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Are audit committee characteristics important to the internal audit budget in Malaysian firms?

¿Son las características del comité de auditoría importantes para el presupuesto de auditoría interna en empresas de Malasia?

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Abstract

An audit committee is viewed as an essential self-regulatory internal governance instrument that is expected to provide an oversight role over the entire process of financial reporting. An internal audit is also one of the corporate governance cornerstones that is essential for the effective monitoring of the operating performance of internal control. To ensure its effectiveness, the audit committee monitors the resources available to the internal audit, and internal control functions should be directly reported to the audit committee. This study analyses the effect of audit committee characteristics on internal audit budget in Malaysia, where data on internal audit budget is available and how well audit committee monitors the internal audit function is questionable. Our study also opens the door to an unanswered question, that is, whether an audit committee index is related to internal audit budget. Data of 96 companies listed on Bursa Malaysia for a three-year period, 2012-2014, was utilized to achieve this end. The regression results show that audit committee meeting and index are significantly and positively associated with internal audit budget. They also indicate that audit committee tenure has a significant and negative impact on internal audit budget. The findings of the study support the recent policy initiatives in relation to audit committee and internal audit. They also serve as a wake-up call to policy makers in requiring more committed and skilled members on the audit committee.

JEL Classification: M42; M41; G30; G39
*Keywords***:** Audit Committee Characteristics; Internal Audit Budget; Internal Audit Function; Malaysia

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Resumen

Un comité de auditoría es visto como un instrumento de gobierno interno de autorregulación esencial que se espera que proporcione un rol de supervisión durante todo el proceso de información financiera. Una auditoría interna es también una de las piedras angulares de gobierno corporativo que es esencial para el monitoreo efectivo del desempeño operativo del control interno. Para garantizar su eficacia, el comité de auditoría supervisa los recursos disponibles para la auditoría interna, y las funciones de control interno deben informarse directamente al comité de auditoría. Este estudio se propone analizar el efecto de las características del comité de auditoría en el presupuesto de auditoría interna en Malasia, donde los datos sobre el presupuesto de auditoría interna están disponibles y qué tan bien supervisa el comité de auditoría la función de auditoría interna es cuestionable. Nuestro estudio también abre la puerta a una pregunta sin respuesta, es decir, si un índice de comité de auditoría está relacionado con el presupuesto de auditoría interna. Los datos de 96 compañías enumeradas en Bursa Malaysia por un período de tres años, 2012-2014, se utilizaron para lograr este fin. Los resultados de la regresión muestran que la reunión y el índice del comité de auditoría están significativamente y positivamente asociados con el presupuesto de la auditoría interna. También indican que la tenencia del comité de auditoría tiene un impacto significativo y negativo en el presupuesto de auditoría interna. Los hallazgos del estudio respaldan las recientes iniciativas de política en relación con el comité de auditoría y la auditoría interna. También sirven como una llamada de atención para los responsables de las políticas al requerir miembros más comprometidos y capacitados en el comité de auditoría.

Códigos JEL: M42; M41; G30; G39
Palabras clave: Características del Comité de Auditoría; Presupuesto de auditoría interna; Función de auditoría interna; Malasia

Introduction

Following the accounting scandals, deliberate manipulations and fraudulent activities of some corporations such as Enron, Worldcom and Satyam that lead to accounting failure, internal auditing has increasingly become relevant as an important corporate governance mechanism (Carcello, Hermanson and Raghunandan, 2005; Coram, Ferguson and Moroney, 2008; Sarens and Abdolmohammadi, 2011). In response to these accounting failures, the Congress of United States passed into law the Sarbanes Oxley Act of 2002 (SOX, 2002). This significantly changed several issues related to corporate governance and corporate financial reporting. Particularly, it pushed for more focus on internal controls and internal auditing. Hence, it is likely that a number of companies have shifted their concentration towards internal auditing during this period. In addition, the Public Accounting Oversight Board (PCAOB) asserts that an outstanding benefit of its standard on auditing an internal control is encouraging companies to invest in competent and objective internal audit function (PCAOB, 2004). Moreover, statistics show that internal audit budgets and number of internal audit staff grew by over 10 percent between 2001 and 2002 in the US (Carcello et al., 2005).

In a same token, internal audit has become a very crucial component of global businesses. Internal audit is very important for companies as it offers services to the firm management such as monitoring compliance with government regulation and company policy, evaluating risk management, testing internal control as well as preventing fraud (Anderson, Christ, Johnstone and Rittenberg, 2012). In a survey done by the Malaysian Institute of Corporate Governance (MICG), the Institute of Internal Auditors Malaysia (IIAM) and Ernst and Young, internal auditors are found to be in the best position to comprehend and articulate the business practices of the company and they serve as consultants to lessen risk. By evaluating governance, control and risk management, internal audit can help an organization to fulfil its goal to improve the firm performance (Carcello et al. 2005).

Owning to the severe financial crisis of the year 2008, the need for sound governance system has been felt strongly (Bédard and Gendron, 2010). The agency theory suggests internal and external corporate governance mechanisms that alleviate the conflicts between managers and shareholders and reduce the agency costs (Jensen and Meckling, 1976). One of the corporate governance mechanisms is the audit committee. The audit committee is viewed as an essential self-regulatory internal governance instrument that is expected to provide an oversight role over the entire process of financial reporting, particularly the work of the internal control system and auditors (Blue Ribbon Committee (BRC), 1999; Hermanson and Rittenberg, 2003). The Blue Robin Committee (1999) considers the following characteristics expected from members of audit committee to be more active and diligent in overseeing financial reporting process and internal control: independence, financially educate, and meet regularly (BRC, 1999).

Based on agency theory and resources dependency theory, the presence of members who are independent in an audit committee improves the audit committee effectiveness in performing oversight duties. Independent audit committee directors are viewed by the market as professional members who are willing to facilitate advice and counsel (Sori, Ramadili, and Karbhari, 2009). Researchers argue that the independency of audit committee members increases the reliability and accuracy of financial reports of a firm (Abbott, Parker, and Peters, 2004; Dechow, Sloan, and Sweeney, 1995; McMullen and Raghunandan, 1996). Audit committee members with accounting background are more likely to understand accounting numbers and enhance the ability of audit committee in curbing management involvement in earnings management activities to cover self-interest behaviour (Chang and Sun, 2010). Furthermore, the BRC (1999) suggests an audit committee to meet frequently to effectively perform its oversight responsibilities. The number of meetings held by the audit committee is perceived to lead to transparent accounting information (Kent and Stewart, 2008). Finally, audit committee members with shorter tenure are more likely to perform oversight role effectively (Sharma and Iselin, 2005) as they are expected to challenge management decision (Barua, Rama, and Sharma, 2010; Boker and Goodstein, 1993).

In a move to guaranteeing the quality of financial reporting, the role of effective audit committee and internal audit system in enhancing the corporate governance and financial reporting outlook of the firm has been highlighted by several academic researchers (e.g. Puri, Trehan, and Kakar, 2010; Soh and Martinov-Bennie, 2011; Zain and Subaramaniam, 2007). An effective internal audit system assists the audit committee with: assertions concerning control; independent assessment of accounting procedures and practices; risk and fraud analysis (Hermanson and Rittenberg, 2003). Internal auditing also serves as a prized asset for the audit committee to meet its financial reporting obligations (Bishop, Hermanson, Lapides, and Rittenberg, 2000). On the other hand, the audit committee is responsible for reviewing the internal audit plan and making sure the scope of the internal audit activity is adequate. (Zain, Subramaniam, and Stewart, 2006). Moreover, Carcello et al. (2005) argue that an audit

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committee must exact some sort of control over the internal audit function to ensure whether the internal audit system plays effective monitoring role and provides assistance to the audit committee. This may be done by exercising control over the organization's resources set aside for internal audit.

Therefore, the aim of our study is to analyze the potential effect of audit committee characteristics (e.g. independence, expertise, diligence, tenure and audit committee index) on internal audit budget [1]. From complementary-side perspective, we conjecture that an audit committee would effectively monitor the resources invested in internal audit department to make sure the department works towards enhancing financial reporting process. As such, a positive relationship between audit committee and internal audit budget is expected. Alternatively, form substitution-side perspective, the existence of effective audit committee within a firm may decrease the need for a detailed assurance service from internal auditors. This may lead to a negative association between audit committee and internal audit budget. Generally, our results are broadly in tandem with the view that firms with effective audit committee may invest more in internal auditing to boost the confidence of investors concerning the quality of accounting information. However, since the study's results are somewhat preliminary in nature, they should be interpreted with caution.

Malaysian setting is well-suited to investigate in details the relationship between audit committee characteristics and investment in internal audit because of several reasons. First, in Malaysia, there are rising incidents of company mismanagement and failures, which indicates that there is immediate need of effective internal auditing in both public and private sectors (Ali, Saidin, Sahden, Rasit, Rahim and Gloeck, 2012). Examples include Transmile group Berhad, Genting Malaysian Berhad, and Tai Kwong Yokohama. Nevertheless, Ali, Chen and Radhakrishnan (2007) highlight the serious deficiencies and shortcomings of internal auditing of Malaysian companies. They argue that public and private institutions lack efficient internal audit personnel, internal audit competence and that the Malaysian government fails to provide adequate support and assistance for internal audit functions. Second, most audit committee members in Malaysian companies are appointed by controlling managers who run the business (Abdullah, Yusof, and Nor, 2010; Sori et al., 2009). This places a lot of doubt on the ability of audit committee to challenge the management decision.

Additionally, academic researchers argue that many Malaysian audit committees only act as a 'rubber stamp' and are only formed to comply with the requirement of Bursa Malaysia, as the Bursa Malaysia makes it compulsory for all public listed companies to have an audit committee (Abdullah et al., 2010; Zulkarnain and Shamsher, 2007). Third, according to the Revised Malaysian Code on Corporate Governance (Revised MCCG 2007), Malaysian firms are compulsorily obliged to consist of audit committee members with a mix of 2/3 independent directors and at least one of this mix should be an active member of an accounting association or body. Moreover, Bursa Malaysia, to boost the effectiveness of board and audit committee, requires the tenure of independent directors of Malaysian public companies should not exceed a period of nine years (Revised MCCG 2012). Finally, in 2009, Malaysian firms are required to disclose information on internal audit budget. This would enable the researchers to collect secondary data on internal audit budget as well as audit committee variables after the new requirements to test the hypothesized relations in the study.

Prior studies have looked at the role of audit committee characteristics in relation to audit fees (e.g. Abbott, Parker , Peters and Raghunandan , 2003; Carcello, Hermanson, Neal, and

Riley, 2002, Collier and Gregory, 1996), earnings management (Saleh, Iskandar and Rahman, 2007), audit report lag (Hashim and Rahman, 2011; Sultana, Singh, der Zahn and Mitchell 2015), audit risks (Bliss, Muniandy, and Majid, 2007; Muniandy, 2007) and timeliness of corporate financial reports (Abdullah, 2006). Our paper enriches the prior studies by introduce the influence of audit committee characteristics on internal audit budget. Moreover, a number of previous studies on internal audit have examined the relationship between audit committee characteristics and internal audit function attributes other than resources available to internal audit department (Abbott, Parker, and Peters, 2010; Zain et al., 2006). We contribute to the above studies by relating audit committee characteristics to internal audit budget. Finally, our research bears some similarities to the existing work of Barua et al. (2010) who link audit committee characteristics to internal audit budget. This study differs from theirs as it introduces a composite variable capturing several audit committee characteristics used by the researchers (i.e. independency, expertise, diligence, as well as tenure) in the form of an index and examines the index relationship with internal audit budget along with the other audit committee variables.

The other parts of the paper are structured as follows. The next section reviews prior literature and develops the hypotheses. Section 3 describes research methodology and Section 4 presents and discusses the main results. Additional analysis and sensitivity tests are summarized in Section 5, while the conclusion is presented in Section 6.

Literature review and hypothesis development

Audit committee independence and investment in internal auditing

The independency of audit committee members is a crucial factor that influences the efficiency of the committee in overseeing the process of financial reporting. According to Sharma and Iselin (2005) and Al-Mamun, Yasser, Rahman, Wickramasinghe, and Nathan (2014), audit committee should be composed of multiple independent directors because they care about their reputation and prestige. Based on the MCCG (Revised Code, 2007), the audit committee has to be structured fully by non-executive directors, with most of them being truly independent. Moreover, Ye, Carson, and Simnett (2011) argue that independent audit committee members are keystone for financial reporting process as they enhance the quality of financial statements of the firm. A review of literature indicates that the independency of audit committee improves the financial information quality through mitigating earnings management activities (e.g. Amar, 2014; Bradbury, Mak, and Tan, 2006; Saleh et al., 2007; Salleh and Haat, 2014; Siagian and Tresnaningsih, 2011).

However, there are two competing views concerning the potential association between audit committee independence and internal audit budget. Proponents of complementary hypothesis argue that independent audit committee directors may demand greater assurance for financial reporting process as they are more concerned about their reputation and litigation risk (Barua et al., 2010). Therefore, a positive relationship between the independency of audit committee and internal audit budget is expected. Audit fees literature suggests firms with effect audit committees demand a higher audit quality to effectively monitor financial reporting process (e.g. Abbott et al. 2003; Carcello et al., 2002; Vafeas and Waegelein, 2007).

On the other hand, opponents of complementary hypothesis consider audit committee with independent directors as effective governance system that can monitor internal controls and financial reporting process. Therefore, there would be less demand for additional assurance

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from internal auditors (Sarens, Abdolmohammadi, and Lenz, 2012) and an adverse association between the independency of audit committee and internal audit is expected. Because of these two competing arguments, the following non-directional hypothesis is stated:

H1: *There is relationship between Audit Committee Independence and investment in internal auditing.*

Audit committee expertise and investment in internal auditing

In addition to audit committee independence, expertise is generally regarded as a critical characteristic for an audit committee's effective operation (Baxter and Cotter, 2009). Researchers argue that investors are attracted towards firms which comprise of higher number of financial and accounting experts in the audit committee. This is due to audit committee directors with such expertise have capability to analyze financial statements as well as to recognize and understand the using of accepted standards of accounting (Carcello, Hermanson, and Ye, 2011). Schmidt and Wilkins (2012) posit that financial experts in audit committee provide significant value to customers by eliminating deceitful activities from the organization. The Sarbanes Oxely Act (2002) makes it mandatory for U.S. listed companies to include at least one financial expert in audit committee. Moreover, the MCCG (2012) requires Malaysian companies to have an audit committee with at least one member who should be a member of Malaysian Institute of Accounting (MIA).

Persons (2009) asserts that independent members of an audit committee with financial or accounting expertise are more likely to detect any financial misstatements or improper business transactions because they would need to comply with their own professional codes of ethics to maintain their reputation. Extant literature document that audit committee financial expertise enhances earnings quality (e.g. Baxter and Cotter 2009; Dhaliwal, Naiker, and Navissi, 2006) and attenuate earning management activities (e.g. Badolato, Donelson, and Ege, 2014; Bédard, Chtourou, and Courteau, 2004; Salleh and Haat, 2014). These results are in tandem with the agency theory argument that the presence of an audit committee member with accounting expertise reduces the likelihood of agency-principal conflicts and enhance the quality of financial reports.

However, there are two competing arguments on how an audit committee with accounting and financial experts may influence the resources available to internal audit department. Proponents of complementary hypothesis argue that audit committees with accounting and financial experts, in order to protect their reputation, are more vigilant in safeguarding and keeping watch of financial reporting process (Persons, 2009). Since audit committee directors with accounting expertise are more likely to understand accounting figures and uncover management fraud, the presence of such members in the audit committee may result in more work for internal audit function (Barua et al., 2010). Extant studies provide evidence of firms which comprise of an audit committee with accounting expertise to demand a higher audit quality and, thus, pay higher audit fees (Vafeas and Waegelein , 2007; Abbott et al., 2003; Goodwin-Stewart and Kent, 2006). Therefore, a positive association between audit committee expertise and internal audit budget is expected.

Advocators of substitution hypothesis argue that accounting expert members in an audit committee improves the effectiveness of internal control and financial reporting quality. Therefore, the presence of such members in the audit committee may minimize the need for more assurance provided by internal auditors. Zhang, Zhou and Zhou (2007) and Hoitash, Hoitash and Bédard (2009) assert that situations where there exists members with expertise in accounting working in the audit committee, there is bound to be fewer cases of internal control problems, suggesting that investment in the internal audit function might not be necessary. Moreover, Barua et al. (2010) provide empirical evidence that internal audit budget decreases as the number of audit expertise directors in audit committee increases. Given these two competing viewpoints, our study states the following non-directional hypothesis:

H2: *There is relationship between Audit committee expertise and investment in internal auditing.*

Audit Committee Meeting and Investment in Internal Auditing

Theoretically, the agency theory posits that the agency conflicts between shareholders and managers can be addressed through increased activity by the audit committee (Kent and Stewart, 2008; Li, Mangena and Pike, 2012). The greater frequency of audit committee meeting allows for better communication between audit committee and external auditors, thereby making the audit committee to be more effective (BRC, 1999; Zaman, Hudaib, and Haniffa, 2011). Moreover, when the meetings are held frequently, more issues such as risk management, internal accounting controls and financial reporting process can be discussed in detail (Abbott et al., 2003; Saleh et al., 2007). Prior studies found that such organisations with frequent audit committee meetings to indulge less in earnings management activities. They also pointed out that meeting frequently by the audit committee reduces the possibility of receiving a qualified audit opinion (e.g. Farinha and Viana 2009; Pucheta-Martinez and Fuentes, 2007; Xie, Davidson, and DaDalt, 2003).

However, there are two contradicting arguments on the association between audit committee meeting and the investment in internal audit function. Proponents of complementary hypothesis argue that a diligent audit committee (i.e the committee that meets frequently) is anticipated to support the internal audit activities as it is more focussed on the internal control procedures in place and the process of financial reporting (Barua et al., 2010; Raghunandan and Rama, 2007). Barua et al. (2010) and Anderson et al. (2012) suggest that an audit committee with frequent meetings will be able to control the tendency of financial misreporting and as such will demand more investment in internal audit budget. Moreover, Raghunandan, Read and Rama (2001) and Sarens (2009) argue that an active audit committee could consider the internal audit function as a necessary source of information to carry out its monitoring responsibilities, thus the audit committee may push for better staffed internal audit function. As such, audit committee meeting is projected to have a positive impact on internal audit budget.

On the other hand, advocators of substitution hypothesis allege that an audit committee that meets often is perceived to effectively cater for internal control problems and issues with financial report (Sarens et al., 2012). Therefore, the need for internal auditors to provide more assurance about financial reporting quality is minimized. Because of these competing arguments, the following non-directional hypothesis is stated:

H3: *There is relationship between Audit committee meeting and investment in internal auditing.*

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Audit committee tenure and investment in internal auditing

There are two contradictory arguments with respect of the effect of audit committee tenure on investment in internal audit function. The first argument is that a longer tenure will enable audit committee members to accumulate more knowledge about the firm they work with which may facilitate the members' ability to effectively manage the risks facing the company (Kor and Mahoney, 2000) and ensure voluntary ethics disclosure (Othman, Ishak, Arif, and Aris, 2014). A long-term relationship with client is crucial for the audit committee to understand specific knowledge about the client's accounting system, internal control, operations as well as the client's industry features (Boone, Khurana, and Raman, 2008). A review of literature indicates that firms with longer audit committee tenure are more likely to receive a clean audit report (e.g. Deis and Giroux, 1992; Copley and Doucet, 1993; Shafie, Hussin, Yusof, and Hussain, 2009) and report higher financial reporting quality (e.g. Dhaliwal, Naiker, and Navissi, 2010; Yang and Krishnan, 2005). Given that the presence of directors with longer tenure may enhance the monitoring duties of the audit committee, the need for internal auditing to attain effective internal controls and address financial reporting issues would be less likely. Chan, Liu, and Sun (2013) conclude that firms with audit committee members who have served for an elongated period have a lower need for audit effort and, therefore, pay lower audit fees. Moreover, Barua et al. (2010) provide evidence that there is an inverse relationship between average audit committee tenure and investment in internal audit.

A counter-argument is that too long service on the audit committee may lead to audit committee members becoming less vigilant or more permissive of management self-interest actions (Rickling, 2014). Sharma and Isselin (2012) document a significant positive association between the tenure of the independent audit committee members and financial misstatements suggesting that directors with longer tenure may not exercise independent judgment. Because of these contradictory arguments, our study states the following non-directional hypothesis:

H4: *There is relationship between Audit committee tenure and investment in internal auditing.*

Audit committee index and investment in internal auditing

Academic scholars argue that traditional measures of audit committee effectiveness (e.g audit committee independence, expertise, meeting and tenure) do not guarantee an effective audit committee as these mechanisms complement each other and taking one variable and ignoring the other will render the audit committee ineffective (Connelly, Limpaphyom, and Nagarjan, 2012; Lara, Osma, and Penalva, 2007). An empirical study concludes that the independency of audit committee alone could not deter earnings management activities conducted by Malaysian firms, unless the audit committee meets frequently (Saleh et al., 2007). Moreover, a number of studies on audit fees have been motivated to use a composite index to assess the effectiveness of audit committee (Lisic, 2014; Zaman et al., 2011). The common conclusion from the studies is that the composite index can capture the effectiveness of audit committee to monitor financial reporting process and reduce audit fees.

This study adopts four characteristics (i.e independency, expertise, vigilance, and tenure) to represent the effectiveness of audit committee. An audit committee with such characteristics would be expected to provide more effective monitoring role over internal controls and financial reporting issues. This may lead to place a greater demand on internal auditing to mitigate

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control and financial risk that may encounter the firm. However, based on the substitution hypothesis, the presence of audit committee with independent, expert, vigilant and less tenure members may reduce the need for assurance provided by internal auditors. Hence, given these two competing viewpoints, the following non-directional hypothesis is stated:

H5: *There is relationship between audit committee index and investment in internal auditing*.

Data collection and model estimation

Data collection

The initial sample of the study consists of top 100 companies listed on Bursa Malaysia based on the 2014 market capitalization. Our study observes the firms over a three-year period (i.e. from 2012 to 2014). These firms were selected because they are more likely to have complete internal audit and audit committee data. The reason for commencing with year 2012 was because it is considered as a recent year after Malaysian companies, in year 2009, are required to disclose information on internal audit function. Moreover, Malaysian Code of Corporate Governance has introduced new recommendations for audit committee in 2012. The reason for concluding with year 2014 is because it was the last year with available data as at time this research was conducted. Firms with missing financial and internal audit data for sample period are excluded. Table 1 summarizes the sample selection procedure. On one hand, data pertaining to audit committee and internal audit variables were hand collected from the respective annual reports of sample firms. Audit committee variables include audit committee independence, meetings, expertise, tenure, and index while internal audit variables are internal audit budget and source arrangement. On the other hand, financial data (firm size, leverage, inventory, and operating cash flow) were extracted from financial database "DataStream". We deliberately did not exclude financial companies to avoid dealing with small sample size data. Moreover, prior academic works have included financial firms as they found the firms to have internal audit function (Carcello et al., 2005; Sarens et al., 2012). However, our study controls for financial companies to ensure the study results are not driven by these companies. Table 2 presents the distribution of the sample firms according to Bursa Malaysia classification.

Table 1
Derivation of Sample

Criteria	**No. of firms**
Top100 companies based on market capitalization for 2014	100
Less:	
companies with incomplete data on firm size	(1)
Companies with incomplete data on internal audit function	(1)
companies with incomplete data on inventory	(2)
year * 3	3
Final Observations	288

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Table 2
Bursa Malaysia Sector Representation of the Sample Firms

Industry	**No. of firms**	**No. of firm-years**	**Percentage (%)**
Consumer product	13	39	14
IPC	1	3	1
Construction	1	3	1
Trading/services	31	93	32
Properties	5	15	5
Plantation	14	42	15
REITs	7	21	7
Hotels	1	3	1
Financial	13	39	14
Industrial products	10	30	10
Total	96	288	100

Model Estimation

Our study models internal audit budget as a function of audit committee and a set of control variables as follows:

$$IAFNV = \beta_0 + \beta_1 ACIND_{it} + \beta_2 ACEXP_{it} + \beta_3 ACMEET_{it} + \beta_4 ACTEN_{it} + \beta_5 ACINDX_{it} + \beta_6 ACSIZE_{it} + \beta_7 LEV_{it} + \beta_8 INVEN_{it} + \beta_9 OCF_{it} + \beta_{10} SIZE_{it} + \beta_{11} IAFSOU_{it +} \beta_{12} INDS_{it} + \beta 13 YERit + \varepsilon_{it}$$

IAFNV equals the natural log of the const born by the Internal Audit Function (IAF). ACIND equals the proportion of independent audit committee members to the total number of audit committee members. ACEXP equals the proportion of audit committee members who have accounting or auditing qualification to the total number of audit committee members. ACMEET equals the natural log of the number of audit committee meetings. ACTEN equals the average tenure of audit committee members. We develop an audit committee index (ACINDX) through aggregating the scores of audit committee mechanisms tested in this paper. This is because we want to analyze whether the index can better capture the ability of the audit committee mechanisms to control and monitor the fund assigned to internal audit function. Table 3 shows the incorporated mechanisms and scores attached to them. The index ranges from zero to four. A higher index score indicates audit committee effectiveness, with an ACINDX of four being the highest.

Table 3
Audit committee Index (ACINDX) components

Items	Score
ACIND	1 for firms with above sample median ACIND for the year and 0 otherwise
ACMEET	1 for firms with above sample median ACMEETING for the year and 0 otherwise
ACEXP	1 for firms with above sample median ACEXP for the year and 0 otherwise
ACTEN	1 for firms with below sample median ACTEN for the year and 0 otherwise

We include a set of control variables that have been investigated in prior literature (Barua et al., 2010; Carcello et al., 2005). Following the literature, we include SIZE in our regression models to control for firm size (Al-Dhamari, Ku Ismail and Al-Gamrh, 2016). Our study measures SIZE by the log of a firm' total assets. Highly leveraged firms report financial information of low quality as managers of these firms manipulate earnings to hide the true performance of the firms (Sweeney, 1994). Academic literature provides evidence that an increased proportion of debt may lead to higher investment in internal audit function (Carcello et al., 2005). As such, we include LEV (i.e. leverage measured by total debt to total assets) to control for information risk. Moreover, it has been argued that the need for better monitoring by an effective internal audit increases with a firm complexity (Ramamoorti, 2003). Therefore, we include INVEN (i.e. inventory measured by total inventory to total asset) to reflect complexity of firm operations. A higher level of operating cash flow may raise agency problem as managers of higher cash flow firms are expected to squander the cash in projects that only serve the managers' self-interest and secure their control over the firm resources (Jensen, 1986). As such, an audit committee of firm with higher cash flows is more likely to encourage and support the monitoring role of internal audit over the firm cash. Our study measures operating cash flow (OCF) by cash from operations to total assets. Barr and Chang (1993) highlight the advantages of outside internal audit providers that include greater perceived independence, flexibility, cost savings and improved quality. Therefore, it is expected that firms with outsiders performing internal audit services to invest less in internal audit. We measure internal auditing source arrangement (IAFSOU) by the dummy variable, which takes the value of 1 if the IAF is outsourced and 0 otherwise (Al-Dhamari, Al-Gamrh, Ku Ismail, Haji Ismail, 2017). We finally include ACSIZE (i.e. audit committee size represented by the natural log of the number of audit committee members) to control for audit committee effectiveness.

We employ OLS estimations in our study. We use the Variance Inflation Factor (VIF) and correlation matrices to assess the multicollinearity problem [2]. Both tests indicate that the multicollinearity problem is not a major concern. We also utilize Cook-Weisberg and Wooldridge test to assess the potential of the existence of heteroscedasticity and autocorrelation problem respectively. Both tests indicate that the heteroscedasticity and autocorrelation problem are not a major concern of this study [3]. Finally, we winsorize ACEXP, ACTEN, LEV, INVEN and OCF at 5% and 95% to mitigate the potential normality problem that caused by outliers [4].

Empirical evidence

Descriptive statistics

Table 4 presents the descriptive statistics for all variables tested. The table shows the mean internal audit budget (IAFNV) is Ringgit Malaysian (RM) 3,985,917. The minimum (maximum) values of audit committee independence (ACIND) are 50% (100%) with an average value of 86%. The figures show that still some Malaysian firms are not following the Bursa Malaysia requirements of having an audit committee that should consist of at least 2/3 independent directors. While the average number of audit committee meetings (ACMET) is 6, the mean audit committee size (ACSIZE) of sample firms is 4. The mean value of audit committee expertise (ACEXP) is 33% with a minimum (maximum) of 0 (80%). The mean (median) tenure of audit committee directors (ACTEN) is 8.18 (7.67).

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This indicates that Malaysian firms are not obliged to Bursa Malaysian recommendation that the tenure of independent directors should not exceed a period of nine years. Audit committee index (ACINDX) ranges between 0 and 4 with an average value of 2.34. Leverage (LEV) has an average of 20.76%. As for inventory (INVEN), the mean value is 7% while cash flow from operations (OCF) has an average of 11%. The size of sample firms (SIZE) ranges between 345507 million and 639398 million. Approximately, 17% of the sample firms have outsourced internal audit function (IAFSOU). Table 5 reports the correlations between IAFNV and other variables under investigations. The absolute values of coefficients are lower than 0.80, alleviating any major concern for multicollinearity problem.

Table 4
Descriptive Statistics of Variables

Variable	**Min**	**Max**	**Mean**	**Sd**	**P75**	**Median**	**P25**
IAFNV (*RM'000*)	15	65000	3985.917	7969.947	3029	1145.5	399
ACIND	0.5	1	0.859	0.152	1	1	0.75
ACMEET	3	18	5.840	2.473	6	5	4
ACEXP	0	0.8	0.332	0.188	.4	.33	0.25
ACTEN	1.25	28.333	8.178	4.506	10.75	7.667	4.667
ACINDX	0	4	2.337	0.945	3	2	2
ACSIZE	3	6	3.667	0.783	4	3	3
LEV (%)	0	78.65	20.759	16.515	30.635	19.825	6.74
SIZE (*RM'000*)	345507	639398006	29935886.8	93213864.3	14908202.8	52533478	2407680
INVEN	0	0.545	0.069	0.090	.1115543	0.035	.0003
OCF	- 1.672	1.757	0.109	0.201	0.141	0.754	0.383
IAFSOU			N (mean)				
			0	1			
			240(83)	48(17)			

Notes: IAFNV: the cost born by internal audit function, ACIND: the percentage of independent audit committee members, ACMEET: the number of audit committee meetings, ACEXP: the percentage of audit committee members with an accounting or auditing qualification, ACTEN: the average tenure of audit committee member, ACINDX: audit committee index, ACSIZE: total number of audit committee directors, IAFSOU: 1 if internal audit function is outsourced and 0 otherwise, LEV: total debt to total assets, SIZE: total assets, INVEN: total inventory to total assets, OCF: operation cash flow to total assets.

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Table 5
Correlation Matrix

	IAFNV	ACIND	ACMEET	ACEXP	ACTEN	ACINDX	ACSIZE	IAFSOU	LEV	SIZE	INVEN	OCF
IAFNV	1	- 0.103*	0.327***	- 0.078	- 0.158***	0.000	0.352***	- 0.436***	0.056	0.588***	- 0.149***	0.032
ACIND	- 0.1^{0}6*	1	0.086	0.010	0.335***	0.460***	- 0.201***	0.124***	0.210***	- 0.099	0.160***	- 0.056
ACMEET	0.432***	0.057	1	- 0.011	- 0.163***	0.450***	0.150***	- 0.059	- 0.015	0.282***	- 0.189***	- 0.075
ACEXP	- 0.098*	0.084	- 0.061	1	0.107	0.414***	- 0.253***	- 0.062	- 0.019	- 0.089	0.049	0.051
ACTEN	- 0.181***	0.327***	- 0.189***	0.1082*	1	- 0.227***	- 0.149***	- 0.086	0.232***	- 0.069	0.059	- 0.100*
ACINDX	- 0.002	0.468***	0.327***	0.340***	- 0.236***	1	- 0.303***	0.123***	0.006	- 0.021	0.047	0.034
AC SIZE	0.365***	- 0.249***	0.188***	- 0.174***	- 0.169***	- 0.301***	1	- 0.170***	- 0.060	0.141***	- 0.038	- 0.019
IAFSOU	- 0.43^{3**}*	0.130***	- 0.105	- 0.072	- 0.094	0.117***	- 0.170***	1	- 0.024	- 0.261***	0.048	- 0.077
LEV	0.018	0.202***	- 0.031	0.006	0.262***	- 0.012	- 0.093	- 0.039	1	0.252***	0.027	- 0.258***
SIZE	0.562***	- 0.073	0.419***	- 0.132***	- 0.059	- 0.044	0.151***	- 0.222***	0.199***	1	-0.216***	-0.427***
INVEN	- 0.097	0.142***	- 0.195***	0.129***	0.003	0.094	- 0.093	0.048	- 0.055	- 0.254***	1	0.129***
OCF	0.099*	- 0.080	- 0.035	0.040	- 0.097	0.011	0.011	- 0.098*	- 0.269***	- 0.404***	0.043	1

Notes: the upper diagonal of the matrix shows Spearman correlations and the lower diagonal demonstrates Person correlations. Significant at: *10, **5, and ***1 percent levels. Please see Table 4 for variable definitions.

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Regression results

The results of the OLS regressions are presented in Table 6 below. Evidently, the adjusted R^2 are 65% and 64% in the model 1 and 2, respectively. The F ratio is economically and statistically significant (P<0.00001) across the two models, indicating that the overall model fits the regression equation. The results also show that the independent and control variables could explain about 65% of changes in internal audit budget.

From Model 1 of the table, on one hand, the finding shows that there is a positive and significant relationship between ACMEET and investment in internal auditing ($\beta = 2.07$, $P<0.05$). This finding suggests that firms with frequent audit committee meeting invest more in internal audit function. It also consistent with the argument that an effective audit committee (an audit committee that meets frequently) increases the demand for more assurance required from the internal audit. The result also is in conformity with Barua et al. (2010) who found that an effective audit committee may demand a higher internal audit budget. On the other hand, ACTEN is significantly and negatively related to investment in internal auditing ($\beta = -2.50$, $P<0.05$). The coefficient of -2.50 implies that a 1% change in audit committee tenure results in a 2.50 reduction in internal audit budget.

This result also suggests that long-serving audit committee members with increased firm-specific knowledge reduce the need for having greater assurance from internal audit function. The finding is in line with Barua et al. (2010) who concluded that audit committee tenure is associated with lower internal audit budget. As appeared in Model 2 of the table, ACINDEX has a positive and significant impact on internal audit budget ($\beta = 2.51$, $P<0.05$). The result suggests that firms with effective audit committee invest more in internal audit. An effective audit committee, to manage financial misreporting risk, may demand for obtaining greater assurance from internal audit budget.

However, other audit committee characteristics including ACIND and ACEXP do not appear to have a significant impact on internal audit budget. The results suggest that audit committee independence and expertise have no monitoring role over resources available to IAF, which is in contradiction to the authors' expectations.

However, these findings are in line with Barua et al. (2010) who find that audit committee independence and accounting expertise are not significantly related to internal audit budget. A possible explanation for the insignificant association between audit committee independence and internal audit budget may be due to independent directors of audit committee are nominated and elected by the firm management. As such, the directors might not take deceive action against the management. Ismail, Dunstan, and Van Zijl (2010) argue that audit committee independence is not effective governance mechanisms in Malaysia because family members' involvement in the appointment of audit committee directors. Moreover, Chen and Nowland (2010) assert that outside directors in Asian family-owned firms are not truly independent monitor because the involvement of family group in the selection of outside directors.

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Table 6
Results of Regression Analysis

	Model 1				Model 2			
	Dependent variable: IAFNV				Dependent variable: IAFNV			
Variable	**Coefficient**	**t-Statistic**	**P-Val**	**VIF**	**Coefficient**	**t-Statistic**	**P-Val**	**VIF**
ACIND	0.228	0.54	0.590	1.36				
ACMEET	0.416	2.07	0.039***	1.48				
ACEXP	- 0.145	- 0.44	0.657	1.17				
ACTEN	- 0.039	- 2.50	0.013***	1.35				
ACINDEX					0.158	2.51	0.013***	1.16
ACSIZE	1.488	4.91	0.000***	1.22	1.886	6.23	0.000***	1.20
IAFSOU	- 0.907	- 5.54	0.000***	1.24	- 0.837	- 5.19	0.000***	1.18
LEV	0.006	1.35	0.178	1.43	0.003	0.70	0.486	1.27
SIZE	0.560	10.86	0.000***	1.48	0.617	12.91	0.000***	1.56
INVEN	3.143	3.41	0.001***	1.60	3.073	3.38	0.001***	1.54
OCF	4.443	6.58	0.000***	1.50	4.744	7.07	0.000***	1.46
INDSTRY	Controlled	Controlled	Controlled		Controlled	Controlled	Controlled	
YEAR	Controlled	Controlled	Controlled		Controlled	Controlled	Controlled	
Number of obs			288				288	
F(17, 270)			31.70				37.45	
Prob > F			0.000				0.000	
Adjusted R-squared			0.645				0.640	

Note: IAFNV: the natural log of cost born by internal audit department; ACMEET: the natural log of audit committee meetings; ACSIZE; the natural log of total number of audit committee directors, SIZE: the natural log of total assets, YEAR: is the year 2013 and 2014. Only five industry sectors are included into regression analysis. These sectors are consumer product, trading and services, finance, plantation and industrial product. The study excludes the remaining sectors reprehensive of the sample firms to avoid the dummy variable trap. Significant at: *10, **5, and ***1 percent levels. Other variables are previously defined.

Another plausible reason of insignificant results may be due that most public firms in Malaysia tend to comply with Bursa Malaysia's requirements only with the intention to avoid any punishment by the regulators who favour independent members. Abdullah et al. (2010) argue that audit committees of Malaysian firms lack rigidity as the establishment of the audit committee is simply to comply with Bursa Malaysia's requirements. Therefore, an audit committee with such characteristics is less expected to effectively work together with internal audit department so as to provide assurance about internal controls and monitor financial reporting process.

As for audit committee expertise, the possible explanation for insignificant finding may be the dominance of audit committee members without accounting and audit qualification. In this paper, the majority of cases have only one or two audit committee member who is certified accountant or a member of a professional accounting body. This is evident by Table 4 which reports that only 33 percent of audit committee members have accounting and audit qualification. Audit committee members who do not understand financial reporting details may

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not be helpful in detecting financial misstatement and effectively communicating with external as well as internal auditors to enhance the quality of financial reports.

Evidently, most of control variables have a significant impact on internal audit budget across the two models with the expected sign. For example, ACSIZE is positively and significantly associated with internal audit budget. This result supports the argument that large audit committees have a better link with environment, more capabilities, more experience and expertise which may increase the effective of the committees (Anderson et al., 2012) .Such audit committees may demand greater assurance from internal audit. Furthermore, SIZE has a significant and positive effect on internal audit budget. The result suggests that large firm invest more in internal audit. IAFSOU is negatively and significantly related to internal audit budget. The result implies that firms with outside internal audit providers invest less in IAF. INVEN and OCF have a positive and significant relation to internal audit budget. The results suggest that firms with higher level of inventory and operating cash flow are considered complex and, thus, demand greater monitoring by internal audit. LEV is the only control variable that has no significant effect on internal audit budget, although it has the expected direction.

Robustness checks

Two tests are conducted in this research to ensure the sensitivity and robustness of the main results reported earlier. The first test re-runs Models 1 and 2 using an alternative measurement for audit committee independence, operationlized by the dummy variable taking the value of 1 if audit committee 100% independence and 0 otherwise. It also re-estimates the models with different measurement for audit committee expertise, represented by the dummy variable assigned the value of 1 if audit committee has at least one member of accounting or auditing expertise and 0 otherwise. Table 7 demonstrates the results of the re-estimated models.

Evidently, the results reported in the table lend further support to those shown in the main analysis. For example, ACTEN has a negative and significant influence on internal audit budget, whereas ACMEET and ACINDEX are positively and significantly related to internal audit budget. As for ACIND and ACEXP, the two variables still have no significant impact on internal audit budget, indicating that the study results are robust and not sensitive to using of the new measurement of ACIND and ACEXP.

Secondly, in the main analysis, the natural logarithm of audit committee meeting and size were utilized to mitigate the normality problem. As a test of sensitivity, Models 1 and 2 were re-estimated with winsorizing ACMEET as well as ACSIZE at 5% and 95% to ensure that the study's findings are not driven by the type of transformation. The results of the re-estimated models are reported on Table 8. The table shows findings that are approximately the same as those from using the natural logarithm of ACMEET and ACSIZE. The results presented in the table also are in line with the study conclusion that ACTEN and (ACINDEX) are negatively (positively) associated with internal audit budget. Other variables still have equivalent significant level as the one reported in the main analysis.

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Table 7
Results of Regression Analysis using alternative measurement of audit committee independence and expertise

	Model 1			**Model 2**		
	Dependent variable: IAFNV			Dependent variable: IAFNV		
Variable	**Coefficient**	**t-Statistic**	**P-Val**	**Coefficient**	**t-Statistic**	**P-Val**
ACIND	0.048	0.37	0.711	-	-	-
ACMEET	0.455	2.25	0.025***	-	-	-
ACEXP	- 0.216	- 1.14	0.256	-	-	-
ACTEN	- 0.036	- 2.28	0.023***	-	-	-
ACINDEX	-	-	-	0.141	2.09	0.037***
ACSIZE	1.539	5.01	0.000***	1.687	5.79	0.000***
IAFSOU	- 0.918	- 5.62	0.000***	- 0.828	- 5.12	0.000***
LEV	0.006	1.37	0.173	0.003	0.67	0.501
SIZE	0.557	10.87	0.000***	0.607	12.58	0.000***
INVEN	3.190	3.53	0.000***	3.183	3.51	0.001***
OCF	4.417	6.57	0.000***	4.675	6.92	0.000***
INDSTRY	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled
YEAR	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled
Number of obs		288			288	
F(17, 270)		31.89			37.06	
Prob > F		0.0000			0.0000	
Adjusted R-squared		0.647			0.638	

Note: IAFNV: the natural log of cost born by internal audit department; ACMEET: the natural log of audit committee meetings; ACSIZE; the natural log of total number of audit committee directors, SIZE: the natural log of total assets, ACIND: 1 if audit committee is 100% independent and 0 otherwise; ACEXP: 1 if audit committee has at least one accounting or audit expert and 0 otherwise; YEAR: is the year 2013 and 2014. Only five industry sectors are included into regression analysis. These sectors are consumer product, trading and services, finance, plantation and industrial product. The study excludes the remaining sectors reprehensive of the sample firms to avoid the dummy variable trap. Significant at: *10, **5, and ***1 percent levels. Other variables are previously defined.

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Table 8
Results of Regression Analysis using winsorization of audit committee meeting and size

	MODEL 1			MODEL 2		
	Dependent variable: IAFNV			Dependent variable: IAFNV		
Variable	**Coefficient**	**t-Statistic**	**P-Val**	**Coefficient**	**t-Statistic**	**P-Val**
ACIND	0.277	0.66	0.508	-	-	-
ACMEET	0.066	1.90	0.058^{*}	-	-	-
ACEXP	- 0.143	- 0.44	0.663	-	-	-
ACTEN	- 0.039	- 2.48	0.014^{***}	-	-	-
ACINDEX	-	-	-	0.154	2.45	0.015^{***}
ACSIZE	0.427	5.13	0.000^{***}	0.521	6.24	0.000^{***}
IAFSOU	- 0.899	- 5.48	0.000^{***}	- 0.837	- 5.19	0.000^{***}
LEV	0.006	1.36	0.176	0.003	0.75	0.455
SIZE	0.565	11.00	0.000^{***}	0.619	12.96	0.000^{***}
INVEN	3.177	3.45	0.001^{***}	3.103	3.42	0.001^{***}
OCF	4.492	6.65	0.000^{***}	4.796	7.14	0.000^{***}
INDSTRY	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled
YEAR	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled
Number of obs		288			288	
F(17, 270)		31.67			37.46	
Prob > F		0.0000			0.0000	
R-squared		0.6660			0.6576	
Adjusted R-squared		0.6450			0.6401	

Note: IAFNV: the natural log of cost born by internal audit department; ACMEET: audit committee meetings; ACSIZE; the total number of audit committee directors, SIZE: the natural log of total assets; YEAR: is the year 2013 and 2014. Only five industry sectors are included into regression analysis. These sectors are consumer product, trading and services, finance, plantation and industrial product. The study excludes the remaining sectors reprehensive of the sample firms to avoid the dummy variable trap. Significant at: *10, **5, and ***1 percent levels. Other variables are previously defined.

Summary and conclusions

Extant research empirically documents that audit committee characteristics monitor resources available to internal audit department (Barua et al., 2010). Here, the study went one step further by exploring the association between audit committee index and the investment in internal auditing. It also extends prior literature that emphasizes solely audit committee characteristics in East Asian countries to an internal audit context. The findings of our study have some interesting practical implications. First, audit committee meeting and audit committee index were found to increase the internal audit budget. Second, resources available to internal audit department decrease as the average serving tenure of audit committee members increases. Third, audit committee expertise and independence have no significant impact on the investment in internal auditing. The results serve as alarm to regulators in Malaysia for requiring more independent and qualified audit committee members. Nevertheless, the overall results support the recent Malaysian requirements on internal audit and audit committee.

Like every other studies, this research has inevitable limitations. First, the study revolves around only the top 100 companies in Malaysia. This is due to the time and cost required to collect data on audit committee and internal audit variables (as they are hand collected). As such, the results found in the study may not be generalized to small companies. Future research can include larger sample size to allow for generalizable conclusion. Second, this study only emphasizes the role of audit committee over the resources available to internal audit function due to Malaysian companies are only required to disclose information pertaining to the cost of and sourcing arrangement of internal audit in their annual report. There are other factors that may affect the function of an internal audit which may, in turn, be linked to the effectiveness of audit committee. These factors that the audit committee can monitor include size of internal audit department, qualification of internal audit staff, availability of internal audit staff, internal audit organizational independence and internal audit department meetings. Perhaps, future studies may analyze the possible relationship between audit committee characteristics tested in our paper and the factors representing internal audit quality using primary data.

Third, this study only observes Malaysian companies due to data availability. It has been argued that compared to countries where establishing an internal audit function is not required by law, companies invest more extensive budgets for their internal audit function in countries where establishing internal audit function is required by the law (Sarens and Abdolmohammadi, 2011). As such, future studies may investigate the association between audit committee characteristics and internal audit budget in different settings, where (where not) internal audit function is required by the law.

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Notes

1. The terminologies of internal audit budget and investment in internal audit are used interchangeably in our study as both of them refer to the resources available to internal audit department.
2. Multicollonearity is considered present when the VIF value is higher than 10.
3. The Cook-Weisberg test accepts the null hypothesis that the variance of the error terms is homogeneous and free of the heteroskedasticity problem (=0.01, -value= 0.936 in Model 1 and=0.02, -value= 0.887 in Model 2). Moreover, the Wooldridge test accepts the null hypothesis that the error terms are not correlated and free of autocorrelation problem (=0.840, -value= 0.362 in Model 1 and=1.004, -value= 0.319 in Model 2)
4. Our study also winsorizes the variables at 1% and 99% and we found the same results.