who have faced reputation damage do not seem to lose wealth and are thus not overly influenced by the litigious environment. If auditors' external environment (i.e. reputation loss; goodwill) does not motivate them to provide quality work, then it is possible that accounting regulators may be correct in their assumptions that auditor liability exposure helps improve audit quality. However, several audit studies fail to prove without a doubt that increased auditor liability leads to increased audit quality.

Extant research counteracts the current industry model by stating that auditors should perform their duties in a way that both maximizes their wealth while also maintaining professionalism (Taylor et al. 2003; Reinstein 2009, 2013; Dye 1993). If auditors maintain their professional responsibilities, their main goal should be to ensure that the financial statements are reliable so that stakeholders have enough confidence to

utilize them in financial decisions, not to portray and sustain an independent auditor-client relationship (Taylor et al., 2003). In the end, the client still pays auditors, and the auditors' reputations are on the line, which is a crucial proponent of their wealth (Rothenburg, 2020). Whether investors will perceive audit quality and financial reporting reliability to be appropriate continues to be an ongoing issue, which is consistent with DeAngelo (1981).[1]

Auditor Effort and Audit Quality

One of the driving forces behind the prohibition of limited liability agreements is the perception that auditors would lackadaisically perform their duties if they were allowed to veil themselves from liability. This phenomenon could negatively affect perceptions of audit quality. Audit quality describes the probability that an auditor will discover and report a breach in the client's accounting system (DeAngelo, 1981), while audit effort focuses on the probability that the auditor detects an existing problem (Lennox and Caramanis, 2008). Research suggests that the amount of effort that an auditor exerts is directly related to an auditor's exposure to litigation risk (Patterson, 2003). Auditors have been found to work harder when presented with the opportunity to absolve themselves of liability (Xiao et al., 2020; Kadous, 2000; Narayanan, 1994).

Despite the benefits that auditors may obtain by exerting additional effort during the audit, research does not overwhelmingly support the incentive to exert this further effort. While additional effort by the auditor may improve audit quality, Dye (1993) suggest that auditors may be dissuaded from utilizing auditing methods that require more

[1] DeAngelo (1981) examines the effect of auditor-client relationships regarding economic rent or "quasi-rent" that auditors earn since they are paid by their clients, which intuitively lowers audit independence.

effort, chiefly because this additional effort overachieves the auditing standard while not contributing to the auditors' wealth. This suggests that auditors may be disincentivized to employ progressive technologies that allow auditors to examine larger data sets, especially as testing approaches 100 percent of the population. This avoidance may diminish if auditors are allowed to limit their liability when dealing with their audit clients.

Following Kadous et al. (2000), the current study operationalizes auditor effort as a proxy for audit quality. Specifically, this study manipulates two methods of acquiring audit evidence. Auditing standards currently require auditors to support their opinion based on a *random* sampling of the population of available information (AU 150, 2001). Therefore, this minimum data collection standard is designated as "low effort." If auditors acquire audit evidences using more intensive alternative methods – such as 100 percent population testing – this would be deemed as an exhibition of "high effort." These are the levels of auditor effort used in this study to examine perceptions of firms whose independence is impaired by the use of limitation of liability agreements.

Big Data

The PCAOB AS1105 (2020) defines the required aspects of audit evidence as needing to be relevant, reliable, and sufficient; these characteristics that are often determined by the CPA firm's use of professionalism and professional skepticism. One area in which auditors may exercise skepticism and audit judgement is in the amount of data they collect as audit evidence during the audit. At a minimum, auditors must test a random sample of the population large enough to reach a reasonable conclusion or basis of opinion for the entire population (PCAOB, AS2315, 2020). Audit evidence standards

allow auditors to examine higher “levels” of data, based on their professional auditing judgement, up to and including testing the entire population sample. Until recently, this was not possible; however, new data analysis tools enable auditors to perform tests on these relatively large datasets more efficiently than was previously possible. The literature refers to the large datasets that may be subject to advanced analytical procedures as “big data”.

There is no set industry definition for big data, but it should be characterized by being massive in quantity, fast rate of collection, and from a variety of sources (Lin, 2014). This aligns with Yoon’s (2015) definition of "big data" as data with incredible size, variety, velocity, and veracity (noise). Big data is an amalgamation of data that industries spend considerable amounts of money to store, process, format, utilize, and analyze to solve problems, make decisions, or increase efficiency (Lin, 2014). Rather than the traditional method of slowly “think-tanking” problems, industries can now turn to these large data sets to quickly draw correlation and trends through the application of progressive analytical technology to big data datasets to answer questions that arise (Lin, 2014).

Yoon (2015) states that most audited large and middle capitalization businesses utilize big data in their decision-making process, but no research is conclusive as to how external auditors can completely integrate big data into their work. Numerous studies have called for more studies into the use of big data and its uses in audit data collection and processing (Appelbaum, 2016, 2017; Brown-Liburd, 2015; Mock, 2009; Yoon, 2015). The present study seeks to contribute to this void in literature.

Audit Effort Hypothesis

There appears to be a strong divide as to whether traditional audit sampling or 100 percent population testing improve perceptions of financial reporting reliability. Complete population sampling is deemed more costly but more reliable, yet auditors can quickly test the population with the correct audit analysis software (Appelbaum, 2017). However, auditors who use complete population sampling compared to random sampling within the current audit standards receive no additional benefits (Appelbaum, 2017).

Auditors' use of big data and the related data analytics may improve financial reporting reliability. Brown-Liburd (2015) describes the data environment that auditors face when utilizing big data as having two components: corporate or financial and boundary or non-financial related. Non-financial data can be anything collected that is associate with the company's financial actions, such as GPS data, outside news articles, point-of-sale data, social media posts, and many more data sources (Brown-Liburd 2015; Yoon 2015). Auditors who use this data will have to exert more effort to manipulate and format this data to conform with their audit analytics software (Brown-Liburd, 2015). Yoon (2015) describes this practice as eliminating the noise in the data to normalize it, which requires the auditor to substantially increase their effort. Eliminating this noise also involves more skepticism and more professional judgement when determining what data is sufficient and relevant (Brown-Liburd, 2015).

Appelbaum (2017) calls for research that examines the following questions: (1) "Should auditing standards be changed to allow/facilitate these methods?" and (2) "What are the trade-offs between 100 percent population tests, sampling, and ad hoc analytics?". These questions guided the direction for the current study. With the SEC, PCAOB, and

FDIC allowing dual standards regarding limited liability agreements in engagement letters with public and non-public companies, it opens the window to examine the impact of increased audit effort on the perception of auditor independence and financial reporting reliability. The reward of limiting auditor liability could make up for the demand for increased audit effort while mitigating cost. The limited liability clause will test as a joint impact variable with 100 percent population testing.

> [H2]: Audit evidence that is gathered from 100 percent population testing significantly improves perceptions of a CPA firm's ability to make unbiased decisions during an audit compared to audit evidence captured via traditional audit sampling.

CHAPTER III: Methodology

Experimental Design

The experiment performed in this study is a 2 x 2 between-subjects experiment. This study was submitted to the Institutional Review Board on February 23, 2022 and approved for data collection nearly forty days later (March 31, 2022). Participant data was collected using Qualtrics© survey for approximately two weeks after approval of the study.

Independent Variables

Two independent variables of interest are manipulated in this study. One independent variable is the inclusion or exclusion of a limited liability clause in the engagement letter's liability disclosure section of the audit agreement with a nonpublic company. This structure is consistent with Reinstein et. al.'s (2013) idea to examine the effect that limited liability clauses have on investors' perceptions of the trustworthiness of the audited financial documents if investors knew about the CPA firm's level of liability exposure. The present study will randomly provide participants with two limited liability manipulations (full liability versus limited liability) and record its effect on measures that affect the financial reporting reliability of the audit outcome.

The second independent variable is audit effort, which serves as this study's proxy for audit quality. The precedent for using audit effort as a proxy for audit quality stems from Kadous (2000), which uses auditors who perform more work or effort that exceeds the minimum audit standards as a substitution for higher quality audits. This proxy was aligns with the structure of the present study. Current audit standards set the minimum requirement for audit data as being a random sample; however, it is

recommended (but not required) to use complete population sampling when perceived as reasonably necessary (PCAOB, 2020). By manipulating the audit evidence collected (traditional sampling versus 100 percent population testing), it allows for the exploration as to whether varying levels of auditor effort mitigates the negative perceptions surrounding limitation of liability agreements.

The current audit standards are not updated to account for the capabilities of data analytics on auditing in the current big data model of businesses. Thus, an opportunity exists to test the contribution that complete population testing has on both data analytics in auditing and limited liability agreements, which could be beneficial for future updates

Dependent Variable

Independence

With the audit industries' intense emphasis on auditor independence coupled with the ever-changing discernment of what independence is in actuality, Taylor et al.'s (2003) concept of placing audit independence as an indirect, subsidiary variable to financial reporting reliability becomes a realistic option. The principal reason for Taylor et al.'s (2003) idea stems from DeAngelo's (1981) idea of economic rent or the fact that audit firms are receiving payment from their client for their services, which makes it impracticable to reach complete independence from the audit subject. Consequently, Taylor et. al. (2003) proposes a shift towards a focus on maximizing financial reporting reliability rather than focusing on maximizing independence.

Retail Investors

Retail investors are individual, non-institutional investors who seek returns on their invested capital (Paisarn, N. Chancharat, S. Chancharat, 2021). Retail investors

persist on a wide spectrum of risk-tolerance with some seeking safe, steady, low-risk, lower return investments, while others are willing to take on high-risk for higher returns (Paisarn, N. Chancharat, S. Chancharat, 2021). Retail investors generally conduct analyses of their own investments, but they often act behaviorally based on their own judgement and market information, regardless of if it is the rational decision (Paisarn, N. Chancharat, S. Chancharat, 2021).

Due to the advent of technologies, investors now have access to more financial information and history of investments and companies (Buddaraju and Devaiah, 2021). Likewise, retail investors are more readily using financial information when making investment decisions due to increased literacy in this subject (Buddaraju and Devaiah, 2021). Additionally, investors' investment decisions are more aware, informed, and affected when companies are involved in scandals or spread disinformation (Buddaraju and Devaiah, 2021).

CHAPTER IV: Results

Survey Response Statistics

Survey responses were collected over an approximate two week collection period. Over that collection period, the survey received a count of eighty-three respondents. Of the eighty-three responses, only thirty-seven were deemed usable responses. The response discarded did not pass a scrutiny check due to several factors. These factors include: incomplete survey, failed manipulation check or irregularities in answer choices such as the same response to all questions. The remaining usable responses (37) achieved a 46% / 54% split between complete record (100 percent population) and sampling data collection methods, respectively. Table 1 summarizes these responses below.

Table 1: Response Rates

	Count	Percentages
Responses Received	83.00	
Usuable	37.00	45%
Complete Record	17.00	46%
Sampling	20.00	54%

Survey Demographics

Table 2 summarizes the demographic results of the usable responses. The thirty-seven (37) usable responses are distributed across the two experimental groups as follows: sampling (20) and full population (17). Approximately ninety-seven percent (97.30%) of the respondents are full time students, with almost seventy-five percent (75.68%) not currently investing; thus, they would not be analyzing companies' financial

statements. Nearly thirty percent (29.73%) of respondents are not even business majors with only eighteen (18.92%) of the respondents studying accounting or finance.

Table 2 Demograpics

Question	Response Label	
Q5: Sex	Female	15
	Male	21
	Prefer not to say	1
	Total	37
Q6: Age	18	4
	19	10
	20	9
	21	7
	22	4
	23	2
	Total	36
Q7: Ethnicity	Asian	1
	Black or African American	10
	Hispanic or Latino	2
	White or Caucasian	24
	Total	37
Q8: Area of Study	Business - Accounting	3
	Business - Administration	5
	Business - Finance	4
	Business - Other Major	14
	Non-Business Major	11
	Total	37
Q9: GPA	2.0-3.0	6
	3.6-4.0	8
	3.01-3.59	6
	Total	20
Q10: Enrollment Status	Full-time student	36
	Part-time student	1
	Total	37
Q11: Investor	No	28
	Yes	9
	Total	37

Over half of the usable responses (62.16%) are under the age of twenty-one. Collectively, the respondents' demographic profile correctly invalidates the use of these participants as sophisticated financial statement. Still, this meets the standard definition of a retail investor, which is the type of investor selected for this research study.

Hypothesis Analysis

Table 3 reports the means, standard deviations, and the sample size related to the responses submitted for this study.

Table 3 Audit Evidence ANOVA

Retail Investors' Perceptions of Auditors' Ability to Make Unbiased Decisions Means, Standard Deviations and Sample Size

CPA Firm's Liability Exposure	Statistics	Evidence Collected: Sample of Accounts	Evidence Collected: Complete Record	Total
Full Liability	Mean	4.20	4.56	4.43
	Std. Deviation	1.483	1.509	1.453
	N	5	9	14
Limited Liability	Mean	4.57	4.63	4.59
	Std. Deviation	1.016	1.408	1.141
	N	14	8	22
Total	Mean	4.47	4.59	4.53
	Std. Deviation	1.124	1.417	1.253
	N	19	17	36

The results of the Analysis of Variance Test (ANOVA) is presented in Table 4.[2] The experiment asks participants to opine as to whether they believe that a CPA firm's (1) level of liability exposure and (2) the type of evidence the CPA firm collects will impact their ability to make unbiased decisions during the audit. The results of the ANOVA test reveal that a CPA firm's level of liability exposure ($F = 0.211$; $p = 0.649$) is not perceived to affect CPA firms' level of liability exposure. These results support H1. Similarly, retail investors did not perceive the type of evidence collected by the firm

[2] The results of non-parametric tests (untabulated) reveal similar findings.

during the audit as a factor that would significantly impact the firm's ability to be unbiased during the audit (F = 0.146; p = 0.705). These results do not support H2. Looking at the both of these tests together, one can conclude that a CPA firm will be unbiased in their decision-making during the audit, which alleviates concerns that limiting an auditors' liability during the audit will be problematic for retail investors.

Table 4 Analysis of Variance Test

Dependent Variable: The impact of an auditors' liability exposure on the ability to make unbiased decisions.

Source	Type III Sum of Squares	df	Mean Square	F-Value	Sig. [b]
Corrected Model	.467[a]	2	.233	.141	.869
Intercept	695.802	1	695.802	421.269	.000
Level of Liability Case	.349	1	.349	.211	.649
Evidence Collected Case	.241	1	.241	.146	.705
Error	54.505	33	1.652		
Total	793.000	36			
Corrected Total	54.972	35			

a. R Squared = .008 (Adjusted R Squared = -.052)
b. Significance Level: p > 0.05

CHAPTER V: Summary and Recommendations

The longstanding assertation that auditor independence enables audit judgements to be void of bias, due to auditor objectivity, and thus more reliable has been the foundation of audit standards for decades. Recently, there has been an influx of dissenting opinions in audit literature, which began with Taylor et al.'s (2003) new financial reporting reliability framework. Taylor et al.'s (2003) new framework sparked a paradigm shift away from the antiquated view that valued independence over reliability in audits. The main goal being improved financial reporting reliability would overcome the hindering limitations associated with not only achieving "complete" independence but also maintaining independence. There have been subsequent studies that expanded on the framework that Taylor et al. purported (Wilson 2015; DeZoort et al. 2012; DeZoort and Taylor 2009). However, there is no literature that examines the interrelationship of audit evidence methodology and limited liability agreements on retail investors' perceptions of a CPA firm's decision.

Overall, the experimental findings from hypothesis one suggest that retail investors are indifferent regarding a CPA firm's level of liability exposure ($F = 0.211$; $p = 0.649$) when performing an audit. Likewise, the absence of a significant difference in the proportion of retail investors who perceived the type of evidence collected by the firm during the audit as a significant driver on the firm's ability to be unbiased in the audit decision ($F = 0.146$; $p = 0.705$) was contrary to what was expected. Collectively, the results from H1 and H2 would suggest that neither the CPA firms' liability exposure nor audit data methodology is essential to retail investors when determining the validity of the audit outcome.

CHAPTER VI: Contributions to the Literature

The results of this study permeate into several aspects of audit accounting literature. First and foremost, the study contributes to the literature surrounding Taylor et al.'s (2003) study on a new paradigm in auditing by supplementing Wilson's (2015) study. Secondly, the study contributes to the call for more research by Appelbaum (2017) regarding the impact big data can have on the audit standards and processes by considering different audit data collection process due to big data capabilities. Finally, the study is important to the AICPA, PCAOB, and State Boards of Accountancy in their on-going development and revisions of standards in place to protect the public interest as it relates to CPA firm's audit data collection and liability exposure. The AICPA, PCAOB, and State Boards of Accountancy may also use this research in future considerations regarding whether a CPA should be required to perform full population test or continue sampling, and if a CPA could be allowed to use limited liability agreements in their audits of publicly traded companies as big data becomes more prevalent in the industry.

CHAPTER VII: Study Limitations and Future Research

As with any experimental research done in a controlled, hypothetical scenario, it fails to encompass real world influences and intricacies. Likewise, those who were surveyed were not the ideal candidates for this study, most were not investors or well-versed in audit accounting. Moreover, the number of usable respondents is not statistically significant to draw conclusions for the study. If CPAs and more respondents who are investors were an available audience, the results would be more material. However, the scope of the experiment did not allow for such extensive surveying, and complications with the IRB process limited the capability to survey of students.

Future research regarding this topic should have a more targeted audience of retail investors. Research should also be conducted regarding specific aspects of financial reporting reliability listed in Taylor et al's (2003) and DeZoort et al.'s (2008) studies such as professional skepticism, objectivity, independence, and assurance. More research is still needed surrounding this topic and many others regarding the implications that big data brings to business and consequently those responsible for auditing them.

APPENDIX A: IRB APPROVAL

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Research Integrity

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NOTICE OF INSTITUTIONAL REVIEW BOARD ACTION

The project below has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services regulations (45 CFR Part 46), and University Policy to ensure:

- The risks to subjects are minimized and reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered involving risks to subjects must be reported immediately. Problems should be reported to ORI via the Incident submission on InfoEd IRB.
- The period of approval is twelve months. An application for renewal must be submitted for projects exceeding twelve months.

PROTOCOL NUMBER:	22-124
PROJECT TITLE:	The Effect of 100 Percent Population Testing on the Perception of CPA Firms that Engage in Limited Liability Agreements
SCHOOL/PROGRAM	Finance
RESEARCHERS:	PI: Brock Revels Investigators: Revels, Brock~Wilson, Reginald~
IRB COMMITTEE ACTION:	Approved
CATEGORY:	Exempt Category
APPROVAL STARTING:	31-Mar-2022

Donald Sacco, Ph.D.
Institutional Review Board Chairperson

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