THE EFFECT OF COMPUTER-ASSISTED TECHNOLOGY ON AUDITOR LITIGATION

By

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ABSTRACT

With audit IT technology and data analytics changing at a quick pace, it’s imperative that the industry adapts. The motivation for this paper stems from the accounting world and the Big 4 audit firms changing their demands on the profession. I conducted a three-cell-between-subjects experiment using 76 participants through Amazon Mechanical Turk regarding a hypothetical class action lawsuit against auditors for an undetected misstatement. The three conditions included a No IT available, IT available but not used, and IT available and used. My two hypotheses center from the Lowe et al. (2001) paper and how if IT during an audit fails, juries will have lower judgement and competence of the auditor. This paper studied the effect of computer-assisted audits on damage awards in auditor litigation based on evaluative judgments of auditor effort. Following the case, participants answered a series of questions to capture bias and feelings about the auditors. The results supported prior research of the link between evaluative judgments and damage assessments, but did not find the primary, novel hypotheses to be significant. The limitations of this study were the use of MTurk instead of a real jury and the potential bias that people have on the accounting profession.
I. INTRODUCTION

If you turn your television onto the local news channel, you will undoubtedly witness at least one business scandal in a thirty-minute segment. From there, you’ll see headlines about accountants facing malpractice lawsuits or financial service firms being sued for billions of dollars at a time. With the world and technology changing every day, it’s imperative that each industry adapts. This paper will focus on the effect of computer-assisted audit procedures on juror verdicts in audit litigation court cases. Specifically, will jurors value the development and implementation of such technology? Or will they see it as a reduction of audit effort and therefore hold the auditors more accountable?

The motivation for this paper comes from the accounting world changing rapidly to include data analytics, from which many Big 4 firms believe should be integrated into accounting students’ university coursework. In fact, some of the firms are even starting to demand it. PricewaterhouseCoopers (2015) found an increase in demand for students “with double majors in accounting and information systems…[and] will be increasingly attractive to both employers and students.” PricewaterhouseCoopers (2015) also discussed specific courses and curriculum which should be taught in accounting coursework at the university level and asked the question: Are today’s students ready? The question presented calls out universities across the United States to indicate that current accounting students are not ready for the industry changes that are yet to come, especially those dealing directly with technology.

Byrnes et al. (2014) shows that with constant technological advancements and changing needs in society, “audit processes are essentially unchanged from those performed decades ago.” While the processes are similar, the individuals arriving for entry-level auditor jobs in the Big 4 corporations may struggle to adapt to the changing IT needs. Strong and Portz (2015) finds that
accounting students from three different universities have a low level of perceived IT knowledge. Furthermore, a 2008 study by Prosch, McKee, and Quick found that more than 25 percent of auditors in Germany and the United States self-rated their IT knowledge as “less than adequate.” This is further proof that many students are way over their heads when entering the evolving industry. Nevertheless, the accounting industry has adapted and these changes have the potential to disrupt current auditors. Byrnes et al. (2012) shows that the accounting profession faces an opportunity to elevate audits to more automation. With the use of technology, many expect technology to reduce physical audit work needed to be performed by humans. Is that a good thing?

Prior research in psychology has examined reasons why humans don’t trust machines to be correct. Dietvorst, Simmons, and Massey (2014) found that “forecasters choose the human forecaster when deciding whether to use a human forecaster or a statistical algorithm.” From this statement, humans are more likely to rely on each other than an algorithm or computer. However, according to the AICPA’s Performing Audit Procedures in Response to Assessed Risks, “an auditor may use techniques such as computer-assisted audit techniques to enable him or her to extensively test electronic transactions and account files.” There are great risks which may outweigh the benefits for firms that use these automated technological procedures. According to Arens, Beasley, and Elder in their Auditing textbook, these include system crash due to the failure of hardware, systematic errors from using the technology incorrectly, hacking of confidential documents, and reduced human involvement to challenge employees. Many might think that putting one’s effort solely on computers would be combated by the statement above. However, while both individuals and machines are capable of mistakes, people have the
potential benefit of learning and growing from them given our ability to adapt (Grodzinsky et al. 2011).

Given these significant upcoming changes to audit practice, I conducted a 3-cell between-subjects experiment using participants from Amazon’s Mechanical Turk (MTurk) to evaluate an audit firm’s legal liability in a class action lawsuit resulting from a financial statement misstatement. I manipulate the availability and use of computer assistance in the performance of an audit that fails to detect a material misstatement, later discovered by the client. Specifically, there is either no IT available for use (control condition), IT available but not used by the auditor, or IT that is both available and used by the auditor.

Many previous authors and papers have looked at concepts involving juror and judge audit litigation. For instance, Lowe, Reckers, and Whitecotton (2001) provided evidence about decision aids used by audit firms and how it affects a juror’s evaluation of legal liability; whereas Lowe and Reckers (1994) examined how hindsight bias, in particular, affects evaluations of auditors’ judgments. While FASB and the government have implemented procedures such as the Sarbanes-Oxley Act to prevent corporate scandals and cheating the system, audit litigation still runs amuck. Lennox and Li (2014) find that from 2001-2010, the Big 4 firms (Ernst & Young, Pricewaterhouse Coopers, Deloitte & Touche, and KPMG) faced 676 total lawsuits in just a 10-year time period. This problem is not going away anytime soon.

This experiment will add to prior literature in auditor litigation and the audit industry’s technological changes in several different ways. First off, Big 4 firms searching for students with IT skills is a relatively new concept and has not been discussed in research papers produced by one of the top four journals of accounting in the United States. While previous research has looked at audit litigation based on jurors and judges in terms of damage awards and
responsibility judgment, the research has not examined how technology and the changes of the audit industry will affect auditor litigation. The technology referenced in this paper relates to IT and computer programs that replace manual audit procedures previously performed in the prior year audit, which winds up reducing the amount of physical audit effort. This could hence lead to a perception of less effort used by a firm. In fact, this paper is the first of its kind to examine the matter. Previously, only ancillary technological decision aids were looked at. In the past, most audits have been run manually using a paper and a pencil. With changing technology, firms can rely on IT as an extra step, which allows actual computer programs to take over for human beings during the audit. This means that the actual audit procedures are removed and are replaced with IT data mining.

There are many individuals and organizations that will be impacted and therefore should be interested in this study. First off, the accounting industry should be interested in the analysis of how their field is rapidly changing. Second, each of the Big 4 corporations should be interested to understand their probability odds in pursing litigation when it comes to using automated technology in uncovering misstatements. Students who are potentially entering the workforce in the coming years should pay attention to this research. Lawyers looking to use this argument in a court of law will be interested in the results of this paper. The results very likely may provide a good recruiting pitch to use their services and avoid losing out on resources and opportunities. Lastly, other academic researchers should be interested in this study in pursuing further research because this paper is one of the first of its kind to look at these manipulated variables.
II. THEORY AND HYPOTHESES

The theory and baseline idea for much of this research and experiment comes from an experimental research paper by Lowe, Reckers, and Whitecotton (2001). After the authors engaged in an experiment capturing juror beliefs and the extent one might hold the audit firm responsible, they found that jurors “attributed lower responsibility to an auditor who followed the recommendation of a highly reliable decision aid, even though the aid turned out to be incorrect.” Furthermore, Anderson et al. (1995) also found, using judges instead of jurors, that auditor liability is higher when a decision aid is not fully utilized. Analogous to my setting, these results would indicate that if a firm uses (declines to use) reliable computer assisted technology, prospective jurors may weigh lower (higher) damage awards on those firms. However, there are several key differences between these papers and mine that warrant further study. Specifically, Lowe et al. were looking at a decision aid that assists auditors in determining whether to issue a going concern opinion, whereas I use a misstatement case regarding an error that was not detected in the Allowance for Doubtful Accounts (ADA) balance. Furthermore, Lowe et al. did not replace any manual audit procedures performed in prior audits, but rather, provided an aid to walking through an additional judgement call in the current year. However, this is predicated on the fact that the decision aid acts as an additional tool in the auditor’s judgment process. Conversely, in my paper, I will examine how people evaluate responsibility when they are replacing human-run audit procedures with IT.

Given these differences, I expect that only part of the results from Lowe et al. will hold in my setting. Specifically, consistent with prior research, I predict that declining to use available IT during an audit that subsequently fails, will result in a perception of lower auditor competence and judgment. If technology has advanced, you are expected to use all your resources. By not
using one’s resources, the firm might be presumed lazy or inefficient compared to its competitors. Also, when you don’t use the technology, you have more control as you control only for human effort and input. As such, my first hypothesis is:

**H1:** Juror’s evaluative judgements of the auditor’s decision to issue the standard, favorable audit report (based on audit procedures of the current year) will be higher when there is no IT compared to IT available but not used.

However, given the fact that the IT is replacing human decision processing, I expect that, by using the computer programs in an audit that subsequently fails, jurors may see the IT use as a reduction in physical audit effort when compared to a setting in which not IT is available and auditors are conducting the audit the same way as in prior years. In other words, by using computer programs, jurors may think that there is more that could have been done by the actual humans physically doing the work. The intuitive reasons for thinking this are that when you have worked fewer hours, you have put less effort in terms of work and time into the specific audit. Additionally, the firm tried to develop a new strategy by going above and beyond (something different), and at the same time failed. While it’s understandable that mistakes do indeed occur, I would believe that people are going to blame the auditor for changing their strategy. Therefore, contrary to Lowe et al. (2001), I predict that when there is more reliance on computer assistance, jurors will be more critical of the auditor.

**H2:** Juror’s evaluative judgements of the auditor’s decision to issue the standard, favorable audit report (based on audit procedures of the current year) will be higher when there is no IT compared to IT available and used.

Furthermore, regardless of how individuals form their opinions of the evaluative judgments, such opinions should have a negative effect on damage awards. This is essentially a maintained hypothesis that comes from previous research (Lowe et al. 2001), which shows that higher evaluative judgements mean that prospective jurors see the auditors as more competent
and less responsible for the audit failure. As such, they assess fewer damage awards (and vice versa).

The combination of these predictions is shown graphically in Figure 1 via a theoretical path. As shown below, there are two possible choices in a setting with IT available for use: one in which an audit team relies on IT and another which dismisses IT. While I predict that both have a negative effect on evaluative judgements (when compared to a control setting without the IT available), it is unclear which will have a stronger negative effect. This is an empirical question that shall be addressed.

**FIGURE 1: Theoretical Predicted Path**

III. METHOD

To test my hypotheses, I conducted an experimental survey regarding a hypothetical class action lawsuit against auditors following the revelation of an undetected misstatement. I manipulated (1) the availability and (2) the use of computer-assisted audit technology between-subjects. This results in three experimental conditions: (1) IT not available (No IT), (2) IT available but not used (IT Not Used) and (3) IT available and used (IT Used). Participants were
randomly assigned a condition, resulting in 25 participants in each, with the exception of IT Used, which had 26 total.

This study was conducted on Amazon Mechanical Turk (MTurk). MTurk is a crowdsourcing internet marketplace that provides a connection to point to a large number of independent workers who will perform tasks for money. Researchers have used MTurk for administering surveys and, as an alternative to laboratory settings, for performing compensated tasks in many fields, including accounting (i.e. Rennekamp 2012; Koonce, Miller, and Winchel 2014). I use MTurk in my setting as MTurk participants represent a broad array of demographics similar to real juror pools and provide a better representative sample than a relatively homogeneous pool of university business students, who may come from similar backgrounds and very similar ages.

The survey involved a hypothetical court case, key variable elicitation measures (i.e. opinions about evaluative judgments and damage assessments), and post-survey questions to measure and control for a juror’s potential inherent bias toward the accounting profession, auditors and automated technology. Refer to Appendix A for the case materials, noting the difference in language between conditions. The participants were compensated $1.00 for participating in the survey, which lasted approximately 8.23 minutes, on average. Jurors were asked to read the case materials carefully and were notified that they would be tested via a comprehension quiz to ensure accurate results.

**Variable Measurement**

Figure 1, presented in the theory section above, outlines the theoretical path model that I use in my analyses. The primary variable of interest in this study is evaluative judgments, which act as the mediator or causal mechanism through which the use of computer-assisted technology
affects juror damage assessments. Evaluative Judgments also reflect the perceived total audit effort determined by each juror and how the juror feels about the case. Based on an 11-point Likert scale used in Lowe et al. (2001), participants indicated their level of agreement or disagreement with the following four statements:

(1) The accounting firm and its staff appear to be competent;
(2) I believe there was no need for the auditors to perform additional audit procedures;
(3) Given the information available at the time of the audit, the right decision in concluding that the financial statements were free of material misstatements; and
(4) The plaintiff must assume normal investment risks when purchasing stock, and therefore is largely responsible for their own loss.

I performed a factor analysis of participants’ responses to these four statements, noting that all four loaded on a single factor with an Eigenvalue greater than 1 (i.e. 2.464). As such, the composite factor score was used as the variable for Evaluative Judgments.

The final dependent variable in this path is damage assessments. This measure is based on a factor analysis of three 11-point Likert scale statements:

(1) The CPA firm’s audit was ineffective, and therefore, the CPA firm should reimburse the plaintiffs;
(2) I support the plaintiff’s call for some amount of damages by the auditor; and
(3) I support the plaintiff’s call for the total amount of damages by the auditor.

All three statements loaded significantly on a single factor with an Eigenvalue greater than 1 (i.e. 2.578). As such, the composite factor score reflects the variable Damage Assessments in all further analyses.
The primary independent variables of this model reflect the experimental conditions and consists of two binary variables: Reliance on IT (equals 1 in the IT Used condition; 0 otherwise) and Dismissal of IT (equals 1 in the IT Not Used condition; 0 otherwise). Each of these variables are therefore compared against the control condition in the primary analysis.

I also collected several demographic control variables (including age, income, education, and sex) before completion of the survey. Following the case materials, participants were presented with three manipulation check questions: (1) “Were the misstatements found during the audit?” (Yes/No); (2) “Did the auditors change their audit procedures during the current year (i.e. 2016)?” (Yes/No; correct response depends on condition); and (3) “Did the auditors use the computer program to assist in their testing?” (Yes/No; correct response depends on condition). On average, only 61.8% of participants got all the questions correct, while 21.1% (5.3%) got just one (none) correct. I ran all analyses using the full sample as well as each decremental sample, noting no changes in my results, which will be discussed further in a later section of this paper.

In addition to the key variables listed above, I also asked a series of questions intended for capturing participants’ inherent biases toward (or against) auditors and the accounting profession in general. Specifically, I asked seven questions from Lowe & Reckers (1994) regarding attitudes toward auditors:

(1) The financial statements are primarily the responsibility of corporate management, and not the external auditor;

(2) The role of the external auditor is to be a public watchdog;

(3) The current standards of audit practice are very high;

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1 As there was not IT available in the control condition, the third manipulation check question was excluded from that condition.
(4) The big audit firms make plenty of money in the good times, so they should share the stockholders’ losses in the bad times;

(5) External auditors cannot look at every client transaction. They must rely on samples and tests of relationships in conducting the audit;

(6) One role of an auditor is to be an insurer against large stockholder losses; and

(7) The big corporations and their auditors work hand-in-hand and only tell the public what they want to tell them.

Three of the statements above (i.e. statements (1), (3), and (5)) loaded significantly on a single factor with an Eigenvalue greater than 1 (i.e. 2.121). Given the theme of these statements, I have coined this factor “Respect for Auditors”. Additionally, the remaining four statements loaded significantly on a negative factor, with an Eigenvalue of 1.879. Based on the underlying commonalities of these statements, I have designated this variable “Distrust of Auditors”. I include these two variables (“Respect” and “Distrust”) in my path analysis as potential additional independent variables that influence Evaluative Judgments, regardless of condition.

Finally, all one must do is a brief google search to notice the catastrophic errors and problems that automatic computer programming has caused in the past. Sure enough, humans most certainly have done the same. For example, a BBC World News article mentioned a computer problem affecting the United Kingdom’s Child Support Agency and creating “significant costs” for taxpayers. That doesn’t count a computer glitch mentioned by a Bloomberg news article that caused Knight Capital Group to lose $440 million in thirty minutes. Of course, at the same time, many might argue that humans have caused detrimental monetary problems themselves. For instance, the Enron accounting scandal is a perfect example. The former accounting firm Arthur Anderson was dismembered by its lack of ethics and standards.
involved when auditing Enron. While Arthur Anderson’s employees were hardly the first to stretch the truth and use fraud, this case goes to show how important and necessary it is to not overlook the decision making made by both computers and humans in any capacity, no matter the consequence. Overall, it’s potentially a toss-up to understand which is more frightening for individuals: a computer error or a human error, with all things considered. Therefore, I also asked several additional questions to potentially help control for opinions regarding IT and may provide possible supplemental explanations for participants’ underlying causal beliefs, such as: (1) I believe auditors should change and adjust their audit procedures from year to year; (2) I believe if the firm did (did not) use the computer program, they would have found the misstatement; (3) I believe computers are more (less) reliable than humans at detecting potential issues; (4) The decision to use (not use) the computer program affects my opinion of the auditors.

IV. ANALYSES

Of the 76 participants recruited through MTurk, the average age was 33.61 and I have an approximately equal mix of male and female (Sex=0.46, where Male=1 and Female=0). Anwar, Bayer, and Hjamlmarsson (2013) find the average age for a juror in the United States is 49.6 years old. Anwar et al. (2013) also found that in criminal jury trials where the average age is greater than 50, the conviction rate is 79 percent. The same study found that when the average age is less than 50, the conviction rate is 68 percent. As the average age of participants in my study is significantly lower than the average age of a juror in the United States, my results are limited in their generalizability. However, this age is significantly closer to the average juror age of 49.6 years than the average age from a university sample (i.e. approximately 20 years).
As shown in Panel A, Evaluative Judgments and Damage Assessments were both higher in the treatment conditions, compared to the control; however, none of these differences are statistically significantly different from each other. Furthermore, there does not appear to be a biased difference in participants’ predispositions toward (or against) auditors in any one condition. While this confirms the effectiveness of my random assignment amongst the three conditions, analysis of how these variables influence evaluative judgments and damage assessments is discussed in further detail in Table 2.

### TABLE 1
Descriptive Statistics

#### Panel A: Means (Std Dev) by Condition

<table>
<thead>
<tr>
<th></th>
<th>Control (N=25)</th>
<th>IT Used (N=26)</th>
<th>IT Not Used (N=25)</th>
<th>Overall (N=76)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluative Judgments</td>
<td>16.45 (6.259)</td>
<td>17.07 (6.202)</td>
<td>17.35 (5.538)</td>
<td>16.96 (5.942)</td>
</tr>
<tr>
<td>Respect for Auditors</td>
<td>14.99 (4.690)</td>
<td>14.69 (3.889)</td>
<td>15.62 (3.859)</td>
<td>15.10 (4.123)</td>
</tr>
<tr>
<td>Distrust of Auditors</td>
<td>14.01 (4.996)</td>
<td>15.65 (4.136)</td>
<td>15.28 (4.680)</td>
<td>14.99 (4.604)</td>
</tr>
<tr>
<td>Damage Assessment</td>
<td>12.68 (7.463)</td>
<td>14.08 (7.619)</td>
<td>14.26 (6.626)</td>
<td>13.70 (7.191)</td>
</tr>
</tbody>
</table>

#### Panel B: Pearson (Spearman) Correlation Coefficients

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluative Judgments</td>
<td>1.000</td>
<td><strong>0.680</strong>&lt;.0001</td>
<td>(0.171)</td>
<td>(0.557)&lt;.0001</td>
</tr>
<tr>
<td>Respect for Auditors</td>
<td><strong>0.678</strong>&lt;.0001</td>
<td>1.000</td>
<td>(0.076)</td>
<td>(0.547)&lt;.0001</td>
</tr>
<tr>
<td>Distrust of Auditors</td>
<td>(0.162)</td>
<td>(0.062)</td>
<td>1.000</td>
<td><strong>0.538</strong>&lt;.0001</td>
</tr>
<tr>
<td>Damage Assessment</td>
<td><strong>(0.515)</strong>&lt;.0001</td>
<td><strong>(0.544)</strong>&lt;.0001</td>
<td><strong>(0.523)</strong>&lt;.0001</td>
<td>1.000</td>
</tr>
</tbody>
</table>
Based on the correlation coefficients in Panel B above, I was also able to confirm several expected univariate relationships between my variables. Specifically, evaluative judgements are positively related to respect for auditors (p<0.0001) and negatively related to distrust (p<0.0001) and damage awards (p<0.0001). Furthermore, respect (distrust) for auditors is also negatively (positively) correlated with damage assessment (p<0.0001 for each). While the correlation between evaluative judgments and distrust is not statistically significant at conventional levels, it is approaching significance and in the predicted, negative direction.

**FIGURE 2: Path Analysis Results**

To formally test my hypotheses, I conducted a path analysis, as laid out in the theory section above.\(^2\) Figure 2 reflects the results of this analysis. All analyses were conducted with

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\(^2\) Additionally, I ran the analyses as an OLS mediation model based on the methods described in Baron and Kenny (1986). The results are substantially unchanged from those presented here.
and without controls for age, sex, attitudes towards auditors, preferences for (against) IT, and feelings about changes to audit procedures. None of these variables had a significant effect and have been excluded from the results discussed below.

Overall, the model has good fit, with a standardized root mean squared error of 0.019, a GFI (Goodness of Fit) of 0.995, and a BCFI (Bentler Comparative Fit Index) of 1. In my hypotheses, H1 and H2 each predict a negative relationship between evaluative judgments and an audit team’s dismissal-of and reliance-on IT, respectively. However, based on my path analysis, neither of these two links are significant (p=0.678 and p=0.324 for Dismissal and Use, respectively). The lack of power for these two links could be due to several factors, one of which relates to the highly significant effect of participants’ predispositions towards auditors.

Specifically, I find a significant and positive effect of Respect (p < 0.01) on Evaluative Judgments, indicating that participants with greater inherent respect for auditors are more likely to evaluate the auditors as competent and assign less responsibility for the misstatement. Distrust had a marginally significant negative effect on Evaluative Judgments, with a p-value of 0.117. Given the relatively short average time spent by participants on this case (i.e. 8.23-minute mean, with a 7.54-minute standard deviation) and the significant percentage of those that failed at least one comprehension check (i.e. 38%), it is possible that participants did not attend closely to the case specifics and, instead, let their predispositions towards auditors drive the results.

Additionally, there may be a power issue given the relatively small sample size, if the true effect size is medium to small.

3 Specifically, I measured opinions about changes to audit procedures through participant responses on an 11-point Likert scale based on their level of agreement or disagreement with the statement: I believe auditors should change and adjust their audit procedures from year to year. Furthermore, I measured opinions about IT reliability by using each of the 11-point Likert scale responses to the following statements individually and in aggregate based on a simple average and a factor analysis: (1) I believe if the firm did (did not) use the computer program, they would have found the misstatement; (2) I believe computers are more (less) reliable than humans at detecting potential issues; and (3) The decision to use (not use) the computer program affects my opinion of the auditors.
However, I was able to replicate the results found by Lowe et al (2001) with respect to the link between Evaluative Judgments and Damage Assessments. Specifically, I replicated their negative and significant relationship between these two variables (p < 0.05). Furthermore, I am also able to see that while Respect for Auditors had a significant indirect effect on Damages via Evaluative Judgments; both Respect and Distrust of Auditors had significant direct effects on Damage Assessments (0.47, p < 0.05 and -0.35, p < 0.01, respectively). This further strengthens the argument that these attitudes may have soaked up a significant amount of power and could be a result of participants’ lack of attention to the particulars of the case.

In general, while MTurk does serve as a nice subject pool to represent the individuals who do wind up going to a jury trial, the subtle manipulation on reliance of IT technology and the dismissal of IT technology might not have been salient enough given the speed in which participants read through the case. Another limitation is the knowledge the average citizen has about accounting and auditor responsibilities. Essentially, the attitudes of auditors may just be an overwhelming influence that drives people’s decisions.

V. CONCLUSION

Overall, this paper studies the effect of computer-assisted audits on damage awards in auditor litigation based on evaluative judgments of auditor effort. I used an experiment, surveying 76 subjects via Amazon’s MTurk. The experiment involved a 1 x 3 design, manipulating the use of technology at three levels (No IT, IT Not Used, and IT Used). While the results supported previous academic research, it did not find the primary, novel hypotheses to be significant. This was a good attempt at a hypothetical court case issue which very well could have found better results with a more strengthened participant group.
There are several limitations to this study, which may have led to the lack of significance and alternative explanations to explain my results and hypotheses. First, this is a hypothetical court case survey, but this study does not survey actual jurors in Pima County/Maricopa County. It is not known if using a different pool of subjects would yield different results. Additionally, it appears that participants were significantly biased with respect to their predispositions toward (or against) auditor responsibilities and the accounting industry as a whole, which may have significantly outweighed a relatively small effect size of the intended, subtle manipulation.

Furthermore, one of the most difficult limitations to combat is that the information provided in the case is not always known. For instance, task realism is referenced many times in Lowe and Reckers (1994), noting that “many items may be ambiguous or may be unknown…in a court of law.” With all that in mind, each audit litigation case is different providing limited information or sometimes settled before the case is decided by a jury of one’s peers.

Overall, this paper provides an intriguing and unique glance at an evolving industry that has much to expand and grow. This paper further differs from others in the accounting research field because it deals with IT that replaces audit procedures instead of just helping to facilitate audit decisions. Future research could make several changes to this study in an attempt to investigate the underlying theory in more detail, including (1) increase the strength of the manipulations, (2) use actual juror subjects, (3) use judges that may be more versed in such cases and more attuned to the subtle differences in the manipulations, (4) conduct the study within-subjects to increase the saliency of the manipulations, (5) assess whether the accuracy of the IT moderates the results (i.e. if the effectiveness of the IT is low vs. average vs. high), or (6) assess whether use of third-party vs. in-house IT development impacts the results.
APPENDIX A

Case Materials

The following is a hypothetical class-action lawsuit involving an audit firm (the defendant) and the investors of a publicly traded company (the plaintiffs).

Please read the case materials carefully. You will be asked a series of questions to confirm you understand the materials, then you will take a short survey regarding your opinions.

Auditing Regulations
Per legal regulations set forth by the PCAOB, "the auditor has a responsibility to plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether caused by error or fraud. Because of the nature of audit evidence and the characteristics of fraud, the auditor is able to obtain reasonable, but not absolute, assurance that material misstatements are detected." (PCAOB AS1001.02)

Background Information
Zed Co. was founded in 1990 and its stock is publicly traded on the American Stock Exchange. For the last 12 years, Zed Co. has been audited by the Dallas office of Watson & Jones, one of the largest public accounting firms in the United States. In each of these years, the auditors issued the standard, favorable audit report.

Summarized financial information for Zed Co. for the prior and current year (i.e. 2015 and 2016) is as follows:

For the year ended December 31, 2015:
The Company (Zed Co.) reported $300 million in Total Revenue, $2.5 million in Net Income, and $450 million in Total Assets. Their auditor, Watson & Jones, accumulated 10,000 audit hours and charged Zed Co. $2 million in audit fees for their work.

For the year ended December 31, 2016:
The Company (Zed Co.) reported $320 million in Total Revenue, $2.0 million in Net Income, and $470 million in Total Assets.

Their auditor, Watson & Jones, accumulated 8,500 audit hours and charged Zed Co. $2.15 million in audit fees for their work.

Case Information
***Language Excluded from Control Condition: For the last 5 years, the national office of Watson & Jones has spent several million dollars developing a computer program that assists their auditors in the completion of their testing. This computer program can be used to test several different accounts, thereby reducing the amount of time and work needed to be performed by the auditors. The national office has deemed this program to be highly effective and efficient.***
During the audit of the Zed Co. 2016 financial statements, the auditors in the Dallas office identified several key risk areas related to management's estimates, including goodwill, deferred tax assets, and accounts receivable. They evaluated the reasonableness of these accounting estimates in the context of the financial statements taken and performed procedures to test both the objective and subjective factors relevant to these accounts.

***Language Included in Control Condition Only:*** All procedures were performed the same way as the prior year. No issues were encountered during their testing.***

***Language Included in IT Used Condition Only:*** To increase efficiency, the audit team used the firm's computer program to assist in the testing of several accounts, including inventory, revenue, accounts receivable, and long term debt. No issues were encountered during their testing.***

***Language Included in IT Not Used Condition Only:*** The audit team decided not to use the firm's computer program for any of their testing. Instead, all procedures were performed the same way as the prior year. No issues were encountered during their testing.***

The auditors completed their work on February 18, 2017. The audit partner concluded that the financial statements were free from material misstatement and signed off on the standard, favorable audit report.

After the audit, on March 10, 2017, management at Zed Co. realized that they had made a mistake in their recording of accounts receivable that would decrease their 2016 earnings by $3.25 million, resulting in a net loss of $1.25 million for the year.

Because of this misstatement, when Zed Co. disclosed the loss to the public, their stock price dropped significantly and the company's investors filed a class-action lawsuit against Zed Co. and its auditor Watson & Jones. The stockholders claimed that the CPA firm incorrectly provided a favorable audit report and requested damages of $5 million (which is the estimated stockholder losses from the drop-in stock price).
REFERENCES


https://www.bloomberg.com/news/articles/2012-08-02/knight-shows-how-to-lose-440-million-in-30-minutes
