

(EIA). We measure EIA by the perceptions of Chief Internal Auditors (CIAs) regarding the implementation of internal audit recommendations. As a second motivation, we seek to determine the degree of influence of each of the AC's characteristics upon the EIA. Thus, this the results of this study will complement existing research and point the way to further research opportunities.

The present study also extends prior research by introducing a different measure of the EIA. It examines the link between AC characteristics, and perceptions regarding the degree of implementation of internal audit recommendations, whereas previous studies focused on other indicators, for example, reporting independence and quality assurance review procedures (Callahan & Soileau, 2010), internal audit budget (Barua et al., 2010; Carcello, Hermanson, & Raghunandan, 2005), and size of internal audit unit and proportion of staff with audit experience (Mat Zain et al., 2006). It is argued that the greater the independence of the AC, the higher the perception of successful implementation of internal audit recommendations. Likewise, there are perceptions that implementation of internal audit recommendations is higher when there is greater expertise among the AC members, and when the AC has frequent meetings. Four AC characteristics (independence of AC, expertise of AC members, number of meetings, and number of members) are identified as features affecting EIA. We formulate hypotheses on the impact of these characteristics on EIA and test these hypotheses via regression models on data collected from 188 CIAs in UK companies listed on the London Stock Exchange. This sample is chosen since the UK institutional context is mature in terms of internal audit and risk management (Zaman, 2001; Zaman, Hudaib, & Haniffa, 2011), having reached the stage where the UK *Corporate Governance Code* (Financial Reporting Council (FRC), 2012b) indicates the responsibility of the board of directors as being to determine the significant risks a company will accept in order to obtain its strategic objectives. Additionally, the board is mandated to report to shareholders annually its behavior in this respect.

Our hypotheses result from the assumption that more effective internal audit outcomes arise from a more independent, competent and interactive AC. Such a committee is predisposed to act within its span of control, and consequently, internal audit recommendations are more likely to be implemented, resulting in greater internal audit effectiveness.

2. Prior research and hypotheses development

The *Financial Reporting Council (FRC) (2012a,b) Guidance on Audit Committee and Corporate Governance Code* describe ACs as key to good corporate governance, and obligate them to monitor and review the effectiveness of the IAF. Additionally, ACs are required to provide direct access to the board chairman and to the AC for the internal auditor, who must be accountable to the AC. Furthermore, the AC has responsibility for reviewing and evaluating the annual internal audit work plan, for receiving periodic reports on the outcomes of the internal auditors' work, and for reviewing and monitoring managerial response to the findings and recommendations contained within those outcomes. The AC is also obliged to meet with the head of internal audit at least annually without management being present, and to evaluate the role and degree of EIA within the company's risk management system. Essentially, the AC is responsible for monitoring the IAF and for ensuring it is provided sufficient financial resources (Carcello, Hermanson, Neal, & Riley, 2002). In fact, more financial resources have been shown to flow to the IAF when its annual budget is reviewed by the AC (Carcello et al., 2005).

The AC, and the EIA, have been explored by Callahan and Soileau (2010) in connection with their influence on the implementation of enterprise risk management (ERM) within organizations. These researchers discussed the particular AC characteristics of: number of members, number of meetings, and the percentage of members who are financial experts. In respect of internal audit, they considered organizational reporting independence and staff competence. Their findings demonstrated that the number of AC meetings and the percentage of financial experts among AC members (AC characteristics), and reporting independence and quality assurance review procedures (internal audit functions), are related to the likelihood that a firm will implement ERM processes.

The link between AC oversight and the resources directed toward internal control activities was explored by Abbott et al. (2010). They demonstrated that ACs with greater IAF oversight generally invest more in the IAF, by underwriting more hours to that activity, and by the level of implementation of IAF recommendations. Similarly, Mat Zain et al. (2006) showed, in the Malaysian context, a positive link between internal auditors' assessment of their contribution to financial statement audits and three particular characteristics of the AC: the proportion of independent AC members, their knowledge and experience of accounting and auditing, and the extent of AC review of internal audit programs, budget, and co-ordination proposals. Hence, a link between AC characteristics and the implementation of IAF recommendations exists in the internal auditors' perception of their potential contribution.

AC traits may support or hinder internal auditors, meaning the AC can be helpful or otherwise in the implementation process. Mihret and Yismaw (2007) highlight the need for management support in providing the necessary resources to the IAF to enable successful implementation of recommendations. Adams (1994) used agency theory to explain why it is in management's interest to maintain a robust internal audit department. Clearly, the aim of audit effectiveness is logical, but it cannot be realized without management commitment to implement internal auditors' recommendations (Van Gansberghe, 2005; Sawyer, 1995).

It is important to acknowledge that none of the factors identified is truly independent since the AC's behavior in one area may be conditional upon its actions in another. Many researchers (e.g. Mat Zain et al., 2006; Abbott, Parker, & Peters, 2004; Goodwin, 2003; Abbott & Parker, 2000) have recognized that the nature of the AC is determined by its level of independence, member expertise, number of members, number of meetings, and the extent of interaction with the internal auditor. This study accepts these premises but differs, in particular from that conducted by Mat Zain et al. (2006) in that it suggests an

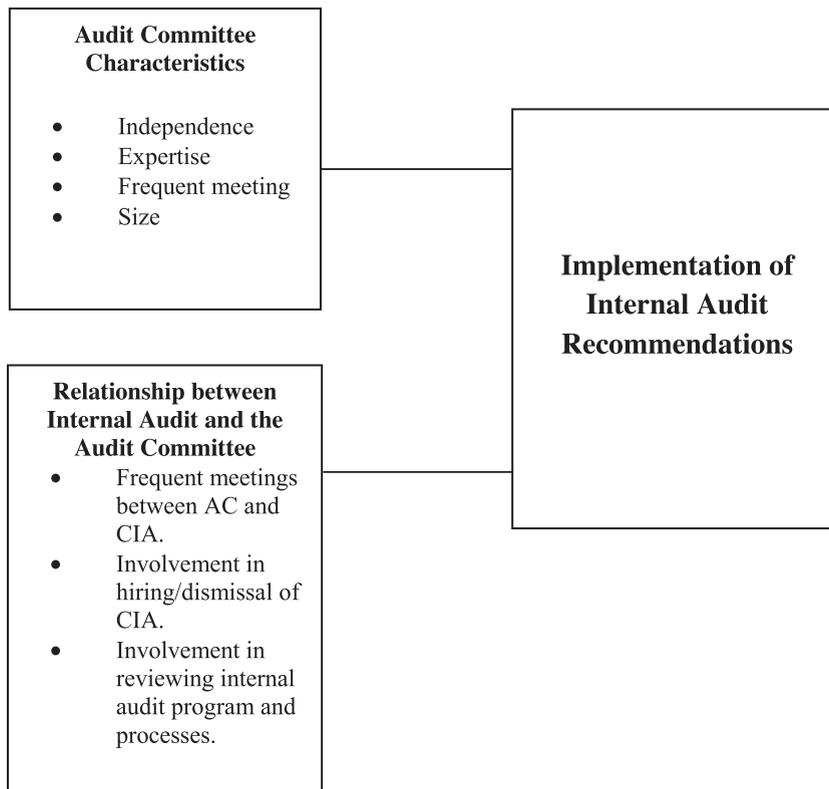


Fig. 1. Model of the research.

effective AC is associated with a higher rate of implementation of internal audit recommendations. [Mat Zain et al. \(2006\)](#) argue that internal auditors make a greater contribution to financial reporting when the AC is more independent, and members possess knowledge of accounting and auditing. Therefore, it can be argued that the more effective the AC, the more able are the internal auditors to contribute to financial reporting, and thus, a higher rate of implementation of recommendations is evident. Consequently, the study presents hypotheses concerning the influence of these AC characteristics on the EIA. These are tested using responses from 188 CIAs in UK-listed companies. [Fig. 1](#) presents the model of this study.

Our hypotheses seek to determine the precise relationships between the identified AC factors and perceptions of whether IAF recommendations are implemented. Although prior research suggests that AC characteristics are related to interaction with internal audit, fees paid to the external auditor, auditor selection (e.g., [Vermeer, Raghunandan, & Forgiione, 2009](#); [Abbott et al., 2004](#); [Carcello et al., 2002](#); [Raghunandan, Read, & Rama, 2001](#); [Abbott, Parker, & Peters, 2002](#)), it is still not known how the characteristics of the AC (number of members, expertise of audit committee members, independence, and number of meetings) are related to the implementation of internal audit recommendations. Consequently, this study extends the literature, specifically in terms of how AC characteristics influence audit recommendations.

2.1. Independence of the audit committee

The importance of AC independence is highlighted in the [Financial Reporting Council \(FRC\) \(2012a\) Guidance on Audit Committee](#), which states:

the board should establish an audit committee of at least three, or in the case of smaller companies two, independent non-executive directors. In smaller companies the company chairman may be a member of, but not chair, the committee in addition to the independent non-executive directors, provided he or she was considered independent on appointment as chairman.

AC independence promotes greater effectiveness in the monitoring of internal controls and a firm's financial reporting ([Barua et al., 2010](#)), since members are more likely to want to preserve their own reputation, less likely to be influenced by the wishes of others whose interests might be served by partisan reporting, and more likely to require higher audit quality ([Abbott & Parker, 2000](#); [Carcello & Neal, 2000](#)). The need to sustain personal reputations and to avoid risks associated with litigation arising from incorrect reporting, predisposes members who can act independently to require more assurance, thereby prompting greater investment in the IAF. [Mat Zain et al. \(2006\)](#) found that a more effective contribution to the

external audit is possible when the AC is independent. Scarbrough, Rama, and Raghunandan (1998) provide evidence of a greater likelihood of frequent meetings between independent ACs and the chief audit executive, thus supporting and facilitating IAF's work, thereby enabling the AC to stay abreast of internal audit findings and expect greater implementation of its recommendations.

The tendency of independent ACs to demand deeper IAF scrutiny of organizational procedures enhances the scope of activities, improves internal controls, and makes the IAF more effective overall. Where AC members are independent, there is less encouragement for them to counter any mismanagement that might negatively influence a firm's financial performance. Hence, such ACs are predisposed to implement IAF recommendations. The following hypothesis is formulated:

H1. There is a positive relationship between independence of the audit committee and perceptions of implementation of internal audit recommendations.

2.2. Expertise of audit committee members

The Financial Reporting Council (FRC) (2012a) stipulates that the AC should have appropriate expertise, stating that "the board should satisfy itself that at least one member of the audit committee has recent and relevant financial experience". This requirement acknowledges up-to-date financial knowledge as essential for AC membership. Furthermore, the FRC emphasizes the expertise of external auditors, encouraging ACs to use this expertise whenever possible to improve their appreciation of the organization's risk management strategies. This requires ACs to take appropriate financial decisions, and undertake accurate cost-benefit analyses of operational decisions. Many such judgments are subjective and extensive consultation is useful in minimizing the associated pitfalls. Moreover, the AC requires knowledge and expertise for effective communication with internal and external auditors on the issue of controls and how to adequately recognize and address potential audit risks (McDaniel, Martin, & Maines, 2002). Clearly, the AC's responsibility can only be effectively discharged if its members are capable of liaising with the organization's entire audit function and ensuring proper implementation of internal and external audit recommendations.

Adel and Maissa (2013) confirm the positive influence on the interaction between the IAF and the AC in cases where AC members are knowledgeable. Mat Zain et al. (2006) showed a significant correlation between internal auditors' estimation of their contribution to the financial statement audit and the degree of accounting and auditing understanding possessed by AC members. Other researchers also find links between AC members' accounting expertise, and overall IAF effectiveness (including the quality of financial reporting) (e.g., Dhaliwal, Naiker, & Navissi, 2010; Naiker & Sharma, 2009; Krishnan & Visvanathan, 2008). The frequency of meetings between the AC and the Certified Internal Auditors (CIA) is found to be an important indicator of overall effectiveness by Raghunandan et al. (2001). Goodwin (2003) also finds a positive relationship between the expertise of AC members and their unhindered private access to the CIA. Hence, we argue that the presence of accounting and auditing expertise will enhance the implementation of internal audit recommendations. The following hypothesis is formulated:

H2. There is a positive relationship between the knowledge and experience of audit committee members in accounting, auditing and finance, and the perceptions of the implementation of internal audit recommendations.

2.3. Frequent meetings of the audit committee

The Financial Reporting Council (FRC) (2012a) stresses the frequency of meetings between the AC and internal auditors as a promoter of good communication. Specifically, the FRC recommends at least three meetings annually. Bedard, Chtourou, and Courteau (2004) perceive such frequency as an indicator of effectiveness, and DeZoort, Hermanson, Archambeault, and Reed (2002) observe the enhanced performance of members in this regard.

Previous research finds that a high frequency of such meetings minimizes opportunities for internal control and reporting problems (Naiker & Sharma, 2009; Zhang, Zhou, & Zhou, 2007; Abbott et al., 2004; Archambeault & DeZoort, 2001; DeFond & Francis, 2005), and provides greater support to the IAF (Raghunandan & Rama, 2007), which Barua et al. (2010) highlight includes positive outcomes for the IAF budget. Hence, we argue that greater implementation of internal audit recommendations occurs when the AC meets frequently. The following hypothesis is formulated:

H3. There is a positive relationship between the frequent meeting of the audit committee and perceptions of the implementation of internal audit recommendations.

2.4. Number of audit committee members

The Financial Reporting Council (FRC) (2012a) suggests that there should be a minimum of three members on the AC. More members may bring enhanced diversity and overall expertise that may reduce the need for large investment in the IAF. However, Barua et al. (2010) did not find a relationship between the budget for internal audit and the size of the AC. Nor did Abbott et al. (2002) find a relationship between poor financial reporting and the size of the AC. More recently, Adel and Maissa (2013) were unable to find a relationship between the size of the AC and its levels of interaction with the IAF.

Other researchers argue that increased size prompts more investment in the IAF and hence, increases the likelihood of IAF recommendations being implemented. Greater AC effectiveness is found to be associated with the number of members (e.g. Benjamin & Karrahem, 2013; Zaman et al., 2011; Callahan and Soileau, 2010; DeZoort et al., 2002). Some researchers observe that the status and authority of the AC within the organization is reflected by the number of members it contains (Kalbers & Fogarty, 1993; Benjamin & Karrahem, 2013). Khanchel (2007) notes the positive impact of a large AC on an organization's corporate governance, and Hamdan, Sarea, and Reyad (2013) extend this to include overall firm performance. Bigger ACs engage in quality discussion (DeZoort & Salterio, 2001; Dhaliwal et al., 2010), and allocate more resources to the IAF, consequently imposing more effective internal controls and enjoying more accurate financial reporting (Anderson, Mansi, & Reeb, 2004). Hence, the following hypothesis is formulated:

H4. There is a positive relationship between audit committee size and perceptions of implementation of internal audit recommendations.

2.5. Relationship between internal audit and the audit committee

The Financial Reporting Council (FRC) (2012a,b) *Guidance on Audit Committees* and *Corporate Governance Code* emphasize an effective working relationship between the AC and the IAF as essential to good corporate governance. The FRC *Guidance on Audit Committees*, and the Institute of Internal Auditors *Practice Advisory, Relationship with Audit Committee* highlight the role of ACs in relation to internal audit, pointing particularly to: meeting with the head of internal audit; involvement in appointing and dismissing the head of internal audit; monitoring and reviewing the work of the IAF, the adequacy of internal audit resources, and the risk management process. It is through liaison with the IAF that some AC members accumulate their understanding of risk management and the degree of effectiveness of internal controls (Arena & Azzone, 2009; Krishnan, 2005). With such understanding, committee members can establish a power base for the IAF within an organization, facilitating its ability to discharge its responsibilities (Beasley, Carcello, Hermanson, & Neal, 2009; Turley & Zaman, 2007; Gendron & Bedard, 2006). Following previous studies (e.g. Adel & Maissa, 2013; Arena & Azzone, 2009; Mat Zain et al., 2006; Raghunandan et al., 2001), this study focuses on three main aspects: (1) frequency of meetings between the AC and the Chief Internal Auditor (CIA); (2) AC involvement in the appointment and dismissal of the CIA; and (3) review of internal audit programs and procedures including the internal audit budget, and their reports on internal controls, co-ordination of activities with external auditors, and risk management processes.

2.5.1. Frequent meetings between the audit committee and chief internal auditor

Frequent meetings between the AC and the CIA provide the opportunity for regular and timely information exchange (Raghunandan et al., 2001). The committee can remain informed and able to facilitate internal auditors' work. Discussions on potential improvements to the financial reporting system can occur (Mat Zain et al., 2006), thereby enhancing the quality of corporate governance (DeZoort & Salterio, 2001).

2.5.2. Audit committee involvement in the appointment and dismissal of the chief internal auditor

Researchers argue that the CIA appointment should be free from senior management influence to ensure impartiality and remove fear of retaliation felt by internal auditors when they must report on poor managerial behavior (Christopher, Sarens, & Leung, 2009; Bailey, 2007). Mat Zain et al. (2006) note the decreasing influence of general management when the AC is involved in the appointment and removal of the CIA, and that knowledge of this amongst internal auditors increases their confidence in discharging their duties, especially those connected with sensitive matters. Hence, the AC's involvement in major decision-making concerning the CIA results in increased IAF empowerment, and in greater chance of its recommendations being implemented.

2.5.3. Involvement in reviewing the internal audit program and processes

The AC must review the organization's internal audit program and processes, to earmark sufficient resources for the IAF to discharge its obligations (Financial Reporting Council (FRC) (2012a), and to evaluate outcomes from IAF activities. Clearly, the amount of oversight by the AC influences opportunities for identifying the IAF program's strengths and weaknesses, and for ensuring that internal audit recommendations are properly acted upon.

Earlier research (Goodwin, 2003; Goodwin & Yeo, 2001; Raghunandan et al., 2001) proposed that the status of the IAF within the organization is enhanced with greater levels of interaction between the AC and the IAF, specifically when that interaction relates to the IAF's involvement in risk management. Abbott et al. (2010) and Carcello et al. (2005) demonstrate that AC involvement in budgetary matters brings greater investment in the IAF, and more attention to the work of internal auditors, since the committee can request internal auditors to amend internal control structures and/or to direct attention to particular areas of perceived high risk activity. The outcome of such engagement by the AC with the IAF is a stronger likelihood that IAF recommendations will be implemented. Hence, the fifth hypothesis:

H5. There is a positive relationship between the extent of audit committee interaction with the internal audit function and the perceptions of implementing internal audit recommendations.

2.5.4. Effectiveness of internal audit

The way in which the effectiveness of the IAF is evaluated is important. Some studies have focused on the extent to which internal audit complies with the *International Standards for the Professional Practice of Internal Auditing* (ISPPA) (Fadzil, Haron, & Jantan, 2005; Xiangdong, 1997; Spraakman, 1997). Some researchers (Cohen & Sayag, 2010; Frigo, 2002; Ziegenfuss, 2000; Barrett, 1986) have concentrated on the IAF's ability to satisfy auditees' needs, attempting to assess satisfaction levels in a direct way, whereas others (Arena & Azzone, 2009; Mihret & Yismaw, 2007; Van Gansberghe, 2005; Sawyer, 1995) have considered the degree to which IAF recommendations are endorsed and implemented, thus using an indirect measure.

According to the Institute of Internal Auditors (IIA), internal audit should provide "independent, objective assurance and consulting services designed to add value and improve an organization's operations ... the internal audit activity helps an organization accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of governance, risk management and control processes". Consequently, the IAF should assure the AC and senior management that all organizational processes and systems are appropriately designed to manage risk, and where necessary allow for changes to be introduced should they be required to meet this overall objective. The EIA is measured in this study as the percentage of recommendations suggested by the CIA and actually implemented by the auditees (see, e.g. Arena & Azzone, 2009; Mihret & Yismaw, 2007; Van Gansberghe, 2005).

3. Research method

Data was collected via a survey, from which a measure of internal audit recommendations was identified and regressed against AC characteristics. Consistent with much prior internal audit research (e.g. Abbott et al., 2010; Mat Zain et al., 2006; Carcello et al., 2005) our survey questionnaire was mailed to CIAs. A total of 542 questionnaires were sent to CIAs of UK companies listed on the London Stock Exchange. From this distribution, 188 (34%) responses were received. This response rate is reasonable when compared with rates achieved by previous studies. For example, Zaman and Sarens (2013), studying informal interaction between ACs and the IAF, achieved a response rate of 27.8% from CIAs in UK-listed companies. An Australian study by Leung, Cooper, and Perera (2011) focusing on the accountability structures and management relationships pertaining to the IAF, obtained a response rate of 21.4%. In the current study, questionnaires received after a reminder was sent were considered as late respondents, and subsequently functioned as a proxy for non-respondents. No significant differences were found when comparing the independent and control variables between early and late respondents, thus indicating no non-response bias¹.

In constructing the survey questions, we consulted instruments successfully used in previous studies, in keeping with the recommendations concerning research methodology found in Bryman and Bell (2007). The questionnaire was designed to obtain the perceptions of internal audit recommendations and AC characteristics, and comprised five sections. Section A gathered general information about respondents and their internal audit departments (academic qualifications, professional qualifications, work experience, and budgeting). Section (B) assessed AC characteristics. Section (C) focused on the interaction between internal audit and the AC. Section (D) concerned perceptions of the implementation of internal audit recommendations, and Section (E) focused on the extent of management support for internal audit.

3.1. Model

Consistent with prior research (e.g. Abbott et al., 2010; Mat Zain et al., 2006; Carcello et al., 2005), we estimate the following OLS regression equation to examine the association between AC characteristics and perceptions of implementation of internal audit recommendations:

$$\text{RECOMMEND} = b_0 + b_1 \text{ SUPPORT} + b_2 \text{ TENURE} + b_3 \text{ INDEPENDENCE} + b_4 \text{ EXPERTISE} + b_5 \text{ FREQUENCY} + b_6 \text{ SIZE} + b_7 \text{ MEETING} + b_8 \text{ APPOINT} + b_9 \text{ REVIEW1} + b_{10} \text{ REVIEW2} + b_{11} \text{ REVIEW3} + e_i$$

where RECOMMEND = perceptions of implementation of internal audit recommendations. (0 = internal audit recommendations have never been implemented to 100 = internal audit recommendations are always implemented). SUPPORT = management support for internal audit (1 = strongly disagree to 5 = strongly agree). TENURE = number of years the CIA has been in his/her position. INDEPENDENCE = number of independent members on the audit committee as a percentage of total number of members on the committee. EXPERTISE = audit committee members' knowledge-level relating to accounting and auditing (1 = poor to 5 = excellent). FREQUENCY = frequency of audit committee meetings. SIZE = number of audit committee members. MEETING = frequency of meetings between the audit committee and CIA. APPOINT = audit committee involvement in appointment and removal of CIA (0 = No, 1 = Yes). REVIEW1 = audit committee reviews internal audit program, plans, and budget (1 = strongly disagree to 5 = strongly agree). REVIEW2 = audit committee reviews internal audit's financial reporting, internal control, and compliance with law and regulations (1 = strongly disagree to 5 = strongly agree). REVIEW3 = audit committee reviews internal audit involvement in risk management, and scope restrictions (1 = strongly disagree to 5 = strongly agree).

Our control variables are based on the results of previous research (Alzeban & Sawan, 2013; Alzeban & Gwilliam, 2014; Cohen & Sayag, 2010; Mihret & Yismaw, 2007) which finds that management support is positively and significantly related

¹ Statistical testing was conducted to determine whether there were significant differences between the responses of early and late respondents. The t-tests indicated no significant difference between early (166 respondents) and late (22 respondents) in respect of measures of the variables of the study.

Table 1
Descriptive statistics.

Variables	Minimum	Maximum	Mean	S.D.
RECOMMEND	8	84	38.7	19.1
SUPPORT	1	5	3.7	0.78
TENURE	0.9	6	2.3	0.72
INDEPENDENCE	34%	100%	74%	14%
EXPERTISE	1	5	3.8	0.81
FREQUENCY	1	9	5.2	1.2
SIZE	2	5	4.1	1.4
MEETING	2	7	3.5	1.1
APPOINT	0	1	0.64	0.4
REVIEW1	2	5	3.2	1.1
REVIEW2	1	3	2.1	0.53
REVIEW3	2	5	3.4	0.92

to the implementation of internal audit recommendations. We also control for CIA tenure, believed to influence the quality of the IAF (see Pizzini, Lin, Ziegenfuss, 2011; Beasley et al., 2009; Walker, Shenkir, & Barton, 2002). The other nine variables in the regression model test the hypotheses as follows: INDEPENDENCE tests H1; EXPERTISE tests H2; FREQUENCY tests H3; SIZE tests H4; MEETING, APPOINT, REVIEW1, REVIEW2, and REVIEW3 test H5.

4. Results

4.1. Primary analysis

Table 1 presents descriptive statistics, indicating that 74% of ACs are comprised solely of independent directors, and that all ACs have at least one expert in accounting or auditing (with an average of 3.8). Sample ACs meet on average 5.2 times annually, with a minimum of 1 and a maximum of 9 meetings. Further, the average size of ACs is 4.1 directors. Sample ACs meet with the CIAs on average 3.5 times annually, and are involved in the decision to appoint and dismiss CIAs (0.64). Additionally, sample ACs are involved in reviewing internal audit programs, planning, and budgeting, and there is internal audit involvement in risk management. However, the average score for the AC's review of the IAF's financial reporting, internal control, and compliance with law and regulations, is somewhat low at 2.1.

Table 2 presents the correlation matrix for the dependent, independent, and control variables included in this study. Our dependent variable RECOMMEND is positively and significantly correlated with five variables $p < 0.01$ (SUPPORT, INDEPENDENCE, EXPERTISE, TENURE, APPOINT) and $p < 0.05$ (MEETING), consistent with prior studies (e.g. Barua et al., 2010; Naiker & Sharma, 2009; Raghunandan & Rama, 2007; Zhang et al., 2007; Abbott et al., 2004; Archambeault & DeZoort, 2001). Three variables are positively correlated with RECOMMEND but not significant $p > 0.05$ (FREQUENCY, REVIEW3, REVIEW1). Two variables have a negative association with RECOMMEND, REVIEW2 and SIZE ($p > 0.05$), consistent with prior studies (e.g. Adel & Maissa, 2013; Barua et al., 2010; Abbott et al., 2002).

Table 3 presents the regression results. The overall model is significant at $p < 0.01$, with an adjusted R^2 of .288. Coefficients on the control variables (SUPPORT $p < 0.01$ and TENURE $p < 0.05$) are significant. For our test variables, the coefficient on INDEPENDENCE shows a significant positive association (supporting H1) suggesting that the presence of independent AC members is associated with greater perceptions that internal audit recommendations are actually implemented. Further, the regression results suggest that INDEPENDENCE, among AC characteristics, contributed the most to RECOMMEND ($\beta = 0.306$). The regression results also indicate a significant association between perceptions of implementation of internal

Table 2
Pearson correlation coefficients for the variables.

	1	2	3	4	5	6	7	8	9	10	11	12
1 RECOMMEND	1.00											
2 SUPPORT	0.55**	1.00										
3 TENURE	0.43**	0.59**	1.00									
4 INDEPENDENCE	0.50**	0.35**	0.37**	1.00								
5 EXPERTISE	0.44**	0.43**	0.33**	0.53**	1.00							
6 FREQUENCY	0.02	-0.07	-0.23*	-0.20*	-0.20*	1.00						
7 SIZE	-0.12	-0.04	-0.15	-0.05	-0.09	0.22*	1.00					
8 MEETING	0.23*	0.02	-0.14	0.17	0.23*	0.02	-0.06	1.00				
8 APPOINT	0.25**	0.13	0.14	0.09	0.11	0.01	-0.05	0.16	1.00			
10 REVIEW1	0.12	0.09	0.04	0.01	0.15	-0.01	0.03	0.11	0.33**	1.00		
11 REVIEW2	-0.16	0.01	-0.03	-0.18	-0.17	0.21	0.05	-0.14	-0.36**	-0.26**	1.00	
12 REVIEW3	0.19	0.06	0.20	0.22*	0.07	-0.05	-0.08	0.13	0.27**	0.16	-0.19	1.00

* Correlation is significant at the 0.05 level.

** Correlation is significant at the 0.01 level.

Table 3
Regression results.

Variable	Expected sign	β . (Beta)	<i>t</i>	<i>p</i> -Value
Constant	4.596	0.000		
SUPPORT	+	0.351	3.244	0.000
TENURE	+	0.277	2.155	0.034
INDEPENDENCE	+	0.306	3.110	0.002
EXPERTISE	+	0.207	2.477	0.015
FREQUENCY	+	0.040	0.406	0.685
SIZE	+	-0.077	-0.989	0.325
MEETING	+	0.231	2.913	0.004
APPOINT	+	0.163	1.966	0.052
REVIEW1	+	0.004	0.052	0.958
REVIEW2	+	-0.119	-1.403	0.164
REVIEW3	+	0.147	1.723	0.088

$R^2 = 0.302$.

Adjusted $R^2 = 0.288$.

$F = 21.416$.

$p < 0.01$.

audit recommendations (RECOMMEND) and the extent of AC members' knowledge of accounting and auditing issues ($p < 0.05$), thus supporting H2. A positive coefficient indicates that the stronger the level of AC knowledge, the higher the likelihood that internal audit recommendations are implemented.

The coefficient of FREQUENCY is positive ($p > 0.05$), but not significant (does not support H3). However, the regression results indicate a negative association between the size of the AC (SIZE) and RECOMMEND, thus rejecting H4. This result suggests no relation between the size of the AC and perceptions of the implementation of internal audit recommendations. This negative relation is consistent with prior studies (e.g. Adel & Maissa, 2013; Barua et al., 2010) who found no association between the size of the AC and interaction with internal audit.

The regression results indicate partial support for H5, since while one dimension (MEETING) of AC interaction with internal audit is positively and significantly ($p < 0.01$) associated with RECOMMEND, three dimensions (APPOINT, REVIEW1, REVIEW3) are positively but not significantly associated with RECOMMEND, and one dimension has a negative association (REVIEW2). In detail, the results indicate that frequent meetings between the AC and the CIA are positively and significantly associated with perceptions of implementation of internal audit recommendations (RECOMMEND) $p < 0.01$. This suggests that the more the AC meets with the CIA, the more that committee will be informed about issues facing internal auditors, the more it will engage in discussion concerning the internal audit report and recommendations, and the more it will review and monitor management's responsiveness to internal auditors' findings and recommendations. Moreover, the results indicate that AC involvement in the appointment and removal of the CIA has a positive association with RECOMMEND ($p = 0.052$) suggesting that this involvement provides greater empowerment of the IAF and hence, generates greater perceptions of implementation of internal audit recommendations.

Overall, our findings indicate that independence of the AC, and AC members with knowledge of accounting and auditing, significantly influence the implementation of internal audit recommendations. These findings provide empirical support to those of Mat Zain et al. (2006) who found that internal auditors make a greater contribution to financial reporting when the AC is more effective (in terms of independence and auditing experts). Hence, it can be argued that the more effective the AC, the more able are the internal auditors to contribute to financial reporting, and more internal audit recommendations are implemented^{2,3}.

4.2. Further analysis

We examine the sensitivity of our results by including certain demographic variables (CERTIFICATIONS, TRAINING, SIZEIA, and BUDGET) in the model. The results remain robust when these demographic variables are introduced. The overall model is significant at $p < 0.01$, with an adjusted R^2 of 0.502. While further analysis indicates significant association at the level of $p < 0.01$ between perceptions of implementation of internal audit recommendations (RECOMMEND) and CERTIFICATIONS, the other three variables (TRAINING, SIZEIA, BUDGET) are also significant ($p < 0.05$). This suggests that these variables play a

² We also test whether the presence of an auditing expert on the AC has more effect on implementation of internal audit recommendations when the AC is independent (EXPERTISE \times INDEPENDENCE). We find that the coefficient on the interaction between EXPERTISE and INDEPENDENCE is positive and significant ($\beta = 0.344$, $p < 0.01$). This indicates that when AC members are independent and have auditing expertise, the implementation of internal audit recommendations increases.

³ Further, we test whether the presence of AC expertise has more effect on the implementation of internal audit recommendations when there is frequent meeting between the AC and CIA (EXPERTISE \times MEETING). We find that the coefficient on the interaction between EXPERTISE and MEETING is significant ($\beta = 0.282$, $p < 0.01$). This suggests that when the AC members have auditing expertise and meet frequently with the CIA, the implementation of internal audit recommendations increases.

complementary role in enhancing the implementation of internal audit recommendations⁴. Further, this result indicates that organizations that provide sufficient resources (in terms of size and budget) to the IAF may increase the rate of implementing internal audit recommendations. These results support those of Mat Zain et al. (2006) who found that the larger the size of the internal audit unit and the larger the proportion of internal audit staff with accounting and auditing experience, the greater the internal auditors' assessment of their contribution to the external audit. Therefore, it can be argued that the more resources possessed by the IAF, the greater the internal auditors' assessment of their contribution to the external audit, and the higher the number of internal audit recommendations implemented.

The sensitivity of our results is further examined by excluding non-significant variables. Results are robust even when excluding these variables. The overall model is significant at $p < 0.01$ with an adjusted R^2 of 0.433. Thus, all three AC characteristics (INDEPENDENCE, EXPERTISE, and MEETING) are significantly associated with RECOMMEND at $p < 0.01$.

5. Conclusion

This paper explores the impact of AC characteristics on the perceptions of implementation of internal audit recommendations. Our results provide evidence that the presence of specific characteristics (independence of the AC, expertise of AC members, number of meetings, and size of AC) influence perceptions of implementation of internal audit recommendations. Moreover, we demonstrate which characteristic contributes the most in this respect, with the presence of independent members on the AC is the greatest contributor. This suggests that ACs with independent members are more supportive of the IAF, and thus, more likely to effect better risk management within an organization.

These findings provide support for the results in Barua et al. (2010) showing that the composition and diligence of the AC are associated with investment in internal auditing. Furthermore, our findings provide support for those of Mat Zain et al. (2006) in relation to AC characteristics and internal auditors' assessment of their contribution to financial statement audits, which indicated that internal auditors make a greater contribution to the external audit when AC members are independent. Consequently, it can be argued that the presence of an independent AC promotes a higher incidence of perceptions of implementation of internal audit recommendations, and thus, a greater contribution from internal auditors to external audit.

We also show that CIA tenure influences perceptions of implementation of internal audit recommendations. CIAs with longer tenure are expected to be more informed about their organizations' internal environment and implementation of internal audit recommendations.

This study adds to the extant literature and provides information for regulators concerning the need for standards that address aspects of AC and internal audit liaison. An important contribution we make to the internal audit literature relates to the tenure of the CIA and perceptions of the implementation of internal audit recommendations.

This study is subject to certain limitations, which provide opportunities for future research. We gathered our data via a survey of CIAs and dealt with the perceptions of these personnel regarding the level of implementation of their recommendations by auditees. A survey with a sample of auditees might reveal a different picture both in terms of beliefs concerning the level of implementation of CIA recommendations, and the reality of the situation as measured by concrete changes to practice. Likewise, demographic factors such as age and gender, which this study did not attempt to capture, might be influential in terms of respondents' (whether CIAs or auditees) capacity to generate positive and/or negative perceptions of the efforts made to comply with recommendations. Another limitation is the fact that we focused on variables such as internal audit budget, size of internal audit, and involvement in CIA change, and explored whether these correlated with the implementation of internal audit recommendations. In respect of the last variable, whilst this study measured the AC's involvement in the hiring/dismissal of CIAs, it did not establish whether such change had actually taken place. Such changes might be a signal of improved/declining governance.

Opportunities exist for additional research to include a different respondent sample (i.e. auditees), to reflect their expectations toward the implementation of IAF recommendations, and to explore the same variables as in this study, or to explore the views of CIAs regarding implementation levels when other variables are considered. At the same time, future studies could usefully incorporate the demographic variables noted above.

References

- Abbott, L., & Parker, S. (2000). Auditor selection and audit committee characteristics. *Auditing: A Journal of Practice & Theory*, 19(2), 47–66.
- Abbott, L., Parker, S., & Peters, G. (2002). Audit committee characteristics and financial misstatement: A study of the efficacy of certain ribbon committee recommendations. Retrieved from (http://papers.ssrn.com/sol3/papers.cfm?abstract_id=319125).
- Abbott, L., Parker, S., & Peters, G. (2004). Audit committee characteristics and restatements. *Auditing: A Journal of Practice & Theory*, 23(1), 69–87.
- Abbott, L., Parker, S., & Peters, G. (2010). Serving two masters: The association between audit committee internal audit oversight and internal audit activities. *Accounting Horizons*, 24(1), 1–24.
- Adams, M. (1994). Agency theory and the internal audit. *Managerial Auditing Journal*, 9(8), 8–12.
- Adel, B., & Maissa, T. (2013). Interaction between audit committee and internal audit: Evidence from Tunisia. *The IUP Journal of Corporate Governance*, XII(2), 60–80.

⁴ For brevity, these results are not tabulated, but are available from the authors upon request.

- Alzeban, A., & Sawan, N. (2013). The role of internal audit function in the public sector context in Saudi Arabia. *African Journal of Business Management*, 7(6), 443–454.
- Alzeban, A., & Gwilliam, D. (2014). Factors affecting the internal audit effectiveness: A survey of the Saudi public sector. *Journal of International Accounting, Auditing and Taxation*, 23(2), 74–86.
- Anderson, R., Mansi, S., & Reeb, D. (2004). Board characteristics, accounting report integrity, and the cost of debt. *Journal of Accounting and Economics*, 37(3), 315–342.
- Archambeault, D., & DeZoort, F. (2001). Auditor opinion shopping and the audit committee: An analysis of suspicious auditor switches. *International Journal of Auditing*, 5, 33–45.
- Arena, M., & Azzone, G. (2009). Identifying organizational drivers of internal audit effectiveness. *International Journal of Auditing*, 13(1), 43–60.
- Bailey, J. (2007). Best practices for internal auditor independence. *Internal Auditing*, 22(2), 34–37.
- Barrett, M. (1986). Measuring internal auditing performance. *Internal Auditing*, 2, 30–35.
- Barua, A., Rama, D., & Sharma, V. (2010). Audit committee characteristics and investment in internal auditing. *Journal of Accounting and Public Policy*, 29, 503–513.
- Bedard, J., Chtourou, S., & Courteau, L. (2004). The effect of audit committee expertise, independence and activity on aggressive earning management. *Auditing: A Journal of Practice and Theory*, 23(2), 13–35.
- Bédard, J., & Gendron, Y. Y. (2010). Strengthening the financial reporting system: Can audit committees deliver? *International Journal of Auditing*, 14(2), 174–210.
- Benjamin, S., & Karrahem, K. (2013). A test of audit committee characteristics and free cash flows. *Corporate Ownership & Control*, 10(2), 611–626.
- Beasley, M., Carcello, J., Hermanson, D., & Neal, T. (2009). The audit committee oversight process. *Contemporary Accounting Research*, 26, 935–936.
- Bryman, A., & Bell, E. (2007). *Business research methods* (2nd ed.). Oxford: The US: Oxford University Press Inc.
- Cahill, E. (2006). Audit committee and internal audit effectiveness in a multinational bank subsidiary: A case study. *Journal of Banking Regulation*, 7(1/2), 160–179.
- Callahan, C., & Soileau, J. (2010). Influence of audit committee and internal audit function effectiveness on enterprise risk management adoption. In *American Accounting Association Annual Meeting and Conference on Teaching and Learning in Accounting* July–August, 2010, San Francisco, USA. Retrieved from (<http://aaahq.org/AM2010/abstract.cfm?submissionID=1892>).
- Cohen, A., & Sayag, G. (2010). The effectiveness of internal auditing: An empirical examination of its determinants in Israeli organizations. *Australian Accounting Review*, 20(3), 296–307.
- Carcello, J., & Neal, T. (2000). Audit committee characteristics and auditor reporting. *Accounting Review*, 75(4), 453–467.
- Carcello, J., Hermanson, D., Neal, T., & Riley, R. (2002). Disclosures in audit committee charters and reports. *Accounting Horizons*, 16(4), 291–304.
- Carcello, J., Hermanson, D., & Raghunandan, K. (2005). Factors associated with US public companies' investment in internal auditing. *Accounting Horizons*, 19(2), 65–80.
- Christopher, J., Sarens, G., & Leung, P. (2009). A critical analysis of the independence of the internal audit function: Evidence from Australia. *Accounting, Auditing & Accountability Journal*, 22(2), 200–220.
- DeFond, M., & Francis, J. (2005). Audit research after Sarbanes–Oxley. *Auditing: A Journal of Practice & Theory*, 24, 5–30. Supplement.
- DeZoort, F., & Salterio, S. (2001). The effects of corporate governance experience and financial reporting and audit knowledge on audit committee members' judgments. *Auditing: A Journal of Practice & Theory*, 20(2), 31–47.
- DeZoort, F., Hermanson, D., Archambeault, D., & Reed, S. (2002). Audit committee effectiveness: A synthesis of the empirical audit committee literature. *Journal of Accounting Literature*, 21, 38–47.
- Dhaliwal, D., Naiker, V., & Navissi, F. (2010). The association between accruals quality and the characteristics of accounting experts and mix of expertise on audit committees. *Contemporary Accounting Research*, 27(3), 787–827.
- Fadzil, F., Haron, H., & Jantan, M. (2005). Internal auditing practices and internal control system. *Managerial Auditing Journal*, 20(8), 844–866.
- Financial Reporting Council (FRC). (2012a). *Guidance on audit committees*. London: FRC. Retrieved from (www.frc.org.uk).
- Financial Reporting Council (FRC). (2012b). *The UK corporate governance code*. London: FRC. Retrieved from (www.frc.org.uk).
- Frigo, M. (2002). *A balanced scorecard framework for internal auditing departments*. Florida: The Institute of Internal Auditors Research Foundation. Altamonte Springs.
- Gendron, Y., & Bedard, J. (2006). On the constitution of audit committee effectiveness. *Accounting, Organizations and Society*, 31, 211–239.
- Goodwin, J. (2003). The relationship between the audit committee and the internal audit function: Evidence from Australia and New Zealand. *International Journal of Auditing*, 7, 263–278.
- Goodwin, J., & Yeo, T. (2001). Two factors affecting internal audit independence and objectivity: Evidence from Singapore. *International Journal of Auditing*, 5(2), 107–125.
- Hamdan, A., Sarea, A., & Reyad, S. (2013). The impact of audit committee characteristics on the performance: Evidence from Jordan. *International Management Review*, 9(1), 32–42.
- Kalbers, L., & Fogarty, T. (1993). Audit committee effectiveness: An empirical investigation of the contribution power. *Auditing: A Journal of Practice & Theory*, 12(1), 24–48.
- Khanchel, I. (2007). Corporate governance: Measurement and determinant analysis. *Managerial Auditing Journal*, 22(8), 740–760.
- Krishnan, J. (2005). Audit committee quality and internal control: An empirical analysis. *Accounting Review*, 80, 649–675.
- Krishnan, G., & Visvanathan, G. (2008). Does the SOX definition of an accounting expert matter? The association between audit committee directors' expertise and conservatism. *Contemporary Accounting Research*, 25(3), 827–858.
- Leung, P., Cooper, B., & Perera, L. (2011). Accountability structures and management relationships of internal audit: An Australian study. *Managerial Auditing Journal*, 26(9), 794–816.
- McDaniel, L., Martin, R., & Maines, L. (2002). Evaluating financial reporting quality: The effects of financial expertise vs. financial literacy. *The Accounting Review*, 77(Supplement), 139–167.
- Mat Zain, M., Subramaniam, N., & Stewart, J. (2006). Internal auditors' assessment of their contribution to financial statement audits: The relationship with audit committee and internal audit function characteristics. *International Journal of Auditing*, 18(1), 1–18.
- Mihret, D., & Yismaw, A. (2007). Internal audit effectiveness: An Ethiopian public sector case study. *Managerial Auditing Journal*, 22(5), 470–484.
- Naiker, V., & Sharma, D. (2009). Former audit partners on the audit committee and internal control deficiencies. *The Accounting Review*, 84(2), 559–587.
- Pizzini, M., Lin, S., & Ziegenfuss, D. (2011). The impact of internal audit function quality and contribution on audit delays. In *Paper presented at American Accounting Association Annual Meeting* August, 2011, Denver. Retrieved from (<http://aaahq.org/AM2011/abstract.cfm?submissionID=589>) and (http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1673490).
- Puri, R., Trehan, R., & Kakkar, H. (2010). Corporate governance through audit committee: A study of the Indian Corporate Sector. *IUP Journal of Corporate Governance*, IX(1 & 2), 48–56.
- Raghunandan, K., Read, W., & Rama, V. (2001). Audit committee composition, “Gray director”, and interaction with internal auditing. *Accounting Horizons*, 15(2), 105–118.
- Raghunandan, K., & Rama, D. (2007). Determinants of audit committee diligence. *Accounting Horizons*, 21(3), 265–280.
- Sawyer, L. (1995). *An internal audit philosophy*. *Internal Auditor*, August, 46–55.
- Scarborough, D., Rama, D., & Raghunandan, K. K. (1998). Audit committee composition and interaction with internal auditing Canadian evidence. *Accounting Horizons*, 12, 51–62.
- Soh, D., & Bennie, M. (2011). The internal audit function: Perceptions of internal audit roles, effectiveness, and evaluation. *Managerial Auditing Journal*, 26(7), 605–622.

- Spraakman, G. (1997). Transaction cost economics: A theory of internal audit. *Managerial Auditing Journal*, 17(7), 323–330.
- Stewart, J., & Kent, P. (2006). Relation between external audit fees, audit committee characteristics and internal audit. *Accounting and Finance*, 46(3), 387–404.
- Turley, S., & Zaman, M. (2007). Audit committee effectiveness: Informal processes and behavioral effects. *Accounting, Auditing & Accountability Journal*, 20, 765–788.
- Van Gansberghe, C. (2005). Internal auditing in the public sector: A consultative forum in Nairobi, Kenya, shores up best practices for government audit professionals in developing nations. *Internal Auditor*, 62(4), 69–73.
- Vermeer, T., Raghunandan, K., & Forgione, D. (2009). Audit fees at US non-profit organizations. *Auditing: A Journal of Practice & Theory*, 28(2), 289–303.
- Walker, P., Shenkir, W., & Barton, T. (2002). *Enterprise risk management: Putting it all together*. Altamonte Springs, FL: Institute of Internal Auditors Research Foundation.
- Xiangdong, W. (1997). Development trends and future prospects of internal auditing. *Managerial Auditing Journal*, 12(4/5), 200–204.
- Zaman, M. (2001). Turnbull—Generating undue expectations of the corporate governance role of audit committees. *Managerial Auditing Journal*, 16(5), 5–9.
- Zaman, M., & Sarens, G. (2013). Informal interactions between audit committees and internal audit functions: Exploratory evidence and directions for future research. *Managerial Auditing Journal*, 28(6), 495–515.
- Zaman, M., Hudaib, M., & Haniffa, R. (2011). Corporate governance, audit fees and nonaudit fees. *Journal of Business Finance & Accounting*, 38(1&2), 165–197.
- Ziegenfuss, D. (2000). Measuring performance. *Internal Auditor*, 57(1), 36–40.
- Zhang, Y., Zhou, J., & Zhou, N. (2007). Audit committee quality, auditor independence, and internal control weaknesses. *Journal of Accounting and Public Policy*, 26(3), 300–327.