Chapter 9

Utilization of Data Mining Techniques To Detect and Predict Accounting Fraud: A Comparison of Neural Networks and Discriminant Analysis

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ABSTRACT

Accounting information systems enable the process of internal control and external auditing to provide a first-line defense in detecting fraud (Turpen & Messina, 1997). There are few valid indicators at either the individual or the organizational level which are reliable indicators of fraud prevention (Groveman, 1995). Recent studies have shown that it is nearly impossible to predict fraud. In fact, many of the characteristics associated with white-collar criminals are precisely the traits which organizations look for when hiring employees (Lord, 1997). This paper proposes the use of information systems to deal with fraud through proactive information collection, data mining, and decision support activities.
INTRODUCTION

Bookkeeping and record keeping methods were created during ancient and medieval times. The concept of double entry accounting began in the 14th century (Accounting and Bookkeeping, 1994). While the concepts of accounting method rules and laws have changed significantly, one principle has remained constant. Accounting’s primary purpose is to keep track of money and other assets (American Institute of Certified Public Accountants, 1999).

An accountant’s first priority is to track all aspects of an organization’s financial elements. The accounting profession is dictated by guidelines, rules, procedures and laws. It is assumed that it is the duty of the accountant to insure that the financial statements provided are an accurate view of the firm. It is also assumed that it is the auditor’s responsibility to detect fraudulent behavior.

Unfortunately, auditors assumed that their responsibility was to detect material misstatements within their client’s financial statements, not to detect fraud per se. This difference in opinion has been labeled the “expectation gap” and it is used to describe the difference between what auditors assume their responsibility to be and what the public perceives it to be (American Institute of Certified Public Accountants, 1999).

In an effort to reduce the “expectation gap” the Accounting Standards Board (ASB) issues Statements on Auditing Standards (SAS), which are serially numbered pronouncements which interpret the auditing standards that accountants are mandated to follow. Specifically, SAS #53 and SAS #82 are the important statements regarding fraud detection (American Institute of Certified Public Accountants, 1999).

SAS #82 was issued in February of 1997 and is effective for audits of financial statements for periods ending on or after December 15, 1997. Prior to SAS #82, SAS #53 dealt with finding “errors and irregularities” in financial statements. SAS #53 defines errors simply as mistakes and says that irregularities include both fraudulent financial reporting and misappropriation of assets. However, SAS #82 provides an expanded description of fraud and covers both fraudulent financial reporting and misappropriation of assets.

The ASB considers the detection responsibility in SAS #82 to be the same as in SAS #53. However, the detection responsibility in SAS #82 has been clarified to use the term “fraud” rather than the term “irregularities.” In addition, SAS #82 also covers both audit planning and performance and provides auditors with additional operational guidance on the consideration and detection of material fraud in conducting financial statement audits.
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