

Data mining education for external auditors

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Abstract

The auditing profession is suffering a credibility crisis in the eyes of the public due to the high profile collapses of many large companies and indeed one of the largest accounting firms in the world, amid fraud and professional breaches. Regulators are strengthening requirements and the auditing profession is once again working towards “educating” the public about what they should be expecting from the auditors. A revolution is seen to be necessary whereby external auditors, via the support of regulators, apply data mining techniques to improved financial reporting requirements in the context of electronic data collection. The public would be provided with more of their expectations including better predictions of fraud, errors and company failures.

Keywords: expectation gap, exploration, deployment.

1 Introduction

The auditing profession is embroiled in another credibility crisis or what has been described by Kahn [5] after Enron’s bankruptcy as a “crisis in confidence”. Tomasic [8] notes that “on the heels of corporate collapses, we are in many ways witnessing a fundamental crisis of trust”. It is proposed in this article that current external auditing practices are outdated, insufficiently rigorous and are contributing to the expectation gap between what the public expects from the auditors and what they are delivering. Data mining techniques are suggested to close this expectation gap and revolutionise how auditors undertake their work. It is acknowledged that legislative support would be required to ensure suitable data is captured and stored to make the changes work. Whilst the Australian auditing standards pay some lip service to introductory data mining techniques in its standard on analytical procedures (AUS 512) [4], little has been done to support the application of the techniques and employ more rigorous and suitable techniques.



2 Credibility crisis

Every large firm that fails, such as HIH insurance Limited in Australia, which collapsed in March 2001, ensconces the auditing profession in a credibility issue. Those firms that fail and involve corporate scandals including a focus on accounting practices especially affect auditors' credibility. This was the case with the \$54 billion write-off after Time Warner purchased AOL and the fraudulent accounting practices employed by Xerox. The seriousness of this recent crisis affecting the auditing profession has not been merely due to the magnitude or even the amount of corporate failures but the public humiliation and failure of one of the largest accounting firms in the world. This firm was Arther Andersen, which was a premier Chartered Accounting firm renowned for its independence and auditing practice. Arther Andersen failed in 2002 amid claims of fraud, legal evidence shredding, management consulting abuses and domination by clients related to its audit of Enron. Arther Andersen's trouble was not confined to Enron however as evidenced by the fact that they also paid a settlement of \$110M in an action of fraud in their audit of Sunbeam. The extent of the credibility crisis has even prompted the Institute of Chartered Accountants', Chief Executive Officer; Stephen Harrison [3] to warns the profession not "to be complacent, otherwise the individual and collective reputations of the profession will remain tarnished".

3 Regularity approach

America has taken a strict approach to regulation of the auditing profession via legislation, for example, Section 203 of the Sabane Oxley Act of 2002 required both the lead and reviewing partner to be rotated every five years, Section 206 prohibited a person who has been employed by the firm's auditors in the preceding year from taking up the office of controller, chief executive officer, chief financial officer, chief accounting officer or any other equivalent position in the company. Section 303 made illegal any attempt to 'coerce, manipulate, mislead or fraudulently influence' the auditors. It is argued that better auditing techniques not stricter auditor regulation is needed to solve the credibility crisis.

4 Expectation gap

Outside of the publics misunderstanding of the fundamental nature of the auditors' responsibility the expectation gap outlines two elements including the performance gap which is where the auditor is not living up to the requirements of the audit standards. The second element of the expectation gap is the standards gap where it is argued that the audit standards are not of sufficient quality to meet reasonable expectations. An example is the issue of detection of illegal and fraudulent acts, which has seen the public expect more and indeed case law require more of auditors than the professional standards themselves. Perhaps the public has the right to heightened expectation of auditors' roles if more sophisticated auditing data mining techniques were adopted.



5 Cooperation directed towards better audit techniques

With an increase in legislative requirements to keep and report more financial information, coupled with electronic systems used by most (if not all) large companies, rich historical data sources are becoming increasingly available. Attention should be applied to regulating the presentation of data that would suit exploration data mining techniques ensuring that the information is kept for a sufficiently long time. It is time to seriously consider data mining techniques to revolutionise the way an audit is undertaken. Some movement have occurred in the area but they are basic techniques revolving around risk databases, employee surveys, flowcharting software and risk and control management [7]. The suggested change would require cooperation between the financial standards board and the auditing standard board to ensure appropriate data was collected and stored. Internal auditors have progressed further with the techniques [6] but have had the advantage of collection of data not legislatively required via support of the employer. Internal auditors are also paid on the benefits of their savings. External auditors have not heeded the prompting of the public to be more effective preferring to “educate” the public in what not to expect. Other disciplines including commercial banking have progressed further than the auditing profession [2] which should be used as a prompt for the external auditors and again may revolve around the commercial advantage to progress. The last major auditing credibility crisis in the late nineteen eighties spurned a change of auditing approach from a systematic cycle approach to a risk based approach to cope with the greater expectations both on the efficiency and effectiveness of the audit. Auditors at the time were being sued for extraordinary amounts of money and yet tendering was introduced into the fee system to increase competition from what had previously been a charge out rate system where loyalty to the auditor prevailed.

6 Sophistication of auditing techniques

A system-based approach revolved around the auditors grouping financial details together in logical cycles, which makes the auditing procedures expedient. For instance evidence about the sale of a product on credit was also evidence about the resultant account receivable, even though the sale was in the income statement and the account receivable was in the balance sheet. The real change came in the emphasis. Prior to risk assessment being introduced the same emphasis was predominately used in each client whereas now the auditor tries to establish where the risk lays and applies more or less effort to the areas based on the risk assessment. The obvious problem is that the risk assessment needs to be correct for the approach to be effective. With the risk based approach to auditing the analytical review procedures have become increasingly important to the auditor to identify risk areas and yet the application of the test has remained fairly unsophisticated, depending mainly on traditional ratio analysis and trend analysis. Whilst time series modelling, regression analysis and financial modelling are included as analytical tests (AUS512 p19-31) [4] movement

towards these practices and more suited techniques has not been evident. If information was legislatively required to be gathered and stored appropriately, exploration data mining techniques such as meta learning, boosting or bagging could be employed.

Professional auditors have been swinging between favouring compliance based auditing approaches and substantive based approaches. The compliance-based approach revolves around the testing and reliance on the organisations internal controls and allows mitigation in the amount of direct or substantive testing necessary. A substantive approach is based on the concepts that it is either not time effective to test controls or that the internal controls themselves are not seen to be sufficiently effective. A substantive approach would see the auditors considering the data itself via direct testing of balances and transactions (AUS502 p06) [4]. The time has come when compliance or substantive approaches and techniques such as sampling which are traditionally used, to be either sophisticated or replaced by a more thorough analysis of the data. Data characteristic can be traced [1] and assumptions can be made about the likelihood that an error has occurred or that a fraud has been perpetrated by the nature, timing and amount of the transaction in combination.

7 Conclusion

The deployment of data mining techniques could allow auditors to be more expectant about discovering fraud and fit more inline with case law requirements that have long been cited as having greater expectation on auditors than their own professional standards. The major areas that the public expects more from the auditor are on the detection of fraud and error and their predicative ability about corporate failure. The standards shrug these expectations off by explaining that the audit embraces such compromises as reliance on internal control, estimations and sampling. Data mining techniques such as classification trees, cluster analysis and discrimination analysis could improve the predictive and discovery ability of the auditor. So instead of the public being “educated” about what the auditors cannot do, the auditors should be educated about what they can do. The savings by a more informed public would mitigate the cost of increased regulation.

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