

Audit At A Crossroads

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Abstract

The year 2002 was not a good one for financial statement auditors or the accounting profession. Not only did one of the largest and most respected CPA firms Arthur Andersen go out of business, but several other firms were associated with companies that misstated their financial statements, participated in illegal insider loans or were involved in other inappropriate actions. The result of these associations, in most cases, was expensive litigation against the auditors. For many years, there has been an *expectations gap* between auditors and their professional association believes their responsibilities are and what the SEC, the courts and the public believe to be the responsibilities of auditors. The latter groups believe that auditors should be the financial watchdogs and should detect all material, financial statement fraud of their clients. Their question is: If the auditors are the watchdogs, then who is? Auditors and professional auditing standards, however, have maintained that auditors should plan and execute their audits to provide reasonable assurance that material financial statement frauds don't exist but that they can never guarantee absolute assurance and can never detect all material frauds because of such factors as lying by clients, collusion, forgery and other similar factors. Auditors, they maintain, are not trained to be forensic experts and should not be held responsible to determine when clients are lying and committing forgery. In fact, they don't believe that being a guarantor of the accuracy of financial statements is possible for anyone, no matter what their training. In this paper, we address the issue of whether or not auditors, if properly trained and if using recent developments in technology, could detect all material financial statement fraud.

In asking this question, we review current and past fraud research and highlight the lack of research relating to the integration of fraud-detection techniques in audits. We argue for two changes in the audit process: 1) full-population analyses and significantly lessened reliance upon sampling, and 2) the inclusion of proactive fraud-detection procedures in routine audit methods.

Finally, we call upon researchers in fraud, computer science (and related fields), and statistics to apply their techniques and knowledge to researching ways in which fraud can be discovered during financial statement audits.

Introduction

In his classic book, “The Structure of Scientific Revolutions”, Thomas S. Kuhn states (Kuhn 1996):

Because [scientific revolutions] demand large-scale paradigm destruction and major shifts in the problems and techniques of normal science, the emergence of new theories is generally preceded by a period of pronounced professional insecurity. As one might expect, that insecurity is generated by the persistent failure of the puzzles of normal science to come out as they should. Failure of existing rules is the prelude to a search for new ones.

While the academic accounting field is not necessarily in crisis, recent events relating to corporations and their auditors would suggest that the professional accounting field certainly is. Recent literature, both academic and professional, is replete with papers describing expectation mismatches, auditor litigation, and company failures caused by financial statement misstatement and fraud.

How should auditing practices change to address the crisis at hand? Will the profession hunker down for the storm, placate current concerns, and emerge in a few years for business as usual, or will the current instability in the field bring about a revolution in auditing practices? If a revolution is possible and is demanded, what is our role as academics in facilitating this revolution? What knowledge is needed to address the detection of fraud and what research should be undertaken to help guide and manage the coming changes?

Historical Precedence

Significant changes in the audit profession are not without precedent. Previous crises caused changes that required refitting audit models, training of professionals, and retooling of audit courses. Several of these crises are listed in Table 1.

<i>Time Period</i>	<i>Previous Approach</i>	<i>Revised Approach</i>	<i>Reason</i>
Late 1800s	Auditors worked for companies	Independent auditing firms were established to provide assurance to absentee owners that management actions were appropriate	Establishment of corporations with absentee stockholders
Around 1900	Full population analysis	Use of sampling for analysis	Number of transactions were too voluminous to review full populations within reasonable time and cost limits
Early	Audits involved	Additional audit	Frauds such as

1930s	checking the mathematical accuracy of financial statements and other accounting records	procedures beyond financial statements were implemented: For example, inventories were observed and accounts receivable were confirmed	McKessin Robbins created fictitious inventory and receivables and it was realized that checking mathematical accuracy was not a sufficient audit.
1980s and 1990s	Auditors maintained they had no responsibility for and could not detect fraud	Auditors accepted some responsibility to plan and perform their engagements to detect material financial statement fraud	Increasing number of lawsuits and recognition of an expectation gap between what auditors, the SEC, the courts, and the public believed auditors responsibilities were

Table 1: Historical Changes in the Audit Field

Current Conditions

We do not believe that the current auditing crisis is atomic in nature; rather, it is the result of several events that have interacted simultaneously. These events are described below.

Economic Events

The first, somewhat obvious, reason for the crisis is the bursting of the economic bubble that existed in the 1990's. The previously strong economy masked many corporate problems that became apparent--all at once--at the end of the decade. The dot-com phenomenon gave investors unrealistic confidence in companies and their stock prices, and fiscally rational decisions were often replaced with visions of personal and corporate wealth. Executives were (and still are) endowed with millions of dollars worth of stock options that far exceed their salary-based compensation, creating significant pressure to increase reported earnings and stock prices.

A conceptual model created by Edwin Sutherland and confirmed in business by Albrecht et. al shows that material misstatements due to fraud are a function of opportunity *conditions*, pressure *motivation*, and perpetrator *attitude* or set of moral values. When economic conditions slowed at the end of the 1990's, the attitude of investors toward risky and potentially irrational decisions provided ripe conditions for fraud to be committed. In addition, the need for strong corporate earnings provided increasing pressure and motivation for management teams to walk a fine line between honest and dishonest reporting. Under these conditions, companies with management teams who had less-than-perfect ethics were extremely prone to fraudulent reporting.

Simultaneously, these same pressures were felt by accounting firms and auditors who were pushing for new clients, increased efficiency, and lower audit costs. In addition, most accounting firms were enjoying unprecedented profits from consulting services to many of the same clients they were auditing.

The Expectation Gap

Over two decades ago, the 'Cohen Committee Report' (AICPA 1978) highlighted an *expectation gap* between auditor performance and financial statement user expectations. The study found that readers of financial statements expected auditors to consider fraudulent causes of material misstatements, but generally accepted the fact that audit standards did not explicitly require auditors to detect such frauds. The result of this expectation gap has been complex and costly litigation between stakeholders and auditors when frauds are revealed.

Subsequent reports and standards from the AICPA and other organizations, such as the Report of the National Commission on Fraudulent Reporting (AICPA 1987), SAS No. 1, SAS No. 16, SAS No. 53, SAS No. 82, and SAS No. 99 have helped reduce the expectation gap and increase the likelihood of finding fraud during routine audits.

Despite the progress towards minimizing the expectation gap, the frauds of recent years, such as Enron, WorldCom, Homestore, Quest, Global Crossing, Adelphia, Xerox, Waste Management, Sunbeam and others, signal that more significant changes are required.

New Regulations

New standards, such as SAS No. 99, explicitly require auditors to consider fraud as part of financial statement audits. While these standards are a result of other causes, such as the expectation gap, they highlight the profession's move toward increased fraud-detection requirements.

Moral Decay

Many studies have shown that general honesty in business transactions has decreased over the past few decades. For example, a survey of attendees at the April, 1998 Business Week Forum for Chief Financial Officers showed that 67 percent of the attendees had fought off other executives' requests to misrepresent corporate results. Of these attendees, 12 percent admitted they had yielded to the requests while 55 percent said they had successfully fought off requests to misrepresent corporate results (1998). While these results may not be empirically generalizable, they provide insight into a trend towards moral decay in business reporting that makes the detection of fraudulent reporting essential, both for the survival of auditing firms and for continued confidence in the U.S. capital market system.

Recent research shows that auditors are feel pressure to reach favorable judgments because of the significant repercussions that occur when less-than-favorable opinions are given. \cite{bazerman02} found that auditors are less likely to be objective or independent when the company they are reviewing is their 'client' and they want to reach a particular conclusion.

What Is Being Done

While the economic impact of the dot-com burst is recent, the expectation gap, moral decay, and other conditions have been unresolved issues for some time. A report commissioned to determine the current state of fraud and auditing (Beasley, Carcello et al. 1999) highlighted many efforts the profession has taken (both academic and professional) to resolve the expectation gap problems. These efforts include studies undertaken to better understand the problems being faced, research into changes required regarding the role of auditors in an engagement, and efforts related to the roles of management, boards of directors, and audit committees. Readers are referred to this publication for more information on the many efforts completed and underway.

In addition, the Auditing Standards Board requested research into SAS No. 82 in October, 1998. This request included the two following areas of need: measurements of the effectiveness of SAS No. 82, and insight into how emerging business and technology trends were affecting the process of detecting fraud.

Fraud Research

Significant research has been conducted to further our understanding of fraud. (Beasley, Carcello et al. 1999) includes a section on findings from academic research during the period 1987-1998. We have supplemented this report with additional reviews of literature during the past two decades. Fraud research to date can be grouped as follows:

- **Descriptive Research About Fraud:** Research that identified characteristics of companies experiencing fraud and proposed the fraud triangle. It introduced the concept of red flags: signs that might indicate the presence of fraud.
- **Fraud Risk Assessment Model:** A validated model showing the probability of financial statement frauds is a function of opportune conditions, motivation, and moral attitudes.
- **Validation of Fraud Risk Factors:** Research that uses empirical methods to validate red flags or indicators of fraud.
- **Effectiveness of Audit Tools for Fraud Detection:** Research into the use (and nonuse) of red flag lists, opinions about fraud risk, and use of automated tools to predict the likelihood of management fraud. These tools focused on people and conditions rather than mining of significant amounts of corporate data.
- **Role of Corporate Governance:** Research into the importance of controls, relationships between board of director characteristics and fraud, and the role of management.
- **Consequences of Financial Statement Fraud:** Research into auditor liability, firm value, and corporate consequences when fraud is found.

As can be seen in the list provided, most research thus far has been focused on understanding fraud, its perpetrators and consequences, and fraud risk factors. Fraud detection during audits has primarily focused on risk control for the audit firm, characteristics of management, and control environments. The inclusion of fraud factors in audit planning has resulted in higher sample sizes or increased scrutiny, but the general

audit methodology has remained the same. *Precious little research has been done that proposes how our newfound knowledge of fraud can be integrated into and thereby benefit the day-to-day audit routine.*

We propose that the time has come for new audit methods to be included in financial statement audits that take advantage of knowledge gained during the last 20 years of fraud research, developments in technology and research in many related disciplines such as statistics, information systems and computer science.

New Methods

The availability of technology and digital data makes it possible to perform data mining routines in ways that have historically been very costly or even impossible to do. Almost all corporate data is now accessible through relational schema (e.g. SQL queries). However, very few auditors understand table relationships, relational theory, foreign keys, data types, or ODBC/JDBC connections. If auditors better understood the nature of data, how it is stored, and how to access it via SQL, they could search for fraud (and other anomalies) in ways that are significantly more powerful than today's methods.

The use of commercial programs like Audit Command Language is only the first step towards this type of analysis. Significant research has been performed in reference disciplines that auditors can use to find fraud in new ways. For example, there is a wealth of methods researched by the statistics community to analyze trends according to time periods, massage data to highlight certain behaviors, and crunch significant amounts of data against predefined models. Currently, the audit process makes heavy use of statistical sampling and descriptive statistics, but it largely ignores more powerful statistical techniques, such as time-analysis routines.

In addition, the computer science field (and related fields) has produced significant research in data mining, data warehousing, and learning techniques. Methods such as ID3, genetic algorithms, and backpropagation networks can be used to train models that are specific to each company's type of data. Scripting languages can be used to quickly apply algorithms to entire data sets and highlight anomalies.

In a pilot study, we investigated for fraud in one of the largest oil refineries in the world. Our findings were reported in the Journal of Forensic Accounting (Albrecht, Albrecht et al. 2001). In that study, we created custom data warehouses that highlighted fraudulent trends that required further investigation. We used time-based statistical methods, regression analysis, and data mining techniques to analyze entire data sets and provide graphical views of suggested trends. During the study, several frauds were found that had not shown up in previous audits.

A Revised Audit Model

We propose that a need exists for statistical and technological methods to be applied within the audit process to focus on financial statement fraud. We suggest two initial modifications to the audit process that will increase the likelihood of fraud detection: 1)

full-population analyses, and 2) the use of proactive fraud-detection procedures. These changes are described in the following paragraphs.

Revision #1: Full-Population Analyses

While material misstatements due to lack of controls are often spread throughout the population of transactions, fraudulent misstatements can be the result of very few transactions. Historically, sampling has been used because 1) it is efficient, and 2) it usually finds misstatements due to lack of controls and other means. Problems resulting through control weaknesses and other ‘traditional’ causes of misstatement are often widely spread throughout a dataset. This assumption does not hold true for most fraud activities. We suggest that sampling is a very dangerous activity when fraud is suspected because, for example, a 5 percent sample results in a 95 percent chance of missing the few fraudulent transactions.

In addition, the availability of digital data and relational data sources circumvents the advantage of sampling when compared to full-population analysis. SQL queries and database cursors can analyze entire populations for many different attributes and make complex calculations in the same relative time as samples. Our pilot study highlighted the need for iterative runs for fine-tuning of queries and scripts, use of corporate servers, and normalization of data.

We realize that sampling will always be required for certain analytical, some limited paper, and other ‘smell’ tests. However, we propose that *routine* sampling is a relic of historical audit procedures that were based in paper-based transactions and manual testing. The availability of digital data and modern processing power makes it largely obsolete.

Sample size is one of the primary outcomes of today’s audit risk model. The audit risk model is currently composed of internal control risks, analytical procedures risk, and detail testing risk (Wallace 1995). How does a general, full-population rule affect the audit risk model? The answer to this question requires more research. However, it is clear to us that there is little justification in continuing general sampling when computers can analyze full populations with very little extra expense.

Revision #2: Proactive Fraud Detection

The analysis of digital data makes it possible to perform proactive, computer-driven fraud detection as outlined in (Albrecht, Albrecht et al. 2001) and (Albrecht and Albrecht 2002). Proactive fraud detection involves analyzing each specific business and listing potential frauds that could occur. Detailed queries and scripts are developed to mine full-population corporate datasets for fraud symptoms. Iterative runs provide feedback to hone queries for poignant results that can be efficiently investigated.

Proactive fraud detection is not necessarily limited to fraud investigation. It should be useful in more traditional audit routines as well, and it could be integrated throughout the entire audit process.

Proactive fraud detection requires additional work of auditors. It will likely increase the costs of audits. However, recent auditing standards and government regulations require auditors to explicitly consider and look for fraud. Proactive detection during detailed testing may be a valuable method of finding fraud in ways that would not be possible

without digital transactions and accessible datasets. Empirical research is needed that validates the benefits and applicability of the proactive model developed in the pilot study.

Conclusion

The audit profession is at a crossroads: the business community is searching for some way to increase its confidence in financial statement fairness. The perceived usefulness of audit procedures has been minimized by recent events and conditions. We have called for two changes to the audit model that we believe will help the profession step up to the new standards and increased expectations.

The proposed changes require two primary efforts. The first is a new type of auditor that is skilled in classic audit methods (e.g. controls, risk, procedures) as well as in data analysis and mining, statistical techniques, relational theory, and scripting routines. This may require the retooling of audit courses and professional education. This person likely is a combination of the skills traditionally held by information systems professionals and auditors. We know the inclusion of these additional topics will likely affect the already-crowded, 150-hour education required of most states, but we feel it is vital to the success of the field in this new century.

The second needed effort is the application of statistical and computer science research to the audit process. What analyses and techniques are most applicable for finding fraud and increasing audit assurance? How can these complex analyses be included in ways that auditors can quickly and efficiently perform them in day-to-day operations? How should digital data in the revenue cycle, the production cycle, and the finance and administrative cycle be massaged, summarized, and analyzed to provide useful information about financial statement fairness?

The answers to these questions are important keys to the future of the auditing profession. Researchers in the fields of statistics, mathematics, and technology need to apply their knowledge to make audits more effective. We see an opportunity for combined efforts between these and audit academic researchers to improve the current state of auditing and to meet the needs of the new century.

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