

# **The Importance of Internal Audit in Fraud Detection**

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**ABSTRACT:** In recent years the importance of good corporate governance has received significant public and regulatory attention. A crucial part of an entity's corporate governance is its internal audit function. At the same time, there has been significant public concern about the level of fraud within organizations. The purpose of this study is to assess whether organizations with an internal audit function are more likely to detect fraud than those without. In this study we use a unique self-reported measure of fraud, primarily relating to the misappropriation of assets, for the first time. The fraud data are from the 2004 KPMG Fraud Survey. The internal audit data are from a separate mail survey sent to the respondents of the KPMG Fraud Survey.

We find that organizations with an internal audit function are more likely than those without such a function to detect fraud within their organizations. Further, organizations that rely solely on outsourcing for their internal audit function are less likely to detect fraud than those that undertake at least part of their internal audit function themselves. These findings suggest that internal audit adds value through improving the control and monitoring environment within organizations to detect fraud. These results also suggest that keeping the internal audit function within the organization is more effective than completely outsourcing that function.

**Key Words:** Internal audit, Fraud, Misappropriation of assets

## INTRODUCTION

This study assesses the importance of the internal audit function in detecting fraud within organizations. It also evaluates differences in the effectiveness of fraud detection between organizations that choose between different internal audit approaches such as: internal audit function within the organization (hereafter insourcing); outsourcing; and a combination of both.

This research examines two important issues in contemporary corporate governance. By examining the link between both the existence and the type (insourced versus outsourced) of internal audit function and the propensity to detect fraud, we evaluate the importance of internal audit as a fraud detection mechanism. Both internal and external auditors emphasize the importance of fraud assessment and detection partly in response to calls by professional bodies, regulatory agencies, and governments. This study also contributes to the literature in this area as it uses a unique and rich data set to evaluate fraud detection, which is the self-reported fraud from the 2004 KPMG Fraud Survey. This data expands our understanding of the importance of the internal audit function and the role it plays in detecting fraud.

The results show a significant positive relation between an organization having an internal audit function and the number and value of self-reported frauds. For those organizations with internal audit, partial or full insourcing increases the likelihood of fraud detection when compared with organizations that outsource the entire function. This finding is particularly interesting because it puts outsourcing in a different perspective from prior studies, which found that financial statement users do not perceive a difference between internal audit insourcing and outsourcing (Lowe et al. 1999; James

2003) and companies that outsource believe that an external provider is technically more competent (Carey et al. 2006).

In the next section we provide a discussion of the background literature and develop our hypothesis and research question. This is followed by an overview of the methodology employed. The results are then discussed, before conclusions are drawn.

## **BACKGROUND, HYPOTHESIS AND RESEARCH QUESTION**

### **DEVELOPMENT**

This section examines the problem of fraud within organizations and research that has examined associations between governance variables and fraud. It then discusses the importance of the internal audit function as part of an organization's corporate governance structure. The section also includes an examination of the implications for an organization of outsourcing its internal audit function. From this background an hypothesis and research question are identified.

### **Fraud**

High profile corporate failures in recent years have focussed significant public and regulatory interest on corporate fraud. The penalties for fraudulent financial reporting have significantly increased in response to society's view on this type of behavior. For example, Bernard Ebbers the former chairman of WorldCom was jailed for 25 years for orchestrating a \$US11 billion financial statement fraud (Belson 2005). These recent well-publicized frauds have affected the work of the external financial statement auditor. In Australia, the Auditing Standard ASA 240 "The Auditor's Responsibility to Consider

Fraud in an Audit of a Financial Report” has increased the external auditor’s responsibility in this area (Auditing and Assurance Standards Board [AUASB] 2006). It defines fraud as “...an intentional act by one or more individuals among management, those charged with governance, employees, or third parties, involving the use of deception to obtain an unjust or illegal advantage.” (ASA 240, para. 9)

ASA 240 continues by stating that there are two types of intentional misstatements relevant to the auditor. First, there are misstatements that result from fraudulent financial reporting and second, there are misstatements that result from misappropriation of assets (ASA 240, para. 10). Much of the research to date has examined associations between corporate governance structures and financial statement fraud, some of which is discussed below.

Inconsistent results have been found in relation to audit committee existence and the likelihood of financial statement fraud (Beasley 1996; McMullen 1996; Dechow et al. 1996). However, audit committee effectiveness has been found to reduce the likelihood that companies are sanctioned for fraudulent financial reporting (Abbott et al. 2000). A positive relation was found between concentration of power in the hands of insiders and the likelihood of issuing fraudulent financial statements (Dunn 2004). In Australia, a negative relation has been found between the proportion of independent directors and institutional investors and the likelihood of fraud, while a positive relation was found between duality (chair of board and also the chief executive officer) and the likelihood of fraud (Sharma 2004). One difference from this study to others was that in his measure of fraud Sharma (2004) used both financial statement fraud *and* misappropriation of assets.

One significant difficulty in performing research on fraud is that data availability is limited. The above studies obtained financial statement fraud data from a number of different sources, including the SEC's Accounting and Auditing Enforcement Releases (AAERs) (Beasley 1996; McMullen 1996; Dechow et al. 1996; Abbott et al. 2000; Dunn 2004), the press, including the Wall Street Journal (Beasley 1996; McMullen 1996; Dunn 2004)). In Australia Sharma (2004) obtained his financial statement and misappropriation of assets fraud sample from the Australian Securities and Investment Commission (ASIC) annual report publications and media releases, the press (the Australian Financial Review, Business Review Weekly) and databases containing company announcements and details of legal cases.

While financial statement fraud has been the main focus of public interest and research, the other type of fraud that has received less research attention (except for Sharma (2004)) is misappropriation of assets, which is typically perpetrated by employees. This is probably due to the fact that even less data is available on this type of fraud than financial statement fraud. Despite the fact that ASA 240 describes this type of fraud as "...often perpetrated by employees in relatively small and immaterial amounts" (para. 14), the evidence suggests it is economically significant. It has been estimated that six percent of US company revenues in 2002 were lost through fraud committed by employees (Holtfreter 2004) and of the 491 Australian and New Zealand companies who responded to the KPMG survey in 2004, close to half had experienced a fraud costing them a total of \$457 million (KPMG 2004). The vast majority of the fraud reported in the KPMG survey related to misappropriation of assets. Clearly this is a significant problem for many organizations and is the focus of this present study.

In summary, previous research studies have identified reported fraud. However, to be externally reported it is most likely related to a serious breakdown in controls and/or governance structures. The majority of fraud reported related to financial statement fraud where there was the likelihood that senior management have been complicit in the activity. Therefore, it is not surprising that much of this research has found linkages between poor corporate governance practices and this type of fraud. In the current study we look at instances where the fraud of misappropriation of assets is discovered by the organization and examine whether this likelihood varies dependent on one attribute of good corporate governance – internal audit.

### **Internal Audit**

Internal audit is an important part of the corporate governance structure within an organization. Corporate governance includes those oversight activities undertaken by the board of directors and audit committee to ensure the integrity of the financial reporting process (Public Oversight Board 1993). Three monitoring mechanisms have been identified in the corporate governance literature. They are external auditing, internal auditing, and directorships (Anderson et al. 1993, Blue Ribbon Committee 1999) as well as the audit committee (Institute of Internal Auditors [IIA] 2003).

In recent years, high profile corporate collapses have focussed attention on corporate governance and also emphasized internal auditing as part of the governance process. The IIA sees the objective of internal auditing as both supporting and strengthening an organization's governance mechanisms and evaluating and improving the effectiveness of risk management and control (IIA 1999).

The importance of internal auditing has also been underpinned by the decision of the New York Stock Exchange (NYSE) to amend its listing requirements to mandate that all listed companies in the United States (US) have an audit committee (NYSE 2003) to liaise between internal auditors, external auditors and management, ensuring the independence of the audit function. There is evidence in the US that the Securities and Exchange Commission (SEC) also attaches importance to internal auditing as there have been recent cases where enforcement actions by the SEC and subsequent settlements have required the registrant to engage internal auditors (Carcello et al. 2005). In Australia recent changes to the Corporations Act and the Australian Stock Exchange (ASX) Listing Rules have strongly emphasized the importance of good corporate governance. Given the perceived importance of internal audit as part of good corporate governance, these changes are likely to enhance the role and importance of internal audit in the Australian environment.

Despite the increasing focus on internal audit, there has been little research on the benefits and importance of this function. Studies have used an agency cost framework to illustrate the value relevance of the internal audit function (e.g., Carey et al. 2000; Carcello et al. 2005). While the variables of size, debt or agency are not associated with the presence of an internal audit function in Australian family owned companies, internal and external audit are used as monitoring substitutes by these companies (Carey et al. 2000). A more recent US study examined the size of internal audit budgets and found that they were positively related to company size; leverage; financial, service, or utility industries; inventory; operating flows; and audit committee review of the internal audit budget (Carcello et al. 2005). Results showed that internal audit budgets were negatively

related to the percentage of internal auditing that was outsourced. The overall conclusion was that companies facing higher risk will increase their organizational monitoring through internal audit, providing evidence of the importance of the internal audit function.

Gramling et al. (2004) performed a literature review on the role of internal auditing in corporate governance. This review found that the role of an internal audit function in corporate governance has been analysed using the external auditors' evaluation of its quality, determinants of its reliance decision, the extent and nature of its work relied on by the external auditor and other aspects of the external audit (Gramling et al. 2004). Examination of this literature review shows that the majority of the research on internal audit has been related to the perceptions of the external auditor and whether the external auditor utilizes the internal auditor's work.

Another way of evaluating the work of internal auditors is to examine how well they detect errors within an organization and there has been limited research on this topic. One study on this topic found the number and magnitude of errors requiring adjustment by the external auditor have been found to be substantially lower for entities that had an internal audit department compared to those that did not have an internal audit department (Wallace and Kreutzfeldt 1991).

More recently, the role of auditors in detecting fraud as well as errors has received greater emphasis. In Australia additional requirements were imposed on external auditors to consider the possibility of fraud when conducting an audit under AUS 210 (Australian Accounting Research Foundation [AARF] 2004) and more recently ASA 240 (AUASB 2006). It is reasonable to expect that this increased emphasis on fraud awareness and

detection affected the internal auditors' duties as well. Even back in the late 1990s, there is evidence that this was occurring in Australia as a survey found that fraud detection was being included in internal audit work (Birkett et al. 1999).

Some studies have evaluated the ability of internal auditors to perform fraud-related work. External and internal auditors achieved a high level of consensus in their financial statement fraud risk ratings suggesting that internal auditors are as aware as external auditors of where fraud is likely to be detected (Apostolou et al. 2001). When considering fraudulent financial reporting, internal auditors think that fraud is the reason for an unexpected difference in income when (1) income is greater than expected and (2) when debt covenants are restrictive, conditioned on income being greater than expected (Church et al. 2001). The focus of these studies has been financial statement fraud.

The nature of the internal audit function is also an important consideration that may potentially affect its value to an organization. Companies may use their own staff (insource), use an external firm (outsource) or a combination of the two. While outsourcing the internal audit function does not significantly affect users' perceptions of auditor independence or financial statement reliability (Lowe et al. 1999) or their perception of protection from financial statement fraud (James 2003), companies that decide to outsource perceive that external providers are technically more competent (Carey et al. 2006). However, a limitation with these prior studies is that they were performed by measuring perceptions not actual performance. Given that many organizations make decisions about whether to insource or outsource their internal audit function, the quality of performance of these respective functions is an issue that warrants more examination than just "perceptions".

Reviewing the internal audit literature shows limited research on the importance and benefits of internal audit *per se* or the relative importance of insourcing compared to outsourcing the internal audit function. The present study addresses these questions by examining how effective the internal audit function is in detecting and reporting fraud.

### **Hypothesis and Research Question**

The internal audit function is an important function that has been shown to add value (Carey et al. 2000; Carcello et al. 2005) and reduce detected errors by external auditors (Wallace and Kreutzfeldt 1991). Its objectives are to improve the effectiveness of risk management, control, and governance (IIA 1999) and it is considered an important governance tool to protect corporations from internal criminal behavior (Nestor 2004). Further, the professional literature suggests that internal audit is a vital tool in fraud detection when assets are misappropriated by employees or outsiders (Luehlfiing et al. 2003; Marden and Edwards 2005; Belloli 2006). Therefore we expect that the ability to detect fraud is enhanced for organizations that have an internal audit function compared to those that do not.

**H1:** Organizations that have an internal audit function are more likely to detect and report fraud than organizations that do not have an internal audit function.

The other research issue addressed by this study is the relative significance of insourcing compared to outsourcing the internal audit function. Most of the prior research has focussed on eliciting users and company officers' perceptions about the relative value

of the two approaches and has generally found that outsourced internal audit is of higher quality (Lowe et al. 1999; James 2003; Carey et al. 2006). However, there has been no research comparing the effectiveness between the two different approaches, and as such we frame our examination of this issue in terms of a research question. We suggest that despite the research findings showing that when the internal audit function is wholly outsourced it is *perceived* to be of higher quality this does not necessarily follow that it will be more effective for the following reasons. First, the finding of higher perceived quality could be partially due to reputation effects, although it should be acknowledged that one advantage of outsourcing is that there will be greater independence brought to the task. Second, to be effective time is important, and *ceteris paribus*, much more time is spent on internal auditing by insourced compared to outsourced internal auditors. Third, this greater time will bring a high level of entity specific knowledge to the internal audit function.

One task of internal auditing is to ensure that controls are in place that will detect fraud and also to report fraud, which is supported by the professional literature that shows whistle blowing and investigations by the insourced internal auditor are an effective fraud detection device (Morgan 2005). Our expectation is that due to the greater time available and knowledge of the entity, insourced internal auditors will be more likely to detect and report fraud.

**RQ1:** Are organizations that insource at least part of their internal audit function more likely to detect and report fraud than organizations that completely outsource their internal audit function?

## METHOD

### Data

#### *Internal Audit Survey Data*

We collected internal audit data through a questionnaire mailed to organizations who responded to the 2004 KPMG Fraud Survey across Australia and New Zealand. There were 480 organizations where we had sufficient details to send the internal audit survey. From the initial mail out and a follow up mail out to non-respondents, the total number of replies was 324, giving a response rate of 67.5 percent. Table 1 shows the range of industries and government sectors that participated. The organizations are also economically very significant with median revenue of \$180m and a median number of employees of 545.

[Insert Table 1 here]

Table 1 also shows the percentage of organizations in each category that reported fraud in the KPMG survey. As can be seen, it is a problem affecting all organizations and is not isolated to particular industries or the private or public sector.

To measure the internal audit function we asked responding organizations whether they had an internal audit function and who performs that function, as well as other questions about the size of the internal audit function. From the sample, 68 percent had an internal audit function. The performance of the internal audit was as follows: own staff 48 percent; external firm 27 percent; and a combination of own staff and external firm 25 percent.

### ***Fraud Survey Data***

The new measure of fraud used in this study is from the 2004 KPMG Fraud Survey. KPMG has been performing this biennial survey of fraud within Australian and New Zealand organizations since the early 1990s. In the 2004 survey, KPMG sent their research instrument to 2,164 of Australia and New Zealand's largest organizations. Usable responses were received from 491 organizations 45 percent of which had experienced fraud.

Fraud was defined in the KPMG Survey (KPMG 2004) as:

Any dishonest activity involving the extraction of value from a business, directly or indirectly, regardless of whether the perpetrator benefits personally from his or her actions.

The amount of fraud reported in the KPMG survey was for the two year period before the survey was administered. This is obviously a percentage of the total fraud that would have been perpetrated against these organizations during that period. The total fraud is an unknown quantity. However, it is a much closer assessment of the reality of fraud within organizations than has been examined by any other research studies. For example, Sharma (2004) attempted to find fraud in Australian companies from external data sources. In a search from 1988 to 2000, only 19 cases were found where there had been misappropriation of a company's assets and only 12 related to falsifying financial statements, giving a total of 31 fraud firms. The KPMG study is a far richer data set of fraud, as it reports 206 organizations that experienced fraud.<sup>1</sup>

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<sup>1</sup> However, it is not a good data source for financial statement fraud as only three of the 206 cases of self-reported fraud in the KPMG study related to financial statement fraud.

Of the 324 respondents to the internal audit survey, 44 percent had experienced fraud as reported in the 2004 KPMG Fraud Survey. This is consistent with the fraud level of 45 percent from KPMG's total sample of 491 organizations. In the present study, of the organizations that experienced fraud, the median number of frauds reported was two and the median total value of frauds reported was \$73,599.<sup>2</sup>

## RESULTS

### Descriptive Statistics

Table 2 shows descriptive statistics of organizations that reported fraud compared to organizations that did not report fraud.

[Insert Table 2 about here]

Mann Whitney tests were performed to assess whether there were significant differences in characteristics across these two groups. The mean revenue (\$1,165.77m compared to \$231.44m,  $z=3.65$ ,  $p<0.001$ ) and number of employees (3,825 compared to 618,  $z=5.31$ ,  $p<0.001$ ) were both significantly higher for organizations reporting fraud. Table 2 also shows some other comparisons between the number of internal audit staff (6.04 compared to 3.69,  $z=2.77$ ,  $p=0.006$ ) which was also found to be significant, however the days of external audit work (182 compared to 118,  $z=1.43$ ,  $p=0.155$ ) was not found to be significantly different for organizations reporting fraud and those that did not. Whether the organization had internal audit (83 percent compared to 56 percent) and the

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<sup>2</sup> The mean frauds reported was 56 and mean total dollar value was \$931,758. These figures are significantly larger than the medians because the data were significantly skewed and there were a few outliers. We believe the median is therefore a better representation of the actual levels of fraud reported across the sample.

type of internal audit was significantly different for fraud compared to no-fraud organizations based on chi-square tests performed. These differences are further examined in Table 3.

[Insert Table 3 about here]

Table 3 compares organizations with an internal audit function with organizations that do not have such a function. The mean revenue (\$853.86m compared to \$214.62m,  $z=5.17$ ,  $p<0.001$ ) and number of employees (2,775 compared to 518,  $z=6.84$ ,  $p<0.001$ ) were both significantly higher for organizations with internal audit functions. Further, a comparison of the mean number (20.00 compared to 0.97,  $z=5.02$ ,  $p<0.001$ ) and total value (\$200,247 compared to \$16,657,  $z=5.06$ ,  $p<0.001$ ) of frauds for organizations with internal audit compared to no internal audit shows that the number of reported frauds was significantly higher for organizations with internal audit.

From the descriptive statistics in Tables 1, 2 and 3 it can be seen that the data were very skewed. Tests of normality were performed and the data were found to not be normal with outliers. This is why Mann Whitney tests were performed on the above comparison and rank order data was used in the primary tests.

These tests on the data reported in Table 2 and 3 also show that the size of the organization is significantly and positively associated with the likelihood of reporting fraud and having an internal audit function. The primary tests were therefore performed whilst controlling for size.

## Primary Tests

We performed primary tests using analysis of covariance (ANCOVA) to assess whether there was a significant association between organizations with an internal audit function and the number and value of their self-reported level of fraud. We also included the number of employees as a control variable because an organization's size is expected to be significantly related to the number and value of self-reported fraud.<sup>3</sup> Due to the concerns about the normality of the data: the number of employees; number of frauds; and total value of frauds were converted into ranked data for the analysis. This is a method suggested by Kachelmeier and Messier (1990) when there are significant concerns with data normality. The results are reported below:

[Insert Table 4 about here]

[Insert Table 5 about here]

Table 4 shows the ranked number (178.73 compared to 128.64,  $F=5.64$ ,  $p=0.018$ ) and Table 5 shows the ranked value (178.87 compared to 128.36,  $F=4.94$ ,  $p=0.027$ ) of the reported frauds is significantly positively associated with whether the organization has an internal audit function, after controlling for size, which was highly significant as expected. Relating these results to Hypothesis 1, they show that there is a positive relation between the existence of an internal audit function and the propensity to detect and report fraud.

Tables 6 and 7 report the impact of the type of internal audit function used on the ranked number and value of reported frauds.

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<sup>3</sup> The number of employees was used rather than revenue because of the number of government organizations in the sample.

[Insert Table 6 about here]

[Insert Table 7 about here]

The ranked number ( $F=4.04, p=0.019$ ) and value ( $F=3.42, p=0.034$ ) of the reported frauds is significantly different dependent on the type of internal audit function, after controlling for size. Research Question 1 relates to whether insourced compared to outsourced internal auditors are more likely to detect and report fraud. To address this question simple effects tests were performed. In comparing insourced only to outsourced only the difference was found to be significant for the number (117.49 compared to 84.34,  $t=3.63, p<0.001$ ) and value (115.56 compared to 84.92,  $t=3.37, p=0.001$ ) of reported frauds. In comparing a combination of insourced and outsourced to outsourced only the difference was also found to be significant for the number (123.67 compared to 84.34,  $t=3.71, p<0.001$ ) and value (126.66 compared to 84.92,  $t=3.85, p<0.001$ ) of reported frauds. There was no significant difference between insourced only and a combination of insourced and outsourced for number ( $t=0.62, p=0.538$ ) or value ( $t=1.12, p=0.266$ ) of reported frauds. Relating these results to Research Question 1, they show that any involvement of insourced internal auditors results in a greater likelihood of reporting fraud than having only an outsourced internal audit function.

### **Other Analyses**

Two other factors associated with the sample that may have affected the results. First, whether the organization was in the private or public sector may have affected the results.

All of the public sector organizations (83 of the 324) had an internal audit function. However, including another variable in the ANCOVA for the public sector was not found to be significant for the examination of internal audit and the number ( $Z=2.13$ ,  $p=0.146$ ) or value ( $Z=3.26$ ,  $p=0.720$ ) of reported frauds or the type of internal audit for the number ( $Z=1.14$ ,  $p=0.288$ ) or value ( $Z=2.13$ ,  $p=0.146$ ) of reported frauds.

Second, the focus of the internal auditors work may have affected the results. It may be expected that if the internal audit function was more focussed on internal controls then perhaps they would be more likely to pick up a fraud. We asked a question in the internal audit survey on the percentage of the internal auditors time spent on the areas of risk management, control, governance, and other. We performed the ANCOVA including the organizations answer to the time spent on 'control' as a covariance. This was not found to be significant for the number ( $F=0.00$ ,  $p=0.982$ ) or value ( $F=0.01$ ,  $p=0.928$ ) of reported frauds.

## **DISCUSSION, CONCLUSION AND FUTURE DIRECTIONS**

These results show that organizations with an internal audit function are more likely to detect and report fraud than those that do not. It is also shown that having some insourcing is more effective in detecting and reporting fraud than completely outsourcing the internal audit function. These results are important for many groups such as investors, regulators, and corporate managers and directors because it provides evidence on the benefits and value of the internal audit function, which illustrates its importance in the corporate governance framework of an entity. This evidence on the benefits and value of internal audit relate to the very topical area of fraud detection and reporting.

The measure of fraud used in this study is unique. Most prior studies have operationalized fraud using externally reported financial statement fraud. This has not surprisingly been associated with poor corporate governance because the occurrence of a fraud within an entity reaching the public domain would suggest a breakdown of the governance and/or controls within an entity. This study uses self-reported fraud from the 2004 KPMG Fraud Survey which is a very rich data source and primarily relates to fraud associated with misappropriation of assets by employees or management. The fact that this data is self-reported is a key difference as organizations with poor controls will be unaware of fraud and organizations with good controls will be more aware of fraud because they are more likely to have detected it. However, the overriding benefit from using this data is that it is unique in that it provides some insights on factors associated with the ability to detect misappropriation of assets, which is economically significant for many organizations and the economy. It also encompasses a range of organizations in the economy, not just corporations.

A limitation in this study is the fact that having internal audit may be associated with organizations with good governance and internal controls, i.e. it is therefore these other factors that increase the propensity to detect the fraud rather than internal audit *per se*. Our findings in relation to Research Question 1 go some way to address this concern but it is a difficult issue to disentangle and warrants further research.

There are many other areas of future research from the issues explored in this study. First, the effectiveness and importance of internal audit within organizations should be examined further in different ways. Most of the prior research has merely focussed on perceptions from external auditors in this area without trying to measure tangible

benefits. Second, auditors' responsibilities for fraud detection have clearly increased in recent years. There should be more research on ways to improve auditors' abilities in this area.

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**Table 1**  
*Descriptive Statistics for Sample*

Size			
Revenue			
- Mean		\$ 646,702,784	
- Median		\$ 180,000,000	
Number of Employees			
- Mean		2,043	
- Median		545	
Industry	No.	%	% reported fraud
Information technology	4	1.2	50
Transport and distribution	16	4.9	50
Building and construction	20	6.2	30
Retail	19	5.9	63
Health services	12	3.7	50
Manufacturing	43	13.3	42
Education	26	8.0	62
Food and primary production	16	5.0	25
Tourism and leisure	7	2.2	57
Telecommunications	4	1.2	50
Energy and natural resources	35	10.8	20
Financial services	46	14.1	54
Local government	29	9.0	62
State government	7	2.2	29
Federal / national government	6	1.9	33
Other	34	10.3	33
Total	324	100.0	44
Country			
Australia	308	95.1	43
New Zealand	16	4.9	56
Total	324*	100.0	44

**Table 2**  
**Comparison of No-Fraud v Fraud Organizations**

	No-Fraud Mean Median (St Dev) No.	Fraud Mean Median (St Dev) No.	<i>z</i>	<i>p</i>
Revenue (\$m)	231.44 120.00 (322.41) 180	1,165.77 286.06 (3,073.72) 144	3.65	<0.001
Employees	617.90 250.00 (970.36) 180	3,825.21 1,024.55 (14,971.80) 144	5.31	<0.001
<b>Resources for Internal Audit</b>				
• Number of Insourced Internal Audit Staff	3.69 2.00 (8.24) 62	6.04 4.00 (9.10) 91	2.77	0.006
• Days of Outsourced Internal Audit Work	117.61 60.00 (167.98) 57	182.27 105.00 (295.80) 56	1.43	0.155
			<b>Chi-square</b>	<b><i>p</i></b>
<b>Internal Audit</b>	<b>56%</b>	<b>83%</b>	<b>26.79</b>	<b>&lt;0.001</b>
<b>Performance of Internal Audit</b>				
Insourced	42%	52%		
Outsourced	36%	19%		
Combination	21%	29%	36.17	<0.001

1. The sample consisted of 324 replies to the internal audit survey.
2. Internal Audit = Whether the organization had internal audit.

**Table 3**  
***Comparison of Internal Audit v No Internal Audit Organizations***

	No Internal Audit	Internal Audit	<i>z</i>	<i>p</i>
	Mean (St Dev) n=105	Mean (St Dev) n=219		
Revenue (\$m)	214.62 (349.38)	853.86 (2,532.16)	5.17	<0.001
Employees	517.95 (972.00)	2,774.74 (12,226.06)	6.84	<0.001
Total Fraud				
• Number	0.97 (9.76)	20.00 (110.94)	5.02	<0.001
• Value (\$)	16,657.14 (121,345.33)	200,246.51 (1,797,326.92)	5.06	<0.001

The sample consisted of 324 replies to the internal audit survey.

**Table 4****ANCOVA – Internal Audit and Number of Reported Frauds**

## Panel A: Descriptive Statistics

Internal Audit	Ranked Number of Frauds Mean of Ranks (St. Dev)
Yes	178.73 (86.94) n=219
No	128.64 (66.28) n=105

## Panel B: Analysis of Variance

Source of Variation	SS	df	MS	F-Ratio	F-Test p-level
<u>Main Effect</u>					
Internal Audit	31,464.65	1	31,464.65	5.64	0.018
<u>Covariance</u>					
Number of Employees (ranked)	313,298.32	1	313,298.32	56.14	<0.001
Error	1,791,513.16	321	5,581.04		

1. The sample consisted of 324 replies to the internal audit survey
2. ANCOVA performed to assess whether there was a significant association between organizations with an internal audit function and the number of their self-reported level of fraud
3. The number of employees and number of frauds were converted into ranked data for the analysis

**Table 5****ANCOVA – Internal Audit and Value of Reported Frauds****Panel A: Descriptive Statistics**

Internal Audit	Ranked Value of Frauds Mean of Ranks (St. Dev)
Yes	178.87 (86.95) n=219
No	128.36 (66.51) n=105

**Panel B: Analysis of Variance**

Source of Variation	SS	df	MS	F-Ratio	F-Test p-level
<b>Main Effect</b>					
Internal Audit	26,797.96	1	26,797.96	4.94	0.027
<b>Covariance</b>					
Number of Employees (ranked)	365,254.39	1	365,254.39	67.27	<0.001
Error	1,742,937.01	321	5,429.71		

1. The sample consisted of 324 replies to the internal audit survey
2. ANCOVA performed to assess whether there was a significant association between organizations with an internal audit function and the value of their self-reported level of fraud
3. The number of employees and total value of frauds were converted into ranked data for the analysis

**Table 6*****ANCOVA – Type of Internal Audit and Number of Reported Frauds*****Panel A: Descriptive Statistics**

Internal Audit	Insourced	Outsourced	Combination	Total
Ranked Number of Frauds	117.49 (58.90)	84.34 (49.54)	123.67 (62.94)	110.26 (59.55)
Mean of Ranks (St. Dev)	n=104	n=58	n=56	n=218

**Panel B: Analysis of Variance**

Source of Variation	SS	df	MS	F-Ratio	F-Test <i>p</i> -level
<b><u>Main Effect</u></b>					
Internal Audit	23,815.32	2	11,907.66	4.04	0.019
<b><u>Covariance</u></b>					
Number of Employees (ranked)	84,201.58	1	84,201.58	28.56	<0.001
Error	630,860.15	214	2,947.95		

1. The sample consisted of 324 replies to the internal audit survey
2. ANCOVA performed to assess whether there was a significant association between the type of internal audit function and the number of reported frauds.
3. The number of employees and number of frauds were converted into ranked data for the analysis

**Table 7****ANCOVA – Type of Internal Audit and Value of Reported Frauds**

## Panel A: Descriptive Statistics

Internal Audit	Insourced	Outsourced	Combination	Total
Ranked Value of Frauds	115.56	84.92	126.66	110.26
Mean of Ranks (St. Dev)	(57.73)	(50.94)	(64.16)	(59.68)
	n=104	n=58	n=56	n=218

## Panel B: Analysis of Variance

Source of Variation	SS	df	MS	F-Ratio	F-Test p-level
<u>Main Effect</u>					
Internal Audit	19,359.69	2	9,679.85	3.42	0.034
<u>Covariance</u>					
Number of Employees (ranked)	112,398.44	1	112,398.44	39.75	<0.001
Error	605,170.67	214	2,827.90		

1. The sample consisted of 324 replies to the internal audit survey
2. ANCOVA performed to assess whether there was a significant association between the type of internal audit function and the value of reported frauds.
3. The number of employees and total value of frauds were converted into ranked data for the analysis