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Discussion of “Digital Analysis and the Reduction of Auditor Litigation Risk”

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Mark Nigrini’s paper, Digital Analysis and the Reduction of Auditor Litigation Risk, is a leap forward for the audit profession, and I believe that this is an important contribution as we increasingly invest in information systems auditing. So any comments that I have on the paper should not be construed as arguing with the value of digital analysis. In fact, I advocate that future research be directed to finding more ways to analyze data and detect the anomalies which might indicate the existence of material fraud, misuse of corporate funds, errors, or misstatements.

Digital Analysis Overview

The essential point of this paper is that digital analysis, used in conjunction with an audit, will reduce an auditor’s risk of litigation. Let’s look at an example.

Frank Benford discovered that there are natural and predictable patterns when one looks at how frequently the numbers appear in large data sets. One of the more significant observations that he made involved the first two digits. Take a simple data set as shown below:

\$15,987.90
3,894.94
.73
100.00

Taking the first two digits of each number (respectively, 15, 38, 73, 10) we can see that each of these digits are different. But Benford, and others mentioned in the paper, found predictable patterns in large sets of data. They found, for example, that there are more 10’s than 99’s. And more 11’s than 98’s; more 12’s than 97’s, and so on. As they looked at more and more data, they found that, in absence of some human intervention, the data should conform to a given pattern.

The author has taken this work further by proposing 13 methods of examining data, including tests for rounding, estimation, and conformance with known patterns. He has expanded the concept and presented it effectively so that those of us in the business of auditing can apply it.

Observations from Practice

Ernst & Young has used digital analysis and found that it does, at times, lead to some very interesting conclusions. Examples include:

- * Frauds, usually low level ones, are sometimes perpetrated through a stream of transactions. Some perpetrators accomplish this by using a recurring pattern of transactions. Such a pattern may be detected through digital analysis and subsequent follow up on the transaction.

- * Operational inefficiency: Considering the cost of issuing one check, our clients may not be aware of ineffective procedures which entail the issuance of many thousands of extra checks or other paperwork. (Example: One company issued 20,000 checks for amounts equal to \$25, \$50 and \$75 as they matched employee contributions to charity. Would it have been more efficient to accumulate such checks? Companies might devise a different approach, particularly when the cost of issuing a check can be more than \$10.00 per transaction.

* Internal Control circumvention. Most companies have signing levels of responsibility for disbursements (e.g. \$5,000 by managers, \$25,000 by senior managers and over \$100,000 by two or more senior managers.) There have been situations where digital filter detect a cluster of transactions just under the authorization limits (e.g.\$4,999), as individuals seek to circumvent the control system. Such discrepancies may not be fraudulent, but raise issues of internal control compliance. Detection can be an effective means of strengthening the internal control system at a relatively low cost.

* Digital analysis may also reveal if there has been a tendency for management to “manage the numbers,” for instance, by rounding up numbers to make them look slightly higher.

In essence, this type of analysis is effective in determining if there has been some form of human intervention in the numbers that require further investigation. As such, digital analysis has the potential to provide a whole new way of analyzing data, and a technique to look at large data sets to detect anomalies.

Areas of Debate

While I have some areas of debate, and recommendations for improvement, I do not in any way intend to discount the value of this research. This paper is breaking new ground in analytical procedures, and it will have immense value for auditors as we rely more and more on technology and anomaly detection to replace conventional testing.

A. I take issue with the discussion on auditor litigation, which makes some assertions that are not correct. The paper indicates that the costs of settlements and legal defense were escalating at an alarming rate, and that was certainly true until 1994. But it goes on to state that there appears no end to the continuous upward spiral.

Looking back ten years from the time-frame referred to in this paper, one could project that there was no end in sight. In fact, in 1993, taking a look at the pace of litigation and settlements for all of the Big Six over a ten year period, one would project that by 2001, these costs would exceed the total revenues of the Big Six. Clearly, that situation required remedy. This is now occurring, and, in fact, the upward spiral has been reversed.

This has occurred because:

1. Firms became much more risk averse. This is evidenced by mass firings of high risk clients by many of the firms, and much more care exercised in gaining new clients. Firms have also instituted continuing reviews of client integrity and business risk so that risk is understood and managed.

2. Firms became much more vigilant in issuing opinions and scrutinizing questionable transactions or disclosures. The profession went back to basics in skepticism and exercising due care.

3. In the US, each firm now is a Limited Liability Partnership rather than just a partnership. Thus, the individual liability of each partner has been decreased, even though the firm’s total capital remains at risk.

4. Efforts by the profession to influence Federal legislation were successful, as evidenced by the Private Securities Litigation Reform Act of 1995.

5. There has been increased vigilance on the part of corporate audit committees and boards to the danger of management fraud, poor controls, and environments that are conducive to dishonesty. This is partly a result of the litigation, and partly a response to the needs of shareholders and the financial community for integrity in financial reporting and corporate conduct.

B. The paper quotes the work of Arens and Loebbecke (1991) and concludes that a major source of legal liability is failure to discover a defalcation during an audit.

There is no question that auditors are sued for such occurrences, but our experience differs from this conclusion. In 1993, we conducted a study of litigation against auditors and found that the primary factor was the risk inherent in the business of the client.

We found that clients that were in high risk industries, in high risk businesses, or where management integrity was questionable, were the primary cause of litigation. Studies conducted by other Big Six firms revealed similar results.

We found that WHO you audit is the major risk factor; not the nature, scope and timing of audit procedures. In other words, if you were auditing an S&L in the late 1980's, you were auditing a powder keg. I suppose you could say the same thing for many of the famous "failures" where auditors have been held to be liable in some form.

This is why there has been so much emphasis by the Big Six on client acceptance and retention. And, as we have improved our ability to assess this risk, we have been effective at reducing litigation against us.

C. Any time that we talk of fraud, it is important to make a clear distinction between management fraud -- such as deliberate misstatement of the financial statements -- and employee theft, which involves the misappropriation of corporate assets for personal gain.

Audit standards require us to consider the potential for management fraud, and material misstatement due to employee fraud.

Digital analysis has detected employee fraud, and circumvention in internal controls that could ultimately lead to an environment where fraud could occur. By detecting such fraud, an auditor has performed a valuable service for their client, and may have reduced their own risk of an audit failure. External auditors may find that digital analysis is a technique to provide some incremental assurance that management fraud did not occur, or that internal controls were not circumvented. I believe that internal auditors, who have the primary role to play in the detection of employee fraud, will make great use of digital analysis as a technique to detect such frauds, and increase the total strength of the control system.

D. The paper makes extensive use of the term due diligence. In the U.S., due diligence is an agreed-upon procedure that is usually conducted in conjunction with an underwriting of securities. We use the term "due professional care" referred to in the generally accepted auditing standards.

E. Lastly, in an amendment to this paper, the author postulates that if an auditor were to use digital analysis, they may avoid an assertion of gross negligence. I fundamentally disagree with this conclusion.

Gross negligence can occur when it is found that an auditor made reckless disregard of audit standards and there was, in fact, no reasonable basis to issue an audit opinion. Digital analysis

could help corroborate an auditor's defense that they were not reckless, but, by itself, does not excuse an auditor for applying poor judgment, or having a poorly trained staff, or failing to exercise due professional care in other facets of the engagement.

Digital analysis is one technique, but is not, by itself, an all-purpose test of reasonableness or propriety. For example, digital analysis will not detect a key item, such as a very material transaction. In a series of disbursements ranging from \$1.00 to \$1,000,000, with 99.99% of the disbursements between \$100 and \$100,000, digital analysis would not necessarily detect the disbursement for \$950,000 that may or may not be fraudulent. This does not negate its potential, but we cannot place reliance on any one tool or technique to form a conclusion.

Conclusion

So, where, in the face of my comments, does digital analysis fit in?

I believe that the audits of the future will be much more focused on the total business risk of an enterprise; make much stronger use of information technology to detect anomalies, exceptions, errors and misstatements; and be performed almost continuously. In fact, all of the firms are moving in this general direction to meet the needs of the financial community and adapt to a changing environment.

Digital analysis is one technique, of which there will be many, to enrich and enable the whole area of audit technology. In fact, I believe that Mark Nigrini has made a significant advance in the whole area of anomaly detection with the publishing of this paper. He has advanced the thinking by posing 13 methods to detect anomalies. We are strong believers in this area as a wave of the future.

Much work needs to be done in an area I call "Analytical X-rays." Just as x-ray technology advanced the cause of medicine, so to will a new generation of analytics advance the cause of high tech auditing. In fact, I believe that the academic community, particularly those of you with a strong mathematics or engineering background, could help advance the profession by adapting algorithms to the field of auditing to enable anomaly detection.

A very important element in moving this forward now shifts to the accounting profession. I believe that the profession has an obligation to embrace these techniques, and to encourage their adoption. And we need to begin to think beyond the characterization of analytical x-rays as mere "analytical procedures." Often, auditors think of analytical procedures (such as a year to year comparison of financial ratios) as providing a relatively low level of assurance. As we develop sophisticated methods, we should determine how such procedures could be used as substantive procedures. If we could deploy tools and techniques that look at data in a systematic way -- looking for known patterns and searching for anomalies -- auditors would achieve the goal of increasing the total value of their services to clients while reducing their own risk of an audit failure.

More powerful analytics will not be a substitute for auditor judgment, or for understanding the inherent business risk of a company or an industry, or inappropriately applying accounting principles. They would not have saved the profession from the litigation crisis. But, if they are woven into the fabric of an audit, they may very well help us to reduce the overall risk of auditing and increase the reliability of the audit opinion.