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**Detecting Fraudulent Financial
Reporting: Teaching the 'Watchdog'
New Tricks**

by

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DETECTING FRAUDULENT FINANCIAL REPORTING: TEACHING THE ‘WATCHDOG’ NEW TRICKS

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ABSTRACT

The purpose of this study is to identify those approaches and techniques from the literature which auditors could usefully employ to detect fraudulently compiled financial statements. The classification which results includes a brief analysis of a number of studies classified within the following categories: prediction models, expert systems, neural networks, Benford's law, computer technology assistance, simple analytical procedure, 'red flag' groupings and broad strategies. We conclude on how this analysis could be useful to future researchers and to auditors in the field who are seeking to improve their approach to detecting material fraud in the financial statements.

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INTRODUCTION

Fraudulent financial reporting costs the world's economies billions of dollars a year. In the US alone the cost of corporate fraud is estimated at \$600 billion annually and is said to be responsible for severely reducing investor confidence in the nation's capital markets. Kaminski, Wetzel and Guan (2004) described fraudulent financial reporting as "a matter of grave social and economic concern" (p.15).

The discernible increase in corporate collapses due to fraudulent financial reporting over the last few years has drawn substantial attention to the auditor's responsibility to detect fraud. Whilst it is widely accepted that the existence of fraud is extremely difficult for auditors to detect, and "...that there are no auditing procedures that can provide absolute assurance..." (Wells, 2004, p.74), auditors are still held accountable for considering the effects of material misstatements caused by fraud.

In 1999 'Fraudulent Financial Reporting: 1987-1997 - An Analysis of U.S. Public Companies' was published by the Committee of Sponsoring Organisations of the Treadway Commission. This report identified many pertinent factors involved in cases of fraudulent financial reporting. One such factor being, "in 83% of the cases, the AAERs [Accounting and Auditing Enforcement Releases] named either or both the COE or CFO as being associated with the financial statement fraud" (1999, p. 1).

In an attempt to repair some of the damage caused by fraudulent financial reporting the American Institute of Certified Public Accountants has launched a 'comprehensive anti-fraud and corporate responsibility program'. One component of this program has been the issuance of Statement on Auditing Standards No. 99 (SAS 99); Consideration of Fraud in a Financial Statement Audit.

Although SAS 99 supersedes SAS 82 it does not increase the auditor's responsibility to detect fraud. As a consequence the auditor remains "...responsible for planning and performing the audit to obtain reasonable assurance that financial statements are free of material misstatements due to fraud" (SAS 82). The new standard does however introduce some new concepts and specific requirements to be undertaken, as well as providing greater guidance on what is required of auditors to discharge their duty. SAS 99 is aimed at achieving audit practices that encourage continuous consideration of fraud throughout the entire audit process.

In New Zealand, Exposure Draft AS206A: The Auditor's Responsibility to Consider Fraud in an Audit of Financial Statements, was issued for comment in September 2003.

In recognition of the Professional Practices Board's (PPB) decision to more closely align NZ auditing standards with International Standards on Auditing (ISA), ED/AS206A was based on the proposed revision of ISA 240. The revision of ISA 240 was carried out to take into account the basic principles and essential procedures contained in SAS 99. As a result ED/AS206A is comparable to SAS 99 and accordingly is only concerned with fraud (not error). The PPB 'Invitation to Comment' (2003) deemed the removal of the requirement to consider error in an audit "...placed a greater emphasis on the auditor's responsibility to consider fraud".

Bearing in mind the likelihood that amendments to New Zealand's Auditing Standard 206 will correspond closely with the requirements promulgated in SAS 99, it is timely that issues regarding the consideration of fraud by auditors be examined. Furthermore, the similarities between the standards make it likely that the challenges encountered by US auditors trying to detect fraudulently-prepared financial statements are going to be similar to those faced by New Zealand auditors. Therefore, it is considered that New Zealand auditors would benefit from research that has been conducted into the findings overseas as well as New Zealand studies that have been undertaken on the subject of fraudulent financial reporting.

Failure to detect fraudulent financial reporting during the course of an audit can expose the auditor to adverse legal and/or regulatory consequences. This could result in the auditor suffering both substantial litigation costs and irreparable damage to their reputation. The continuing importance to both the profession and society of the auditor's responsibility for detecting (materially) fraudulent financial reporting has been reiterated in the recent issue of SAS 99. This auditing standard requires auditors to plan and perform audits with a questioning mind, recognising the possibility that fraud may be present. The increased emphasis on identifying financial statement fraud necessitates amendments to the audit approach to ensure include adequate fraud detection procedures are undertaken.

It is with this interest in mind that we develop this paper to identify and evaluate the techniques and audit approaches known to be effective, or widely used, to aid in the detection of fraudulent reporting. This will be achieved from a review of the recent accounting literature and from providing an overview of the methods found to have fraud detecting qualities.

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We will first establish what constitutes 'fraudulent financial reporting', and provide some key characteristics of this type of fraud. This will be followed by identification of useful/prominent fraud detection techniques. Information will be provided about the specific techniques and approaches as well as any reported views on their relative effectiveness. Any reported limitations will also be presented. The paper will conclude with a summary of the research findings and a suggestion for future research.

DEFINING FRAUDULENT REPORTING

Although the term fraud covers a wide range of activities and indeed is a broad legal concept, financial auditors are specifically concerned with fraudulent acts that create a material misstatement in an entity's financial report (Griesh, 2003). SAS 99 describes two types of misstatements that are relevant to the auditing of financial statements. These are misstatements arising from fraudulent financial reporting, and those arising from the misappropriation of assets.

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Misstatements arising from fraudulent financial reporting, which is also referred to as management fraud, are "intentional misstatements or omissions of amounts or disclosures in financial statements perpetrated with the intent to deceive financial statement users" (Grice Sr., 2001, p.11). While misstatements arising from the misappropriation of assets, also known as employee fraud or defalcation, is also of consequence to auditors, we focus more specifically on the detection of fraudulent financial reporting.

The National Commission on Fraudulent Financial Reporting, (the Treadway Commission) defined fraudulent financial reporting as "intentional or reckless conduct,

whether by act or omission, that results in materially misleading financial statements” (1987, p.3). Another perspective is that of Nieschwietz, Schultz, and Zimbelman (2000), who claim:

By definition fraudulent financial reporting involves intent and deception. Typical frauds involve scheming by highly motivated, clever teams of knowledgeable managers with the capacity for considerable political persuasion and intimidation of both their own employees and their auditors (p.236).

Tippos (2002) took yet another stance on defining what constitutes fraudulent financial reporting when he took into consideration aspects of ‘creative accounting’. Although recognising that creative accounting “may not be fraudulent per se, [the] present usage portrays it as manipulation of rules, with or without the intent to deceive” (pg 37). This author referred to the discretionary powers of management to manipulate records as ‘pure’ management fraud.

As can be seen from the above, fraudulent financial reporting can take many forms. In spite of these distinctions a good proportion of the literature reviewed (Fanning & Cogger, 1998; Beasley, 1999; Wells, 2001; Zimbelman, 2001; Ramos, 2003) offered a general consensus that this type of fraud involved acts with *intent* including, for example:

- Manipulation, falsification or alteration of accounting records or supporting documents from which financial statements are prepared
- Misrepresentation in, or intentional omission from, the financial statements of events, transactions, or other significant information
- Misapplication of accounting principles relating to amounts, classification, manner of presentation, or disclosure (Grice Sr., 2001, p.11).

In terms of this report fraudulent financial reporting is seen to involve the conscious effort by management to produce financial statements with materially incorrect accounting data (Lundelius, 2002). Misrepresentations tend to comprise improper revenue recognition, overstatement of assets, or understatement of liabilities and expenses (Banks, 2004).

METHOD

These definitions of 'fraudulent reporting' set the scene for the scope of the research to follow. In this we review the literature to discover and evaluate research that attempts to resolve or provide support for the auditor who is trying to identify material financial statement fraud. Our review looks primarily at research published within the last five years which, one way or another, identifies means by which auditors might be able to improve their ability to detect fraudulent financial reporting. Several academic databases were utilized, references were followed up where appropriate, and articles up to ten years back were also used if they appeared to be significant to our aim.

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FRAUD DETECTION APPROACHES

The approaches identified are composed of a range of techniques, groupings of techniques and psychological or sociological approaches to predicting or identifying fraud. In our analysis, we take these issues in order of the more statistical and technical, to conclude with the more subjective approaches explicitly inspired by the behaviourist or sociological literatures. The first is to do with statistical prediction models.

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Prediction Models

Eining, Jones and Loebbecke (1997) documented that most auditors have never (knowingly) encountered management fraud before and that this inflicts limits on an auditor's ability to detect fraud of this nature. This position is supported and further implications are drawn by Bernardi (1994) who confirmed that an auditor's fraud detection ability is a function of their prior experience and beliefs about fraud. These types of inherent limitations of auditors themselves have inspired the development of models that specifically aid auditors in the detection of fraud, or at least predict the risk of fraud, thereby signaling to the auditor areas where increased audit attention may be beneficial.

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An early decision aid using parsimonious models to identify factors associated with fraudulent financial reporting was developed by Persons (1995). When tested, the

stepwise logistic models produced superior predictive results in comparison to naïve strategy, which classifies all entities as non-fraud firms. The decision aid correctly identified a large percentage of fraud firms and provided further evidence that accounting data, when combined with appropriate modelling, is useful in the identification of fraudulent financial reporting.

More recently, research undertaken by Bell and Carcello (2000) also resulted in the development and testing of a logistic regression model that “estimated the likelihood of fraudulent financial reporting for an audit client, conditioned on the presence or absence of several fraud-risk factors” (p.169). The factors the authors identified as being effective discriminators of fraudulent financial reporting were:

(1) rapid growth, (2) weak control environment, (3) management overly preoccupied with meeting earnings projections, (4) management that lied to the auditors or that was overly evasive, (5) ownership status, and (6) an interaction between a weak control environment and an aggressive management attitude toward financial reporting (2000, p.180).

After weighting and combining these individual judgments the decision aid thus provides an assessment of the probability of fraudulent financial reporting. The model was found to be significantly more accurate than practicing auditors in assessing the risk of fraud, and resulted in a finding that empirically derived models generally outperform unaided auditors in the accurate classification of fraudulent reporting (Bell & Carcello, 2000).

In 2002 Krambia-Kapardis developed the eclectic fraud detection model. This model works on the founding principle that fraud detection is preceded by a pattern-recognition/fraud-risk assessment decision making process. This requires the auditor to process, critically evaluate and synthesise a considerable quantity of information concerning its client. The author found that there were “patterns in the kinds of relationship between different industries... and different audit procedures that appear to detect them” (2002, p.274). Potentially, therefore, the eclectic fraud detection model can enhance the auditor's ability to detect misrepresentations in the financial reports.

Other fraud prediction models have been developed in the 1980s and the 1990s with some success, but with no 'ideal' model yet formulated (see the review by Nieschwietz, Schultz and Zimbelman, 2000). While the literature provides other examples currently being used as fraud detection tools (Beneish, 1999; Chen & Leitch, 1999; and Lee, Ingram & Howard, 1999), a well recognised shortcoming of this type of model generally is its tendency to produce a high proportion of false positives. This weakness manifests itself in a disregard for the decision rule thereby failing to actually influence auditors decisions. This failure to influence the decisions of auditors means, in some cases, planned audit tests are not modified in response to predicted fraud risk, thus reducing the effectiveness of detecting fraud (Glover, Prawitt, Schultz Jr, & Zimbelman, 2003).

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Expert Systems

Expert systems have been shown to enhance users' performance of tasks requiring skill or judgement. These rule-driven systems capture human thought processes and are primarily based on reasoning rather than calculations. An expert system "mimic[s] the thought processes of a person who has become an expert in a certain area through study as well as personal experience" (Crowder 1997, p.20).

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The low level of acceptance by auditors who are often reluctant to rely on the highly quantitative decision aids gave rise to Eining, Jones and Loebbeckes' 1997 experiment in which they combined a logit model with constructive dialogue in an integrated expert system. This research resulted in the finding that there is a greater probability that practicing auditors would rely on the recommendations of this type of integrated model.

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The authors found that:

Auditors using the expert system exhibited the ability to better discriminate between situations with varying levels of management fraud risk and selected more consistent subsequent decisions regarding appropriate audit actions than did users of a decision aid that provided only a suggested assessment, [such as] a logit statistical model (p.1).

Furthermore, the 1997 experiment recognised that decision aids had been shown to outperform experts for multi-cue judgments, which are considered problematic for

unaided human judges, even those with a high level of expertise in the matter being judged. By using an expert system, auditors, especially those with no prior experience of fraud, can increase their potential for detecting fraudulent financial reporting (Eining, Jones & Loebbecke, 1997).

Neural Networks

A neural network has been described as a “type of artificial intelligence which uses case-based reasoning and pattern recognition to simulate the way the human brain processes and stores or reams information” (Crowder 1997, p.20). Neural networks also have capabilities to ‘learn’ the characteristics of potentially fraudulent schemes by comparing new information to stored data and detecting hidden patterns within large volume data sets (1997).

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A number of studies (Green and Choi, 1997; Fanning and Cogger, 1998; and Lin Hwang & Becker, 2003) have shown the significant potential neural networks have as a fraud detection tool. Research conducted by Green and Choi (1997) identified neural networks as being able to “simultaneously examine the changes and relationships between multiple accounts or groups of account balances” (p.15). Once the neural network has ‘learned’ the pattern of input data from sample fraud and non-fraud cases, it evaluated the individual data signals to create a distinct behaviour pattern to classify input data as either fraudulent or non-fraudulent. This pattern is then applied to predict the presence of fraud in financial statements (Green and Choi, 1997).

Lin et al (2003) created a fuzzy neural network (FNN) “to investigate the utility of information technologies such as an integrated system of neural networks and fuzzy logic for fraud detection” (p.657). The network was constructed using ratios and trends associated with either revenue recognition and measurement, or the use of accounting estimates in the revenue cycle. The FNN produced encouraging results and was seen as being able to “complement audit decision making by helping reduce the oft-observed inability or bias of auditors in combining and weighing information cues” (2003, p.665). It was considered that the effectiveness of an audit would be improved by alerting the auditor to areas of potential material misstatement which warranted additional audit tests.

The authors opined that the empirical results indicated an integration of fuzzy logic and neural network technology could be advantageous in the prediction of fraudulent financial reporting.

An artificial neural network (ANN) was used by Fanning and Cogger (1998) to investigate the usefulness of publicly available predictors in the detection of fraudulent financial reporting. This study was different from previous model development as it solely used information that was openly available to the public rather than information gained through auditor client interaction. Equally, it could be informative should the auditor run across the situation where management is concealing information from them. The model's test findings produced a high probability of detecting fraud, the authors suggesting that "ANN's offer superior ability to standard statistical methods in detecting FFS [fraudulent financial statements]" (Fanning & Cogger, 1998, p.10).

A reported disadvantage of neural network based models is their inherent weakness of not being able to trace the process by which the output is reached. As justification of results is difficult to obtain, the neural network can not be quantified and therefore lacks a measure of statistical confidence. This results in neural networks lacking explanatory capabilities (Green & Choi, 1997). Also, the software and expertise needed to apply and interpret it are "less likely to be available to the average audit firm in New Zealand" (Van Peurse and Pratt, 2002, p.233). Nonetheless, for those firms with the internal capacity to develop or operate a neural network, the possibilities of detecting fraudulent reporting may be increased.

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Benford's Law

Benford's Law determines the expected frequency of digits in large data sets. In the 1920's research conducted by Frank Benford deduced that digit occurrence could be predicted and should follow a certain pattern.

His empirical results showed that an average of 30.6 percent of the large numbers had a first digit 1. In contrast, only 4.7 percent of the large numbers had a first digit 9. He then hypothesised that naturally occurring data, when

ordered, should form a geometric sequence. Through the use of integral calculus, he formulated the expected digital frequencies for first and second digits and digit combinations in lists of numbers (Nigrini & Mittermaier, 1997, p.54).

It has been established that Benford's Law applies to numerous sets of data, in particular, its relevance to financial data is of significance to auditors. The digit frequency tables formulated by Frank Benford are being used to discover accounting fraud. Given Benford's Law, it would be anticipated that valid and unaltered financial data should not overly deviate from the expected frequencies formulated. The fact that numbers in large datasets (10,000 plus transactions) can be mathematically predicted means an analysis of the frequency distribution of certain digits can detect abnormal patterns. These abnormal patterns may signify the present of fraud (Coderre & Warner, 1999).

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A number of digital tests have been developed that apply the theories of Benford's Law. These tests include, first digit, second digit, and first two or last two digit analysis. However, as data sets continue to grow in size new tests such as first three digits will come into play to expand the Law's efficacy. "The first-digit test analyses the reasonableness of the data, which can be very valuable to internal and external auditors. Additional tests of the digits can help to isolate the cause of deviations from Benford's expectations" (Rose & Rose, 2003, p.59). Tests have also been established to search data subsets such as relative size factor, which reveals when the largest number in a subset is disproportionate and indicates the possible existence of an anomaly (Nigrini, 1999).

Although Benford's Law has wide-ranging implications for detecting fraud, examination of the literature has found that its utility tends to be most apparent in the area of misappropriation of assets or employee fraud. However, it is also recognized that the application of this theory can be effective in the detection of management fraud, such as the manipulation of revenues through fictitious sales. It has been said that "fraudsters are often unimaginative and tend to invent numbers in multiples of five, ten, or 25" (Crowder, 1997, p.20). As invented numbers normally do not conform to Benford's Law (Nigrini & Mittermaier, 1997), data which is manipulated may present itself as a deviation from expected digit frequencies.

Akin to most fraud detection techniques, Benford's Law also has its limitations. In this regard, a one-off misappropriation or a single transaction to manipulate earnings in all probability will not be detected using this technique. Also the fact that Benford's Law does not apply to assigned numbers, which are numbers given to things in place of words (i.e. bank account and telephone numbers), or to numbers influenced by human thought, such as supermarket prices, can place limits on the theories use in some instances (Nigrini, 2000).

Computer Technology Assistance

Computer Assisted Auditing Techniques (CAATs) are considered to be particularly suited to detecting fraudulent financial reporting. This is due to the ability of computers to extract, sort and analyse vast quantities of data in an effective and efficient manner (Paukowits & Paukowits, 2000). CAATS have been used since the 1960s in audit and have made extensive and intensive data interrogation possible. The capability to digitally analyse great volumes of data is complementary to the auditor's responsibility to detect fraud. In large databases anomalies can easily go unnoticed by an auditor; however, technology in the form of digital analysis programmes can now be used to direct the auditors attention to possible misstatements. "A systematic approach to fraud investigation that involves the identification of unusual activity with the aid of CAATs, ... can help to ensure that corrupt activity within the organisation does not remain undetected" (Coderre & Warner, 1999, p.57).

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CAATs permit auditors to "obtain a quick overview of the company, develop an understanding of relationships between various data elements, and easily drill down into the details of specific areas of interest" (Brazina & Leauby, 2004, p.1). Audit software programs provide the platform for auditors to successfully interrogate financial data in search of fraud. Programs such as ACL and IDEA are becoming a cost effective way of increasing the fraud detecting ability of auditors.

In its white paper 'Fraud Detection and Prevention: Transactional Analysis for Effective Fraud Detection', ACL Services claim "many indicators of potential fraud only arise when transactional data from one system is compared to that of another" (2002, p.6). Furthermore, ACL claim transactional analysis is a powerful and effective method of detecting fraud within an organisation. This type of analysis comprises a comprehensive series of tests, which are specifically designed to detect fraud indicators. Some specific statistical data analysis techniques that have proven their effectiveness in detecting fraud are:

- Calculation of statistical parameters such as averages, standard deviations, highest and lowest values, which are used to identify statistical anomalies
- Classifications to find patterns and associations among groups of data
- Stratifications of numeric values to identify unusual and outlying values (2002, p.7).

In 1998 Josh Martin described fraud-finding software as better than ever. "While auditors typically sample small portions of data to check that accounting policies are being followed, now they can easily check every transaction, a capability identified by the oxymoron '100% sampling'" (p.51). When considering the presence of fraud the capability to verify 100% of certain transactions, instead of a sample selection only, automatically increases the likelihood of detecting fraudulent financial reporting.

Tapp and Burg (2001) recorded another method by which technology is being deployed to detect fraud.

Internet-based solutions that can be used to extract data from company databases directly onto personal computers. Once uploaded, this data can be sorted and compared against other company or non-company figures. Such sorts and comparisons are the keys to detecting occupational and management fraud (p.20).

The ability of computers to sort and analyse large volumes of data, and the growth of network-driven and database solutions to detect fraud, will both continue to ease the auditor's job in this respect.

Simple Analytical Procedures

Although much of the literature reviewed supports the use of sophisticated methods for detecting fraud it is apparent that many auditors still rely on simple analytical procedures such as ratio or trend analysis to direct their attentions to the existence of potential fraudulent financial reporting. “Since these techniques compare changes in the numbers from year to year, they can point out significant discrepancies” (Wells, 2001, p.81). It is proposed that simple procedures such as these are still a valid way of ensuring auditors address many of the issues that may indicate management fraud in particular.

Over the years contradictorily evidence has been documented with regard to the effectiveness of some analytical procedures (APs). In 1988 a paper by Coglitore and Berryman claimed “analytical procedures can be effective in detecting materially misleading financial information” (p.1). This statement was based on a review of misleading financial representations provided as case evidence, which the authors believed could have been detected had the auditors used appropriate analytical procedures. The procedures noted in this study were predominately comparative analysis of figures. While it is evident that simple analytical techniques such as ratio and trend analysis will continue to be useful in the detection of fraud (Wheeler, & Pany, 1996; Coderre & Warner, 1999; Kaminski, Wetzel, & Guan, 2004), it has been stated in a number of studies that the utilisation of more sophisticated methods of analytical procedure are of greater benefit in the detection of fraud (Calderon & Green, 1994; Green & Choi, 1997; and Chen & Leitch, 1999).

'Red Flag' Groupings

We now look to how researchers have grouped together those fraud audit procedures or fraudster characteristics when dealing with white collar crime. These 'collections' of indicators or 'patterns' of behaviour are termed Red Flag Groupings. Vanasco (1998), for example, considers some 'groupings' that are likely to be useful in any approach to fraud auditing such as:

- Looking for analytical symptoms, transactions that seem 'odd' or out of place

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- Observing lifestyle or behavioural symptoms such as management's greed or rich lifestyle;
- Sampling unrepresentative set of items, paying particular attention to transactions that were made outside the usual controlled procedures.

SAS99 also lists a number of these 'red flags', as does New Zealand's own (current) AS 206 'Fraud and Error'. Other procedures for particular systems or specific industries exist and are considered in, for example, Owusu-Ansah, Moyes, Oyelere and Hay (2002) and in Peterson and Gibson (2003). Davia (2000) combines a number of audit procedures that are seen to give the auditor a better chance of detecting fraud.

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The success of these 'red flag' lists alone has not been consistently confirmed. Bell, Szykowny, and Willingham (1991) show that 'red flags' can have substantial predictive capabilities, whereas others conclude that 'red flag' approaches do not work (Pincus, 1989). The next category is entitled 'Broad Strategies', the final element of this classification of audit approaches, and is one which overarches and sometimes incorporates the techniques we have discussed earlier.

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Broad Strategies

Other researchers look more broadly, conceptually and have developed detection strategies as a result. These strategies are usually informed by either the behavioural, strategic management or the sociological literature. Behavioural studies consider characteristics of managers – such as greed, lifestyle, personal incentives – that are likely to lead to fraudulent behaviour. An extensive review of studies prior to 2000 has been carried out by Nieschwietz et al (2000). Brief, Dukerich, Brown and Brett (1996) in a typical example, conducted a study in which one purpose was to identify those personal values likely to be associated with fraudulently misstated financial statements. More recently, Makkawi and Schick (2003) established that the pressure for managers to perform is further intensified if management have stock ownership or if their compensation is tied to stock market performance. Their results indicated that the “decision to misrepresent financial statements might be construed as influenced by the

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tension between the value placed on economic outcomes and the value placed on the regard for oneself as a good and decent human being” (p.189).

Other approaches are informed by the sociology and/or the strategic management literature. One of these is the fraud audit approach termed the 'Vulnerability Review' (Rezaee, 2003). In a Vulnerability Review the auditor can consider whether the company's own structure and processes are likely to lead to the detection and/or reporting of fraudulent activities. For example, the existence of an effective whistle-blowing policy within the organisation may be one characteristic that is more likely to lead to detection. Another form of this sort of approach is the 'Gamesmanship Review' in which the auditor assesses the top management team's (or the governing board's) "philosophies, attitudes, operating styles, decisions, actions, beliefs and ethical values" (Rezaee, 2003, p. 13). The latter approaches are more likely to uncover top management vulnerabilities to fraud than is the Vulnerability Review which can usually be overridden by top management.

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Other studies draw on a combination of the behavioural and sociological literatures. Dunn (2004) hypothesised that fraud was a function of structural power, ownership power and control variables. The results of his study showed that excessive power is positively related to illegal corporate behaviour, hence the decision to issue fraudulent financial statements is more likely to occur when there is an 'insider' concentration of power. Galpin and Van Peurse (1994) provide a summary of the characteristics and behaviour patterns of managers and employees who are more likely to commit fraud as found in the sociological and behavioural literature.

Other strategies would suggest that the audit 'team' should be composed of a particular range of experience, to include auditors with extensive and particular experience for example, (Knapp and Knapp, 2000). There is also the finding that an increase in accountability and reporting demands on the auditors themselves would improve detection by providing the auditor with more incentives to discover fraud (Hoffman and Patton, 1997). There is a wide range of audit approaches to be found in this literature.

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Some claim that the combination of using 'red flags' and prediction models, or other types of decision aids, may be particularly effective in the detection of fraudulent financial reporting (Summers & Sweeney, 1998, Saksena, 2001, and Newman, Patterson & Smith, 2001). We conclude therefore that the use of several of these approaches would seem to be worthy of consideration by audit firms.

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CONCLUSION

In 1996 Brief, Dukerich, Brown, & Brett claimed that “the incidence of unethical activity by managers - defined as fraudulent financial reporting - seems to be sufficiently high enough so as to characterise the problem as a potential crisis.” (p.194). Bearing this opinion in mind it is essential that auditors are able to detect the presence of fraud within financial statement representations. The development and use of effective fraud detection techniques is key to this capability.

This paper has presented some of the fraud detection techniques currently available to auditors. It has been shown that many decision aids exist that are specifically focused on detecting misstated financial information, with tests performed on these aids reported as having achieved encouraging results. In addition, applications such as Benford's Law and CAATs are considered to be especially well suited to the task of detecting fraudulent financial reporting. The behavioural, sociological and strategic management literature inform a variety of broad-based approaches to detecting fraud.

Although limitations exist for any fraud detection tool, most techniques presented in this paper show significant potential for detecting fraudulent financial reporting. However, as Martin (1998) claimed, fraud is becoming more sophisticated each year, therefore, it is paramount that the methods by which management fraud is to be detected must also become more sophisticated. “Auditors who continue to master the technology used by thieves will likely win the battle” (Banks, 2004, p.36). Furthermore, “fraud detection can not be learned by auditors who rely on their professional experience alone” (Krambia-

Kapardis, 2002, p.274). This implies the importance of using effective fraud detection techniques in conjunction with auditor expertise to achieve a successful fight against fraudulent financial reporting. Overall, our conclusion from this review therefore is that the use of several of these approaches is probably the best for any audit firm. We suggest that firms should consider reviewing and modifying their audit procedures on a fairly regular basis so as to best incorporate new technologies or findings, and so as best to respond to the changing environment of client fraud.

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FUTURE RESEARCH

There is a distinct lack of empirical evidence supporting the effective use of many of the methods suggested here. Although identifying fraud is, by its very nature, notoriously difficult; there would seem to be scope for studies into determining whether the techniques to identify fraudulent financial reporting actually work.

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