

# Risk Management and Ethical Environment: Effects on Internal Audit and Accounting Control Procedures

Kirsten Rae\*

Nava Subramaniam\*\*

John Sands\*

## Abstract

*This study examines the impact of the scope of risk management and ethical environment on internal audit activities and the quality of accounting control procedures (ACPQ). The conceptual framework for the study is guided by COSO's frameworks on internal controls and enterprise risk management and data from a questionnaire survey of 64 Australian firms are analysed using a structural equation model. The results of the study support that (1) internal audit activities have a significant intervening effect on the relationship between the scope of risk management and ACPQ, and (2) a direct and positive relationship exists between ethical environment and ACPQ. Our findings suggest that widening the scope of risk management activities do not directly improve ACPQ, but that it leads to more extensive internal audit activities and in turn such activities promote better ACPQ. Further, the results indicate that fostering a more ethical environment directly leads to higher ACPQ. These results have implications for the design of internal controls, namely with respect to the role of internal audit activities and ethical environment in enhancing ACPQ.*

## Keywords

Internal Audit

Internal control

Risk Management

Ethical Environment

Accounting Control Procedures

## Introduction

The internal control system is a key corporate governance facet that has attracted considerable attention in recent years. The Committee of Sponsoring Organizations' (COSO)<sup>1</sup> *Internal Control – Integrated Framework* conceptualises an internal control system to comprise of several components, including the control environment, risk assessment, monitoring of controls, information and communication, and control activities (COSO, 1992). See Figure One.

These components are derived from the way management runs a business, and are seen to be integrated with the management process and the internal control. More recently, COSO's (2004) *Enterprise Risk Management – Integrated Framework* (hereon referred to as the *ERM framework*) expanded on the previous internal control framework by integrating the entirety of an enterprise's risk management processes with the organisational objectives classified under four categories: strategic, operational, reporting and compliance (which may be analysed from differing organisational levels i.e. divisional to sub-entity levels).

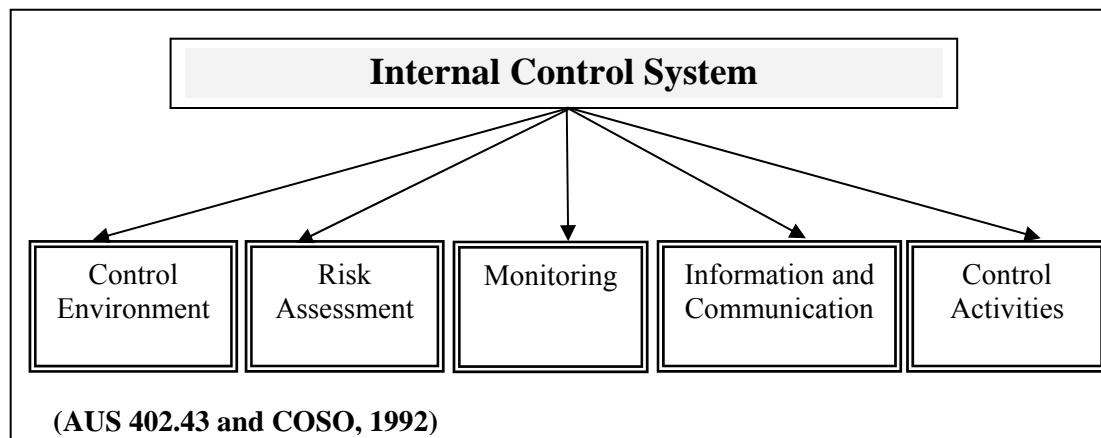
The responsibility of implementing an effective ERM framework lies with managers, of which the design of the internal control system and adherence to set policies and procedures are vital aspects.

The current study, guided by COSO's *Internal Control – Integrated Framework*, and the *ERM Framework*, focuses specifically on four key components of an internal control system.

<sup>1</sup> COSO was originally formed in 1985 as a private sector initiative by five major professional associations in the United States, the American Accounting Association, the American Institute of Certified Public Accountants, Financial Executives International, The Institute of Internal Auditors, and the National Association of Accountants (now the Institute of Management Accountants). Its key objective was to sponsor the National Commission on Fraudulent Financial Reporting, which studied the causal factors related to fraudulent financial reporting.

\* Sunshine Coast University

\*\* Deakin University

**Figure One: The Five Components of Internal Control**

These are:

- a) ethical environment - as a feature of the control environment component,
- b) scope of risk management – as an element of the risk assessment component,
- c) extent of internal audit activities – as a feature of the monitoring component; and
- d) the quality of accounting control procedures (ACPQ) – as an outcome variable of the control activities component.<sup>2</sup>

We further contend that both risk management and ethical environment can be viewed as internal control components that operate at a broader strategic level within the organisation. In other words, senior management tend to set the risk appetite for the organisation and invest in related strategies for the management of the entity's risks. Likewise, ethical values may be communicated by example through leadership and management's strict adherence to admonishing those who violate the ethical standards or code (Schwepker and Hartline, 2005; Weaver, Trevino and Cochran, 1999b). These broader strategic components, in turn are

arguably able to impact the design of internal monitoring systems such as the extent of internal audit activities. By contrast, accounting control procedures which are more operational and transactions-related are more likely to be affected by the monitoring process such as internal audit activities, as well as by the broader strategic level variables, namely risk management and ethical environment. A more detailed discussion of the directions of the relationships among these four components is undertaken in the upcoming section titled, 'Hypotheses Development'.

In summary, the objectives of this study are to examine (1) the direct effects of the scope of risk management, ethical environment and extent of internal audit activities, on ACPQ, (2) the direct effects of ethical environment and the scope of risk management on the extent of internal audit activities, and (3) the intervening role of the extent of internal audit activities in the relationship between the scope of risk management and ACPQ.

### Motivation for Study

In general, the motivation for the present study is largely derived from the lack of empirical evidence on the relationships between related internal control features. Such evidence is vital for several reasons.

Firstly, in the wake of the recent corporate collapses, regulators have intensified their attention on internal controls. High profile

<sup>2</sup> We did not assess the information and communication component for reasons relating to project manageability including keeping the survey instrument at a reasonable length. We believe that future studies may take the opportunity to extend research by including this component.

cases such as WorldCom and Enron clearly highlight how accounting and related internal controls had failed as a result of poor design and inappropriate behaviour of staff (Cunningham, 2004; Hwang and Staley, 2005). At the same time, organisations are increasingly faced with a growing number of options for managing an internal control system including the adoption of ERM, self-assessment controls, ethical and board evaluation processes and a plethora of accounting-based controls (Cohen, Krishnamoorthy and Wright, 2002; Fadzil, Haron and Jantan, 2005). Yet, there is little understanding on how these various control strategies and mechanisms may affect each other. Furthermore, the need for a better understanding of such relationships becomes even more imperative as the costs of designing and implementing internal controls have grown significantly in recent years. For example, it is reported that the costs associated with meeting the requirements of the Sarbanes-Oxley (SOX) Act passed by the U.S. Congress in 2002 averaged about US \$35 million for large firms in the first year (Verschoor, 2005). Interestingly, a large part of these costs relate to the application of transaction control processes. Therefore, a better understanding of the inter-relationships between key internal control features is increasingly critical for identifying the overall effectiveness and efficiency of a control system. A poor selection of controls not only increases the probability of errors and mis-statements but also increases the potential for fraud occurrence, which subsequently affects organisational performance.

Secondly, recent regulatory focus on the reporting of internal control quality necessitates more empirical evidence on the inter-relationships between different internal control components. For example, the SOX Act mandates that management assess and report on the effectiveness of the firm's internal controls over financial reporting (Agami, 2006). The Act also stipulates that the independent auditor should report on management's assessment of the effectiveness of the company's internal controls over financial reporting.

Although, traditionally, the review of the internal control system has always been a key part of an external audit, the formal reports by both management and the auditor are new requirements. By having a better understanding of the inter-connections of the various components within a system of internal controls, management will be better able to review and report on the quality of the overall system.

Thirdly, in addition to such regulatory requirements, various corporate governance guidelines (e.g. the United Kingdom's Turnbull Report (1999) and the Australian Stock Exchange's (ASX) corporate governance guidelines (2007)), and professional practice documents (e.g. IIA, 2001a) have been issued with recommendations on a variety of strategies for internal control enhancement. For instance, management leadership i.e. 'tone at the top' has been much emphasised in such recommendations (ASX, 2007).

Further, these various guidelines have also placed significant emphasis on an entity's approach to risk management as a key mechanism that overarches the design of internal controls through-out the organisation.

Organisations have been encouraged to undertake an ERM approach, which involves a process "designed to identify potential events that may affect the entity, manage risks within its risk appetite, and to provide reasonable assurance regarding the achievement of entity objectives" (COSO, 2003, p.3). Likewise, it is advocated that proper assurance processes, particularly that undertaken by the internal audit function is another vital internal control component. Yet, the literature suggests that there can be trade-offs in the selection of control mechanisms within an organisation. Such an approach is akin to a '*substitution of controls*' strategy where senior management may elect to forgo or substitute one type of control for another (Noreen, 1988; Stansbury and Barry, 2007). Unfortunately, there is still little understanding on how these various control strategies and mechanisms affect and

compensate for each other. Such knowledge is vital as the choice and design of the internal controls which, in turn, has direct implications for the overall quality of an internal control system.

In summary, the current study thus aims to contribute to the literature by providing empirical evidence based on a systematic study of a selected set of internal control components. The remainder of the paper is organised as follows. The next section provides the background to COSO's *Internal Control – Integrated Framework*. Subsequent sections provide the development of several testable hypotheses and a delineation of the research method. The final two sections discuss the results and the conclusions of the study, respectively.

### **Background: COSO's Internal Control – Integrated Framework**

The main objectives of COSO's *Internal Control – Integrated Framework* are to provide a common definition of internal control, and to provide a standard to assess the effectiveness of internal controls. The framework defines internal control as “a process, effected by an entity's board of directors, management and other personnel, designed to provide reasonable assurance regarding the achievement of objectives in (1) the effectiveness and efficiency of operations, (2) the reliability of financial reporting, and (3) the compliance of applicable laws and regulations” (COSO, 1992). The term ‘process’ is used in a broad sense where it goes beyond procedures to include the corporate culture and related organisational policies. Further, through the inclusion of “effectiveness” (the achievement of objectives) into the ambit of internal control, COSO recognises the existence of business objectives and assists in aligning the definition with business risk approaches to audit (Spira and Page, 2003).

COSO's *Internal Control – Integrated Framework* models internal control as comprising of five interrelated components, which are derived from the way management runs a business. The components are:

**Control environment:** this sets the tone for the organisation, providing the foundation for all other components of internal control, and influences the control consciousness of its people. It includes integrity, ethical values and the competence of all members of the entity, as well as management's philosophy and operating leadership style, which are dimensions associated with an ethical environment (Chen, Sawyer and Williams, 1997).

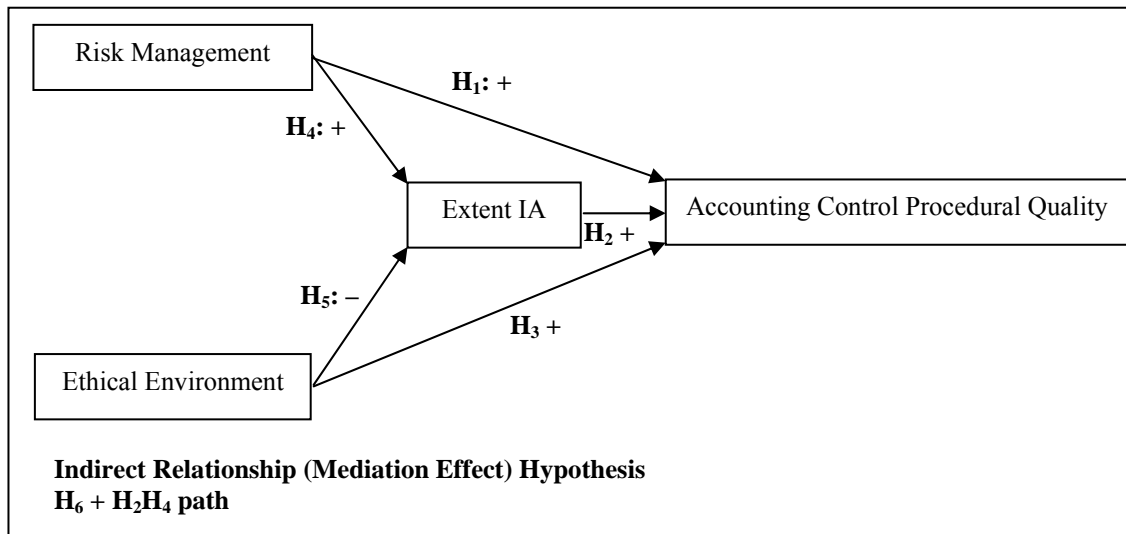
**Risk assessment:** this is the identification and analysis of relevant risks, internal and external, to the achievement of the objectives, forming a basis for determining how the risks should be managed.

**Control activities:** these help ensure that the necessary procedures are taken to help ensure that an entity achieves its objectives. Control procedure activities occur throughout the organisation, at all levels and in all functions.

**Information and communication:** internal and external information must be identified, captured and communicated in a form and timeframe that enables people to carry out their responsibilities. Effective communication also must occur in a broader sense, flowing down, across and up the organisation.

**Monitoring:** internal control systems need to be monitored, a process that assesses the quality of the system's performance over time. This is accomplished through ongoing monitoring activities such as the internal audit activities.

COSO argues that there is a synergy and linkage among these components, forming an integrated system that reacts dynamically to changing conditions. The internal control system is seen to be intertwined with the entity's operating activities and to exist for fundamental business reasons. In the following section, hypotheses for the present study are developed. Figure Two provides an overview of the various hypothesised relationships.

**Figure Two: The Relationships Hypothesised in H<sub>1</sub> to H<sub>6</sub>**

## Hypothesis Development

### Accounting Control Procedures Quality (ACPQ)

Accounting control procedures aim to prevent and detect transaction errors and omissions, and to correct such errors and omissions, where possible. A recent CPA Australia's survey indicated that about two-thirds of small businesses claim to have internal accounting controls in place in most transaction areas e.g. sales, purchases, accounts receivable, etc. (Hartcher, 2003). Accounting control procedures include authorisation of transactions, record keeping custody, and segregation of duties. The quality of the various accounting control procedures (ACPQ) determines the timeliness and the accuracy of the detection of errors and omissions. In general, there are two dimensions to ACPQ. The first refers to the quality of the design of the internal accounting controls e.g. the format of authorisation procedures relating to a given transaction. The second relates to the extent to which various employees within the organisation adhere to internal control policies and procedures (Marshall, 1995). Thus, both the internal control design and employee adherence to the set procedures are critical for enhancing ACPQ. Therefore, the higher the ACPQ, the more likely that errors and misappropriations will be detected.

### Risk Management - ACPQ

Management has the responsibility to identify business risks, assess the significance and likelihood of risk occurrence, and decide how to manage such risks. The IIA's (2001b) Practice advisory statement on *Assessing the Adequacy of Risk Management Processes* denotes that management need to install sound risk management processes and periodically communicate such risk strategies to all stakeholders in the organisation. Nielson, Kleffner and Lee's (2005) study found that sophisticated shareholders are increasingly demanding that management become more involved in risk management planning and development of effective principles so as to strengthen the firm's overall corporate governance structure. It is also argued that the risks managed ought to extend beyond the purely financial to embrace the broad range of risks experienced by companies such as environmental, social and other business risks (Lindow & Race, 2002).

The process of risk management includes the identification, assessment, monitoring and treatment of risks. As the scope of risk management expands, firms are likely to cover a larger number of areas of an organisation's activities as well as the variety of risks including financial, environmental, industry and operational

type risks (Fatemi and Glaum, 2000). Beasley, Frigo and Litman (2007) highlight the importance of having an enterprise wide approach to risk management and argue that as organisations invest in a wider set of risk management processes, the organisational objectives can be more easily met.

We predict that the greater the scope of risk management activities, the higher the ACPQ. This is because, as the scope of risk management widens, a greater number of staff from different areas tend to become more aware of, and involved in risk management activities. A greater involvement in risk management ought to lead to higher levels of relevant knowledge and strategies to mitigating such risks. Staff who are more exposed to risk management in turn will be better able to identify weaknesses in the existing internal controls. Consequently, the staff will be in a better position to offer valuable suggestions to improve the internal control weaknesses. Further, from an individual psychological perspective, staff are also likely to be more motivated to adhere to internal controls when they better understand the potential consequences to the organisation of failing to follow proper accounting control procedures.

Based on the above discussion, the first hypothesis of this study is as suggested:

***H<sub>1</sub>: There is a direct and positive relationship between the scope of risk management and ACPQ.***

### **Internal Audit Activity - ACPQ**

Traditionally, the internal audit function's role has been to assess the effectiveness of organisational internal controls, and to report to management where and how internal controls could be strengthened (Van Peursem, 2004). In June 1999, the Institute of Internal Auditors (IIA) officially adopted a revised definition of the internal auditing function and integrated this definition into its code of ethics. The internal audit function is defined as:

“an independent, objective assurance and consulting activity designed to add

value and improve an organization's operations. It helps an organization accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control, and governance processes (IIA, 2000)”.

This revised definition expands the focus of the internal audit function from one of assurance to one providing a value added approach (Bou-Raad, 2000; Krogstad, Ridley and Rittenberg, 1999). Thus, it is no surprise that internal auditors have become increasingly involved in consultancy work, covering non-financial areas such as business unit processes, operational efficiencies and compliance with laws and regulations (Verschoor and Farrell, 1996). Consequently, there is now a greater variance in internal audit programs both in their nature and scope. For example, internal auditors may undertake compliance type audits only, or a variety of other performance and operational audit type reviews. This increased variance in internal audit programs may enhance organisational opportunities to improve accounting control procedural quality.

We predict that the larger the extent of internal audit activities, the higher the ACPQ. This is because, with greater levels of checking and monitoring of the internal control features across a variety of a firm's business sections, as well as increased value added activities, the probability of finding weaknesses in the internal accounting controls increases. Given that accounting control procedures often tend to relate to transaction authorisation and processing, a higher level of internal audit activities would serve to increase the detection of control weaknesses and failures. Colbert and Alderman (1998), for example, found that internal audit test results are highly valued by fraud investigators their fraud detection procedures, and that such reports have helped in prompting further investigations. In other words, as the nature and scope of the internal audit activities increases, the higher the probability of detecting errors and fraud. Consequently, with greater detection of weaknesses, more

strategies can be developed to remedy the weaknesses in the internal control system.

Thus, the second hypothesis for the study is as follows:

***H<sub>2</sub>: There is a direct and positive relationship between the extent of internal audit activities and ACPQ.***

### **Ethical Environment - ACPQ**

While accounting control procedures can be easily written down as formal organisational policies, getting individuals or employees to adhere to such policies is another issue. Carelessness, laziness and even disobedience are plausible reasons for ignoring accounting control procedures. However, it is likely that in a more ethical environment, employees will tend to follow company rules and regulations because it would be the morally acceptable behaviour.

Prior studies claim that the ethical environment within the firm is likely to influence employee behaviours in two ways. First, through organisational socialisation processes, employees will learn to behave according to the level of ethical climate, and the higher the ethical values, the greater the ethical outcomes (Ardts, Jansen & Van der Velde, 2001).

Second, empirical evidence also indicates that management's attitude to corporate ethical environment, exemplified by ethical leadership, has a positive impact on overall employee behaviour (Weaver et al, 1999a). The ethical environment of an organisation is seen to encompass aspects of upper management's tone in achieving organisational objectives, their value judgments and management styles (COSO, 1992; AUS 402.43)

Victor and Cullen (1987) introduced the concept of 'ethical climate' to explain and predict organisational ethical behaviour. They suggested that when morally acceptable behaviours based on honesty and integrity are actively promoted and become part of an organisation's culture (i.e. a

shared system of values), a more highly ethical environment is created.

In an empirical study by Valentine, Godkin and Lucero (2002), a positive association was found between ethical environment and employee organisational commitment. Based on a sample of 304 young working adults, Valentine et al. (2002) found that ethical environment was positively and significantly associated with the level of employees' organisational commitment.<sup>3</sup>

Furthermore, in a recent study, Kizirian and Leese (2004) studied audit papers of 60 information systems audit engagements and found that the ethical tone of the audit clients' management has a significant impact on the strength of their security controls.

Based on the preceding discussion, we predict that in a more ethical environment, employees will be more willing to adhere to the organisation's accounting control procedures. It is expected that the greater the ethical environment, the higher the ACPQ as employees' with a higher moral consciousness will be more willing to 'do the right thing' by their employers.

The third hypothesis for this study thus is as follows:

***H<sub>3</sub>: There is a direct and positive relationship between ethical environment and ACPQ.***

### **Risk Management - Internal Audit Activity**

In organisations where the scope of risk management activities is large, employees are likely to be more actively involved in a wide ranging set of activities. The awareness among employees about the various types of risks faced by their organisation, how such risks may be interconnected, and the risk mitigation strategies put in place by management, is expected to be greater in firms with a wide risk management agenda than those firms

<sup>3</sup> Organisational commitment refers to the extent to which employees feel connected with the company's values and way of doing things (Schwepker, 1999).

with narrow risk management plans. Consequently, with the choice of a wider set of risk management activities and areas, employees are likely to find value in internal audit activities, because such activities help to identify breakdowns in both the design of their risk management plans and related internal controls,

Also, the internal audit function is well placed to aid in improving risk management strategies. Lindow and Race (2002), for instance, argue that as a firm widens its risk management activities, there will be greater demand for the internal audit function to assist in administering and monitoring many of these risk management activities. Similarly, Spira and Page (2003) observe that, in view of the Turnbull report, some companies have expanded their internal audit function to include specialists such as engineers and marketers to broaden their operational risk perspective. Senior management can engage internal auditors to not only audit control activities, but also help to monitor a company's risk profile and play a key role in identifying areas that improve risk management processes. Accordingly, we predict that as the scope of risk management increases, there will be greater demand for more extensive internal audit involvement.

Thus, based on the above discussion, the following hypothesis is proposed:

***H<sub>4</sub>: There is a positive relationship between the scope of risk management and the extent of internal audit activities.***

#### **Ethical Environment - Internal Audit Activities**

Organisations have several choices for improving on their existing control system. For example, one strategy is to invest in more sophisticated controls that add onto or complement their traditional control system such as increasing the number and the variety of controls (e.g. a moving from a simple to a more sophisticated information system or performance evaluation system). Traditional control systems tend to be predominantly outcome controls-based whereby the focus is on either rewarding or

punishing managers in order to align their interests with the organisation's (Weaver et al., (1999a). Another strategy is to develop or adopt alternative controls that are more behaviour-oriented. engendering a more ethical environment may work as an alternative means of control, which, in turn, alleviates the need to expand or change a firm's traditional control system.

Based on the preceding arguments, we propose that the demand for internal audit activities would be negatively related to ethical environment. Management committed to fostering a high ethical environment may be less motivated to increase more traditional control features such as internal audit activities because there will be greater trust in employees to follow set rules and procedures. Therefore, based on the above discussion, the fifth hypothesis for study is as follows:

***H<sub>5</sub>: There is a direct and negative relationship between ethical environment and the extent of internal audit activities.***

#### **Intervening Effect of the Extent of Internal Audit Activities**

In the preceding discussion, it was proposed that there is a positive relationship between the scope of risk management and the extent of internal audit activities (*H<sub>4</sub>*). In addition, a positive relationship was also proposed between the extent of internal audit activities and ACPQ (*H<sub>2</sub>*). When viewed together, the two predicted relationships suggest that internal audit may act as a significant intervening variable in the relationship between the scope of risk management activity and ACPQ.<sup>4</sup>

We therefore hypothesise the sixth and final hypothesis for study:

<sup>4</sup> Although a significant proposed relationship is proposed for *H<sub>2</sub>*, a negative significant relationship is proposed in *H<sub>5</sub>* between ethical environment and extent of internal audit activities. Therefore, an indirect relationship is not proposed between ethical environment and ACPQ.



**H<sub>6</sub>:** *The extent of internal audit activities has a significant intervening effect on the relationship between the scope of risk management and ACPQ.*

## Research Method

### Sample

Data collection was undertaken through a questionnaire survey distributed to financial controllers (otherwise termed chief accountants) of medium to large Australian firms. The sample population involved firms from a cross-section of industries such as manufacturing, retail, automotive dealerships, information technology, wineries and fisheries, and hotels. The database comprised two major sources. The first data set accessed the BRW list of 1000 largest Australian firms (September, 2003) ([www.brw.com.au](http://www.brw.com.au)). One hundred and sixty (160) firms whose revenues ranged from \$20 million to \$110 million per annum were selected randomly from the database for this study with the aim of accessing medium to large-sized firms. The second database comprises one hundred and sixty (160) four and five star hotels in Australian capital cities derived from the Dawson's (2003) hotel directory.

### Questionnaire Development

A questionnaire was developed based a literature review of prior studies, and the research instrument was pre-tested using six participants: the financial controllers of two large locally based firms, three academics who had significant industry experience and one forensic accountant, whose firm specialised in forensic consulting. Face-to-face interviews were conducted, leading to minor changes to wordings in several questions.

The questionnaire instrument included distinct sections for each of the four variables and a section capturing participants' demographic information.

### Questionnaire Administration

Financial controllers were chosen as survey participants for two key reasons. Firstly, they are in a senior position and thus, are expected to have a very good understanding of the quality of internal control procedures. Secondly, financial controllers are often actively involved in the oversight of any system reviews and changes, and thus would be aware of any control weaknesses or malfunctions of internal control procedures.

The questionnaire was accompanied by a letter to introduce the purpose of the study along with a reply paid envelope for their responses. Follow up calls were made approximately two weeks after the questionnaires were sent out<sup>5</sup>. To test for non-response bias, responses from the first and last 20 surveys were analysed with no significant results<sup>6</sup>.

Of the 320 questionnaires sent out to the organisations selected for participation, a total of 67 responses were received (approximately 21% response rate), of which 64 were useable (18.8% usable responses). Three of the returned questionnaires were discarded due to incomplete responses. As shown in Table One, nearly half the respondents were from large firms i.e. 100 employees and above and about 28% from less than 49 employees.

A range of industries was represented in this study. These were categorized into Manufacturing, Retail, Hotel and Other Services and no significant difference was found to exist between hotel and non-hotel participants' responses.

<sup>5</sup> Ethical clearance for this research was obtained from Griffith University's Social Sciences, Business, and Arts Ethics Sub Committee. A letter was forwarded to each firm, with a declaration that the questionnaire was given ethical clearance by the University's sub committee, along with the researcher and supervisor's contact details. Each letter sought respondent's participation in fully completing the questionnaire, allowing the opportunity for each participant to remain anonymous.

<sup>6</sup> The non-response bias testing followed the method used by Firth (1978).

**Table One: Sample Respondents by Number of Employees**

Number of Employees	Number of Respondents	Percent of Respondents
Less than 49	18	28%
50-100	15	23%
More than 100	31	49%
<b>Total</b>	<b>64</b>	<b>100%</b>

### Variable Measurement Model

ACPD was assessed based on a seven-item scale, whereby the items were adapted from the 'Small Business Sample' Section of CPA Australia's Small Business survey (CPA Australia, 2003). Each participant was required to rate the firm's internal control strength, using a 7-point Likert-type scale with 1=very poor to 7=very good, in seven key areas. These include 'cash management', 'bank accounts', 'physical assets', 'purchasing and accounts payable', 'sales', 'employee recruitment' and 'payroll'. Data analyses were based on the Z-score of a factor analysis for the seven-item (KMO = .841; Sig = 0.000). A confirmatory factor analysis produced goodness of fit indices that support this measurement model (see Table Three).<sup>7</sup> The internal reliability of the measure for these seven-items for each participant was also strong with the Cronbach Alpha being 0.875.

The questionnaire also asked an additional question on the perceived quality of the internal controls overall so as to gain an assessment of the respondent's overall judgement of the strength of the internal controls. A bivariate correlation analysis between the average score of the 7-item measure and the 'overall' rating indicates a significant and strong correlation exists.

The extent of internal audit activities was measured by asking each respondent "To

what extent did your organisation, in the last financial year undertake internal audit activities?". An eight-point scale was also provided with 0 being 'none', 1 representing to 'a very small extent' and 7 signifying 'a very large extent'.

Ethical environment was measured using a five item, five-point Likert-type scale as developed by Hunt, Wood and Chonko (1989). Ethical environment was evaluated using the ethical tone at the senior management level because COSO (1992) asserts that the overall ethical tone in an organisation is developed from the top down, and must be exemplified to the lower staff levels of the organisation before an ethical environment will be assimilated by the whole organisation. The measure consisted of statements such as, "Top management in my organisation has let it be known that unethical behaviour will not be tolerated", and "If a manager in my organisation is discovered to have engaged in unethical behaviour that results primarily in the entity's gain (rather than personal gain) he or she will be promptly reprimanded. The Cronbach Alpha evaluating the internal reliability of the ethical scale is 0.807. Further, a factor analysis revealed a unidimensional scale for the five-item ethical environment scale (KMO = .766; Sig = 0.000) and provided a Z-score, which was supported by the confirmatory factor analysis shown in Table Three.

Scope of risk management was measured by asking each respondent to rate the extent to which four items of risk management

<sup>7</sup> The confirmatory factor analysis was conducted using structural equation modelling within the AMOS statistical software program.

have been adopted by a firm. These four items developed by Fatemi and Glaum (2000) relate to four specific areas that are likely to be covered as part of a firm's risk management activities. The four items include the management of financial, environmental, industry competition, and operational risks. A factor analysis produced a significant result ( $KMO = .752$ ;  $Sig = 0.000$ ) while a high Cronbach Alpha

( $\alpha = 0.846$ ) supported a strong internal reliability for the risk management scale. Indices in Table 3 from a confirmatory factor analysis support a four-item risk management factor. Therefore the Z-score for the four-item has been used in the analysis.

The descriptive statistics for the four variables are presented in Table Two.

**Table Two – Model 2 - Descriptive Statistics and Correlation Matrix (n=64)**

VARIABLES	MEAN	S. D.	THEO. RANGE	ACTUAL RANGE
<b>Ethical Environment (E. Env)</b>	4.19	0.648	1 - 5	2.2 – 5.0
<b>Scope of Risk Management (RM)</b>	3.41	1.875	1 - 7	1.0 – 7.0
<b>Extent of Internal Audit Activities (IA)</b>	3.85	2.160	0 - 7	0.0 – 7.0
<b>ACPQ (ACPQ)</b>	5.35	1.08	1 - 7	2.0 – 7.0

**Table Three: Confirmatory Factor Analysis for Three Measurement Models**

Goodness of fit indices	ACPQ	E. Env	RM
CMIN (Minimum Discrepancy) ( $\chi^2$ )	5.0400	3.4350	0.116
P (Probability)*	0.8880	0.3290	0.7330
CMIN/DF **	0.504	1.1450	0.116
SRMR (Standardised Root Mean Squared Residual)***	0.0273	0.0316	0.0068
GFI (Goodness-of-Fit Index) <sup>#</sup>	0.9790	0.9800	0.9990
AGFI (Adjusted Goodness-of-Fit Index) <sup>#</sup>	0.9400	0.9010	0.9910
NFI (Normal Fit Index) <sup>##</sup>	0.9780	0.9690	0.9990
CFI (Comparative Fit Index) <sup>##</sup>	1.0000	0.9960	1.0000
RMSEA (Root Mean Square Error of Approximation) <sup>###</sup>	0.0000	0.0470	0.0000
* Non-significant probability cannot reject the goodness-of-fit of the hypothesised model [Byrne, 2001]			
** Ratio of < 2 indicates a good-fitting model [Tabachnick & Fidell, 2001]			
*** SRMR < .05 represents a well-fitting model [Byrne, 2001]			
<sup>#</sup> Required value of > .9 for each of these indices [Page & Meyer, 2000] ; Tabachnick & Fidell, 2001]			
<sup>##</sup> Required value of between > .9 [Tabachnick & Fidell, 2001] and $\geq .95$ [Hu & Bentler, 1999] for each of these indices			
<sup>###</sup> RMSEA is one of the most informative criteria with $\leq .08$ as the desired value of RMSEA [Hu & Bentler, 1999; Tabachnick & Fidell, 2001]			

## Statistical Analysis

Structural equation modelling (SEM) was used to test these six hypotheses. For this study, SEM was the preferred method of analysis because it allows the analysis of multiple relationships simultaneously, provides measures of overall model fit, and explains the significance of relationships between variables (Kline, 1998; Baines and Langfield-Smith, 2003). These functions as well as accounting for the effects of measurement error in multi-item variables are considered to be advantages of SEM over path analysis (Viator, 2001).

This study adopted the two-stage process recommended by Schumaker and Lomax (1996). The first stage of the process was to conduct separate measurement models for

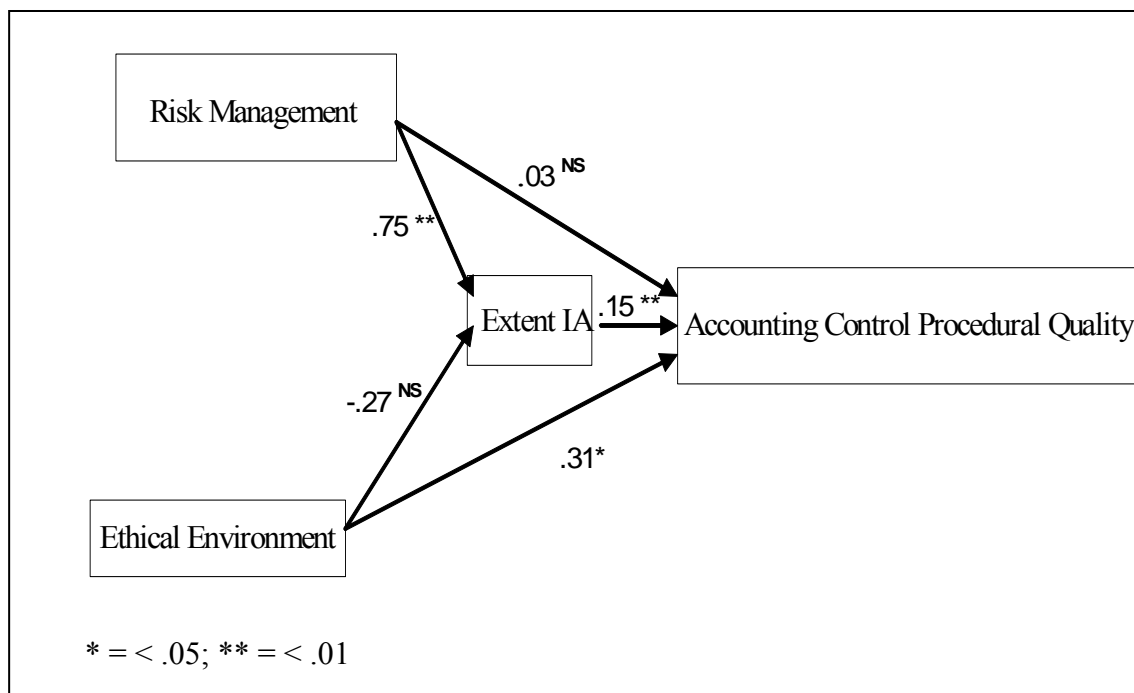
each latent variable. The results of these confirmatory factor analyses are summarised in Table Three and reported earlier in this paper under section 5.0 (Variable Measurement). The structural model is constructed as the second stage of the process and the results are reported under the following section.

## Results and Discussion

### Results of Hypotheses

Figure Three provides details of the initial (full) SEM for all the relationships hypothesised in  $H_1$  to  $H_6$ . The regression coefficients for each path are summarised in Table Four. There are three significant SEM (full) Model structural paths.

**Figure Three: The Full Structural Equation Model: Testing Hypotheses  $H_1$  to  $H_6$**



The critical ratio (CR) and non-significant regression coefficient (CR = 0.268;  $P = .788$ ) have been found for the path representing the relationship between the scope of risk management and ACPQ. These statistics do not support a significant direct relationship between these factors. Consequently, these results do not provide support for Hypothesis One ( $H_1$ ). Conversely, the SEM results show an acceptable CR and significant regression

coefficient (CR = 2.568;  $P = .010$ ) for the positive relationship between the extent of internal audit activities and ACPQ; thus supporting Hypothesis Two ( $H_2$ ). Similarly, the positive relationship between ethical environment and the ACPQ is shown to be significant (CR = 2.810;  $P = .005$ ). Therefore these results support Hypothesis Three ( $H_3$ ).

Table Four also shows significant statistics (CR = 2.626; P = .009) for the direct positive effect of the degree of risk management on the extent of internal audit activities, which support Hypothesis Four (**H<sub>4</sub>**). However, an unacceptable CR and non-significant regression coefficient (CR = -0.936; P = .349) results are reported for the relationship between ethical environment and the extent of the internal audit activities. These statistics do not support the relationship proposed in Hypothesis Five (**H<sub>5</sub>**) but do provide a

negative result, which reflects the directional prediction of the hypothesis.

Also, from the results in Table Four, the acceptable and significant statistics for two significant paths hypothesised in **H<sub>2</sub>** and **H<sub>4</sub>** provide support for the intervening effect the extent of internal audit activities on the relationship between the scope of risk management and the quality of ACPQ. These statistics therefore support Hypothesis Six (**H<sub>6</sub>**).

**Table Five: Maximum Likelihood Estimates: Best Fit SEM Model Structural Paths**

Regression Weights	Estimate	S.E.	C.R	P
Extent of IA <----- Scope of Risk Management	.637	.260	2.447	.014
ACPQ <--- Ethical Environment	.327	.109	2.992	.003
ACPQ <--- Extent of IA	.152	.050	3.041	.002

Both insignificant paths of the initial (full) SEM were eliminated when a further model was constructed to achieve a 'best fit' SEM. Table Five summarises the regression coefficients, CR and significance for each of the remaining three significant SEM structural paths that are hypothesised in **H<sub>2</sub>**, **H<sub>3</sub>**, and **H<sub>4</sub>**. Significant findings achieved for the 'best fit' SEM are similar to the initial (full) SEM results that supported **H<sub>2</sub>**, **H<sub>3</sub>**, and **H<sub>4</sub>**. The significant statistics for the two SEM structural paths hypothesised in **H<sub>2</sub>** and **H<sub>4</sub>** again provide support for the intervening effect of the extent of internal audit activities on the relationship between the scope of risk management and ACPQ hypothesised in **H<sub>6</sub>**. These significant SEM structural paths are illustrated in Figure Four.

The 'goodness of fit' indices are reported in Table Six for the 'best fit' SEM. These significant indices (SRMR = 0.0352; GFI = 0.9930; AGFI = 0.9640; NFI = 0.9740; CFI = 1.0000; RMSEA = 0.0000) support the

model's fit for these relationships as hypothesised in **H<sub>2</sub>**, **H<sub>3</sub>**, **H<sub>4</sub>**, and **H<sub>6</sub>**.<sup>8</sup>

## Discussion of the Results

The results of this study provide two major sets of findings. The first set of findings pertains to the internal audit function whereby internal audit activities are seen to play two important roles. Firstly, as hypothesised (**H<sub>2</sub>**) the extent of internal audit activities is found to have a direct and positive effect on ACPQ. These findings are aligned with various anecdotal case evidence (Colbert and Alderman, 1998; Buckhoff, 2002) whereby internal audit reviews are viewed as being vital in the identification of weaknesses in internal

<sup>8</sup> Smith and Langfield-Smith (2004) recognised that while  $\chi^2$ , GFI, NFI, AGFI are the most commonly used fit indices for accounting research, they acknowledged some structural equation model (SEM) experts consider these to be inappropriate measure (e.g. Hu & Bentler, 1999; Byrne, 2001). Consequently, Table 7 incorporates additional indices considered to be more appropriate by these SEM experts (e.g., CFI, RMSEA & Standardised RMR). Further, the appropriateness of the  $\chi^2$  statistic to as an indicator of fit has been questioned due to its potential bias (Byrne, 2001; Arbuckle, 2005).

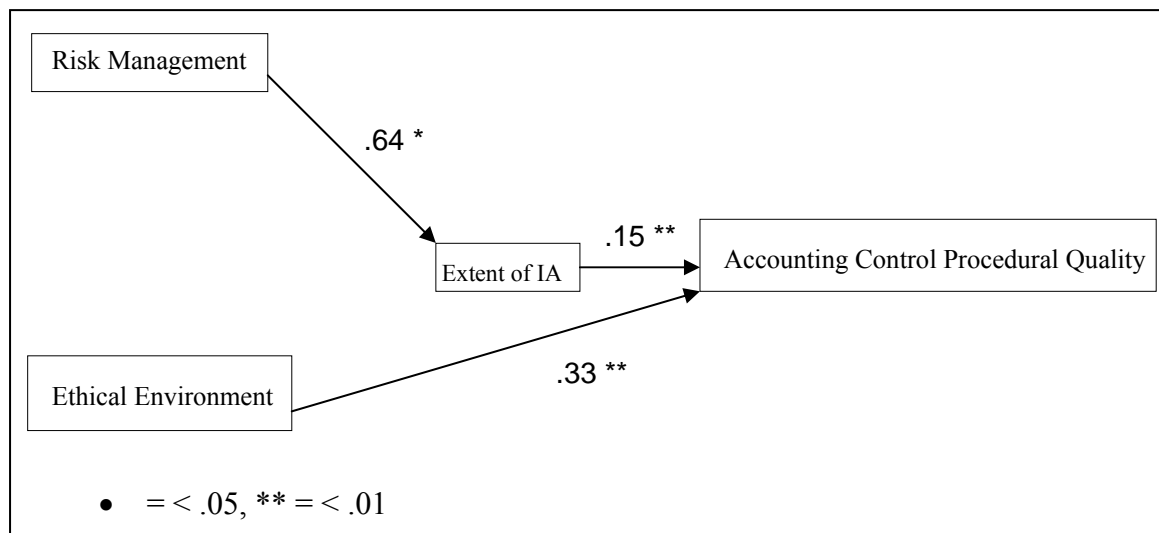
control procedures and fraud detection.  
Often recommendations made by internal

auditors are seen to lead to detection of  
errors and incidences of fraud.

**Table Six: Indices for Full and Best Fit Structural Equation Models: Testing Hypotheses H<sub>1</sub> to H<sub>6</sub>**

Goodness of fit indices	Full SEM	Best Fit SEM
CMIN (Minimum Discrepancy) ( $\chi^2$ )	0.0000	0.9430
P (Probability)* <b>see Table 3 for reference</b>	Not Produced	.6240
CMIN/DF ** <b>see Table 3 for reference</b>	Not Produced	0.471
SRMR (Standardised Root Mean Squared Residual)*** <b>see Table 3 for reference</b>	Did not Fit	0.0352
GFI (Goodness-of-Fit Index) <sup>#</sup> <b>see Table 3 for reference</b>	1.0000	0.9930
AGFI (Adjusted Goodness-of-Fit Index) <sup>#</sup> <b>see Table 3 for reference</b>	Not Produced	0.9640
NFI (Normal Fit Index) <sup>##</sup> <b>see Table 3 for reference</b>	0.9780	0.9740
CFI (Comparative Fit Index) <sup>###</sup> <b>see Table 3 for reference</b>	1.0000	1.0000
RMSEA (Root Mean Square Error of Approximation) <sup>####</sup> <b>see Table 3 for reference</b>	0.2790	0.0000

**Figure Four: Best Fit Structural Equation Model: Testing Hypotheses H<sub>1</sub> to H<sub>6</sub>**



Secondly, internal audit activities are also seen to play a significant intervening role in the relationship between the scope of risk management and ACPQ. More specifically, the results do not support **H<sub>1</sub>**, indicating that there is no direct relationship between the scope of risk management and ACPQ. However, since **H<sub>4</sub>** and **H<sub>2</sub>** were found to be supported, it can be concluded that the scope of risk management still has an impact on ACPQ through internal audit activities. In other words, the support of **H<sub>4</sub>** indicates that as the scope of risk management widens, the extent of internal audit activities is likely to increase. This finding is aligned with Lindow and Race's argument (2002) who contend that there will be greater demand for the internal audit function to assist in administrating and monitoring such risk management activities as such activities increase in frequency and in their nature. In addition, the support of **H<sub>2</sub>** suggests that as more internal audit activities are conducted, ACPQ will become higher. Given that accounting control procedures can be broad covering not only cash or sales transactions, but also controls over physical assets that may involve environmental-related risks, increase in internal audit activities in such areas is likely to have a spill-on effect on ACPQ. Spira and Page (2003) observed that, since the Turnbull report (1999), some companies have added specialists to their internal audit function to broaden their capacity to audit operational risks. Further Spira and Page (2003) also note that internal auditors are becoming more involved in the identification and monitoring of a company's risk profile as part of the overall risk management process. In sum, these results imply that when firms broaden the scope of their risk management activities, there will be greater emphasis placed on their internal audit activities. A more active internal audit function in turn leads to better ACPQ as such activities increase the probability of identifying weaknesses in accounting control procedures (e.g. poor authorisation and lack of segregation of duties over physical assets and employee activities).

The second set of findings of this study relate to the effects of ethical environment on ACPQ. Firstly, **H<sub>5</sub>** was not supported, suggesting that there is no direct relationship between ethical environment and internal audit activities. Instead, our findings support **H<sub>3</sub>**, suggesting a direct and positive relationship between ethical environment and ACPQ. More specifically, a stronger ethical environment within the firm is seen to lead to a higher ACPQ. These findings suggest that in more ethical environments, employees are more likely to follow accounting control policies and rules as this would be the expected norm at the workplace. These findings are consistent with results by Weaver et al. (1999b) who found that organisations that fostered strong ethics were more likely to support employee development such as engendering employee performance appraisals that placed emphasis on their behaviour.

### Conclusion and Limitations

To date there is scant evidence on the inter-relationships among different components of an internal control system. The present study provides valuable empirical evidence on the effects of risk management and ethical environment on internal audit activities and ACPQ. Overall, the results of the present study clearly highlight that both risk management and ethical environment impact ACPQ through different modes. When organisations plan to invest in a wider risk management strategy in order to improve internal control procedures such as ACPQ, they will need to be aware that significant attention also needs to be paid to internal audit activities in order to achieve their objective. This attention reflects a holistic approach that has been purported to provide tangible financial benefits for firms (Whitehorn, 2008). Additionally, the results also suggest that an organisation can derive direct benefits in terms of improving their ACPQ through engendering a more ethical environment. These results have both theoretical and practical implications for both audit activities and ethical environment.

Theoretically, the study provides a more in-depth understanding of the inter-relationships of the components of COSO's internal control framework. It is evident that the relationships among the various internal control components are not always direct and simple, and that monitoring mechanisms such as internal audit activities may play a significant intervening role in achieving high quality control activities (Subramaniam and Ratnatunga, 2003). These results support the comments by Thomson (2007, p. 31) that "organisations must demonstrate strong internal controls, maintain integrity at all times, and manage enterprisewide business risks". He further warns that the price for mistakes and surprises are only becoming steeper, and that all organisations including those in the not-for-profit sector face the same impending pressure.

From a practical perspective, the results suggest that firms need to consider the level of resources allocated to their internal audit function because of the positive direct and indirect effect these internal audit activities have on ACPQ. Assessment of the strength of the internal audit function and adequate resourcing of such a function are some of the issues that an organisation needs to pay increasing attention to, particularly as the pressure on senior management to broaden the scope of risk management increases (Cai, 1997; Spira and Page, 2003). This broadening of the scope of risk focus requires better funding for the internal audit function as well as recruitment and training of qualified and certified professionals e.g., CIAs, CMAs and CPAs (Singer, 2008).

Further, the results of this study suggest that a move towards enterprise strategies is likely to be associated with greater internal audit activities. Enterprise involves integrating risk management strategies rather than evaluating risk management in silos, which is likely to result in fragmented and/or duplicated roles within a firm's risk management system (Whitehorn, 2008). This holistic approach would help improve resource allocations to these internal audit activities and reduce costs through mitigating redundant roles. With improved

ACPQ, a flow-on positive impact can be expected in corporate governance processes, and the safeguard of financial reputations - which are two of the top ten risk concerns in 2006/2007<sup>9</sup>.

Although the internal audit function is frequently a driver of the ERM process, in theory, organisational culture is the long term key factor of an effective ERM system (Whitehorn, 2008; Singer, 2008). Consequently, in practice, senior management must provide strong support for ERM to be successful in providing reasonable assurance of financial statement reliability, which should be an outcome of ACPQ (Thomson, 2007). Such an holistic approach to ERM may involve compliance officers, ethical officers, and quality control personnel so that key risks are managed (Julien and Richards, 2008). Furthermore, ethical leadership is also seen as an important ingredient for achieving high quality internal control procedures. The current findings suggest that senior management, in their strategic planning of an internal control system will need to pay significant attention to the role of internal audit as well as to internal environment factors such as the ethical environment.

The results of this study, nevertheless, need to be interpreted in light of several limitations. First, a limitation of this study relates to the measurement of ACPQ, which was reported by the financial controllers. Given that financial controllers tend to be responsible for ACPQ, there is the risk of upward bias in their assessment. Future studies may adopt a more objective measure of the ACPQ construct by using measures such as the level of resources and sophistication of the various accounting control procedures. Alternately, future studies may adopt a weighted measure of ACPQ, whereby its assessment could be undertaken by multiple parties including

<sup>9</sup> Aon Insurance Brokers, (2007) Australian Risk Management and Total Cost of Insurable Risk Survey (Whitehorn, 2008, 'Top 10 Risks for Companies, p. 15) and the Risk Management Institution of Australian's Master Class on Reputation Management for Certificated Practising Risk Managers, November 2007 (Whitehorn, 2008, 'Endnote 2, p. 18).



financial controllers, internal and external auditors. A second limitation may relate to the problem of a small sample size. Since only 64 respondents participated in this study, this may have posed restrictions on the use of a structural equation model for data analysis. However, the Hoelter's (1983) critical N (414 @ .05; 636 @ .01) suggests the sample size is adequate (Byrne, 2001; Arbuckle, 2005).<sup>10</sup> Finally, the usual caveats of survey research are applicable to this study. Future studies may undertake a more qualitative approach to understanding the various processes that facilitate or inhibit the relationships among the selected internal control features. For example, in-depth interviews of employees may better explain how a more ethical environment has helped in the willingness of employees to adhere to control policies, and contribute to improving ACPQ.

In conclusion, this study highlights the importance of the inter-relationships between ethical leadership, risk management and the extent of monitoring activities namely, the internal audit activities for the design of effective accounting control procedures. Further research in this area is much needed as the benefits of having adequate internal controls have become abundantly clear. No doubt, the design of effective internal control systems remains a key challenge for senior management.

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<sup>10</sup> The reported Hoelter critical N for the 'best fit' SEM (i.e., between 414 for .05 and 636 for .01) indicated that the hypothesised model is correct and should be accepted for these large sample sizes because they are much larger than the accepted critical N of 200 argued by Hoelter (1983).

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