

The association between CEO characteristics, internal audit quality and risk-management implementation in the public sector

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Published online: 20 July 2017
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Abstract This study examines the relationships between characteristics of the chief executive officer (CEO) and risk-management implementation in public-sector organisations in Malaysia. Two personality traits of CEOs (1) locus of control, and (2) risk-taking propensity are examined in this study. In addition, this study investigates the role of internal audit quality as a moderator to the relationship between CEO and risk-management implementation. Data were obtained from questionnaires administered to CEOs of federal and state statutory bodies in Malaysia. 55 samples were analysed using hierarchical multiple regression analyses. This study finds only the CEO's risk-taking propensity to be positively related to risk-management implementation. However, the internal audit quality is found to moderate the relationship between CEO's locus of control and risk-management implementation. The results suggest that appointing a CEO with the right traits, i.e. risk-taking propensity, and the strengthening the quality of internal audit can help governmental agencies to accelerate risk-management activities within their organisation.

Keywords Risk management · Chief executive officer · Internal audit · Upper echelons theory · Resource-based view

Introduction

Risk management is key in ensuring organisational success. Many large organisations have failed because they could not overcome the risks. Effective risk-management activities have also been identified as a useful mechanism to prevent

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fraud in organisations. This is evidenced by the enactment of the Sarbanes–Oxley Act in 2002 after the uncovering of the Enron and WorldCom scandals in the United States, where risk management was identified as an important component of the Act. Since then, research efforts have been escalated to finding ways to improve risk management in organisations, both in the public and private sectors. In Malaysia, the requirement for effective risk management for government agencies came in 1998, when the government issued a directive to implement risk management to curb unethical activities such as bribery and misconduct by government employees. However, to date, the implementation of risk-management activities is still low in these agencies.

The risk-management literature asserts that the head of organisation or chief executive officer (CEO) plays an important role and is fully responsible for the implementation of enterprise risk management in organisations (Australian Government 2004; Committee of Sponsoring Organisations of the Treadway Commission or COSO 2004). In addition, previous studies found that the quality of the board of directors and top management (e.g. Beasley et al. 2005; Gordon et al. 2009; Kleffner et al. 2003; Saeidi et al. 2012; Shenkir and Walker 2006; Daud 2011; Yazid et al. 2011) influence the implementation of risk-management activities. This study extends prior literature by examining the issue in depth and focussing on two personality traits of a CEO, namely locus of control and risk-taking propensity, to determine their relations to risk-management implementation in government agencies in Malaysia.

In addition, various professional and regulatory bodies assert that the internal audit function plays an important role in the risk-management activities of an entity: COSO (2004); the Institute of Internal Auditors (IIA 2004); the Institute of Internal Auditors Research Foundation (IIARF 2011); and the National Audit Department of Malaysia (2012). This is supported by previous studies (Aghghaleh et al. 2014; Beasley et al. 2005; Fraser and Henry 2007; Kassim et al. 2011a, b, c; Daud 2011). Nevertheless, most of these studies were conducted within the context of the private sector (e.g. Fraser and Henry 2007; Kassim et al. 2011a, b, c; Daud 2011) with only a few studies performed in the government sector (De Zwaan et al. 2007; Woods 2009). In general, the literature supports the argument that the internal audit function influences risk-management activities in an organisation. Based on this argument, this study extends prior studies by examining the moderating role of the internal audit function on the relationship between CEO characteristics and risk-management implementation in public-sector agencies in Malaysia.

Relevant literature

Risk management and Chief Executive Officer

Issues relating to the factors influencing the implementation of risk management have been widely studied by several researchers including Anuntaakalakul (2010), Beasley et al. (2005), Bowling and Rieger (2005), Desender (2007), Drew et al. (2006), Gordon et al. (2009), Mylrea and Lattimore (2008), Rosa (2007), Saeidi

et al. (2012), Shenkir and Walker (2006), Truter (2007), Daud (2011), Woods (2009) and Yazid et al. (2011, 2012). A review of prior studies reveals that one important factor that is associated with the implementation of risk-management activities is a top management team (Beasley et al. 2005; Desender 2007; Drew et al. 2006; Gordon et al. 2009; Shenkir and Walker 2006; Yazid et al. 2011). This finding is consistent with the argument set forth in upper echelons theory which suggests that the decision to implement organisational strategies is highly dependent upon the characteristics of the top management team, including their demographical and personality characteristics (Hambrick and Mason 1984; Hambrick 2007). Further, Sobel and Reding (2004), Reding et al. (2007), Australian Government (2004), COSO (2004) and IIA (2004) argue that risk management is an organisational governance component that is under the purview of top management.

The CEO is responsible for the implementation of the appropriate risk-management approach (COSO, 2004; IIA 2004, IARF 2011; Reding et al. 2007). According to Beasley et al. (2005), Desender (2007), Simkins and Ramirez (2008) and Walker et al. (2002), risk management will not be successfully implemented without full support from the top management of an organisation. Norlida and Isahak (2012) find the CEO to be one of the main factors contributing to risk-management implementation in organisations.

The decision by top management to implement risk management is obtained through a strategic decision-making process where the CEO plays an important role. A number of previous studies found that the characteristics of the CEO and top management team influence the organisation's strategic decision-making process (e.g. Lewin and Stephens 1994; Hambrick and Mason 1984; Nadkarni and Hermann 2010; Papadakis and Bourantas 1998; Papadakis et al. 1998; Papadakis and Barwise 2002; Papadakis 2006). Further, a CEO's personality characteristics are found to be related to the decisions regarding whether a particular strategy is to be implemented (e.g. Nadkarni and Hermann 2010; Papadakis et al. 1998; Papadakis and Barwise 2002; Papadakis 2006). However, to date, there is no empirical study that examines the relationship between the CEO's personality characteristics and risk-management implementation. Therefore, this study will fill the gap in the literature and examine this relationship with the level of risk-management implementation in the Malaysian public-sector agencies.

A seminal study by McCrae and Costa (1987) noted that there are five main personality traits, commonly known as the Five-Factor Model (FFM). Two personality characteristics derived from the Five-Factor Model (FFM) are often used to explain the relationship between CEOs and strategic decision making, being (1) locus of control, and (2) risk-taking propensity (Hiller and Hambrick 2005; Nadkarni and Hermann 2010; Papadakis et al. 1998; Papadakis and Barwise 2002; Papadakis 2006). Therefore, this study hypothesises the relationships of these two CEO personality characteristics with the implementation of risk management, in support of Papadakis's (2006) argument that CEOs do not have a dominant influence on the organisation's strategic decision making.

Risk management and internal audit

IIA (1999) states that internal audit should assist an organisation to accomplish its objectives by providing quality assurance and consultancy services to improve organisational effectiveness of risk management, control and governance processes. Wernerfelt's (1984) resource-based view explains the role of internal audit, as suggested by Swinkels (2012), and its relationship with organisation's performance (Conner 1991; Mahoney and Pandian 1992; Rumelt 1984). The resource-based view is also used to explain the relationship between internal audit and the CEO (Karsten and Gales 2009). Makhija (2003) found that a CEO plays an important role in creating value-added skills for the organisation. This is achieved through a subjective process and considerations by the CEOs, i.e. (1) to identify the most profitable use of resources and determine how resources are used, (2) to determine the combination of resources, which includes the ability of CEOs to use complementary resources, and (3) to enable the creation of resources (such as to increase the number of employees) depending on the organisation's activities (Lockett et al. 2009). Hence, the CEO will determine the size of internal audit (i.e. adequate number of internal auditors) that befits the needs of the organisation.

Several previous studies have looked at the role of internal auditing in the implementation of risk management (e.g. Buang 2011; Bloom et al. 2009; Ernst and Young, 2006; Goodwin-Stewart and Kent 2006; Hasnah et al. 2011; Kassim et al. 2011a; KPMG 2002; Sarens and Beelde 2006; Sarens 2009). For example, KPMG (2002) found that internal audit serves as a consultant in achieving operational efficiency, internal control and risk management, supported by Buang (2011) and Bloom et al. (2009). In addition, Sarens and Beelde (2006) and Goodwin-Stewart and Kent (2006) found a significant relationship between the internal audit role and commitment to the organisation in managing risk. Ernst and Young (2006) found that 62% of internal auditors in Australia and New Zealand who participated in the survey are involved in assurance of the effectiveness of risk-management implementation, while 47% of internal auditors are involved in the prohibited roles, i.e. involved in the development of the risk-management process. Recently, a study conducted by Kassim et al. (2011a) in Malaysia also produced similar results, whereby 25% of the respondents felt that internal audit could get involved in prohibited activities of risk-management implementation.

Even though COSO (2004), IIA (2004) and IIA (2011) assert that the implementation of risk management is the responsibility of management, De Zwaan et al. (2011), Ernst and Young (2006), Frasey and Henry (2007), Kassim et al. (2011a) found the inverse result, whereby internal audit was found to be responsible for successful implementation of risk management. Meanwhile, Beasley et al. (2005) and Daud (2011) found that internal audit moderates the relationship between the quality of board of directors and the implementation of risk management.

In Malaysia, Zamzulaila et al. (2006) suggested that the Malaysian government needs to revise the guidelines issued by the Treasury Department to take into account the evolving role of internal audit in the public sector, pertaining to the emphasis on risk-management issues. Meanwhile, Zamzulaila et al. (2007) found that internal audit of local government in Malaysia has shown good progress and started to implement

risk-based auditing. Kassim et al. (2011a) found that the role of internal audit in risk management of government-linked companies (GLCs) in Malaysia has a significant effect on risk-management implementation. This is in line with the Institute of Internal Auditors Malaysia or IIAM (IIAM 2011) and Malaysian Code on Corporate Governance (Malaysia 2012) that suggest internal audit activities in Malaysia focus on evaluating and improving the effectiveness of risk management. In the public sector, Circular No. 3 of 1998 from The Prime Minister's Department of Malaysia (Malaysia 1998) and the Malaysian Auditor General's Report Year 2011 (2012) also suggested that the CEO of Malaysian public-sector agencies must ensure that internal audit conducted an objective and independent assessment of risk management.

The evolving role of internal audit in risk management requires internal audit to have a certain quality so that it can be perform effectively (Azham et al. 2007; Mihret and Yismaw 2007). Sarens (2009) also argued that the ability of internal audit to provide assurance on the implementation of risk management is strongly influenced by internal audit quality. However, it is difficult to meet this need when there is human resource constraint (Azham et al. 2007). Malaysian Treasury Circular Number 9 of 2004 (Malaysia 2004) requires CEOs of public-sector agencies to ensure that an adequate number of internal auditors are in line with the size and activities of the organisation. In addition, the Auditor General of Malaysia has also suggested to the CEOs of all public-sector agencies to ensure that internal audit has adequate staff (adequate number of internal auditors) in terms of numbers, grades and expertise in order to perform their duties effectively and provide wider audit coverage (JAN 2008). Furthermore, Azham et al. (2009) found that shortage of internal auditors (i.e. small size of the internal audit function) renders internal audit unable to perform the scope of the audit in broader areas. The result of the study is consistent with Al-Twaijry et al. (2004) and Mazlina et al. (2006) who found that a larger size of the internal audit function allows a wider coverage of the audit. In addition, Anuntaakalakul (2010) finds that where there are more than 20 internal audit staff in the public-sector unit, they will be more successful in carrying out their duties when it comes to risk management. The role of internal audit in the implementation of risk management has also been debated in the public-sector auditor conference during 'Hari Audit Se-Malaysia 2011' (JAN 2011). This debate raised the role of internal audit in the implementation of risk management.

Therefore, internal audit quality (represented by adequate number of internal auditors) is one of the important factors that can contribute to the implementation of risk management. This study is to see whether internal audit quality interacts in the relationship between CEO's personality characteristics and the implementation of risk management.

Hypotheses

CEO roles in risk-management implementation

Upper echelons theory suggests that top management characteristics influence the decision to implement an organisation's strategy and then improve organisation's

performance (Hambrick and Mason 1984). Further, the literature suggests that personality characteristics of the CEO (i.e. as the centre top management figure) influence the decision to implement an organisation's strategy (David et al. 2012; Hambrick 2007). These views are supported by several previous studies which found CEOs' personality characteristics to be positively associated with the implementation of the organisation's strategy (Norlida and Isahak 2012; Nadkarni and Herrmann 2010; Papadakis et al. 1998; Papadakis and Barwise 2002; Papadakis 2006). This study measures two CEO's personality characteristics and their association with the decision to implement organisation's strategy: locus of control and risk-taking propensity.

Locus of control is one of the most popular measures of personality. It expresses an individual's perception of how much control she or he is able to exert over events (Rotter 1954; Papadakis 2006). A CEO's locus of control is likely to be associated with the decision to implement an organisation's strategy such as risk management. Previous studies such as Miller et al. (1982), Miller and Toulouse (1986), Nadkarni and Hermann (2010) and Papadakis (2006), found that the CEOs who possess the personality characteristic of locus of control will pay more attention to matters relating to innovations and new initiatives. They are also purported to engage in more proactive strategies, planning, and rational decision making (Lewin and Stephens 1994; Miller et al. 1982). In this regard, Papadakis (2006) found that CEO's locus of control is significantly associated with the decision-making process related to implementation of the new initiatives. Moreover, Nadkarni and Hermann (2010), Miller et al. (1982) and Papadakis (2006) found that the CEOs with locus of control show positive relations with the implementation of flexible strategy. Therefore, this study expects an association between CEO's locus of control and the implementation of the organisation's strategy towards achieving objectives, i.e. risk-management activities. This leads to the following hypothesis:

H1 The CEO's locus of control is positively related to risk-management implementation level.

CEO's risk-taking propensity is also likely to be associated with the decision to implement an organisation's strategy such as risk management. Risk-taking propensity describes an individual's attitude towards risk (Jackson 1976). Kitchell (1995), in studying the risk-taking culture of a company as opposed to the risk-taking mindset of an individual, suggested that it is positively associated with innovative decision making. Furthermore, Miller and Toulouse (1986), Hitt and Tyler (1991), Nahavandi and Malekzadeh (1993), Nooraie (2011) and Papadakis (2006) found that a CEO's risk-taking propensity is a significantly positive association with the decision-making process to implement an organisation's strategy. Even though Papadakis and Barwise (2002) found that the CEO's risk-taking propensity is not influencing the strategic decision-making process, it is significantly related to top management's aggressiveness in the decision-making process (i.e. aggressiveness is one of the top management team characteristics). This gives an assumption that the CEO's risk-taking propensity ends up forcing aggressive top management to make a decision, such as an aggressive decision to implement risk management. Therefore, this study expects an association between

CEO's risk-taking propensity and the implementation of the organisation's strategy towards achieving organisation's objectives, i.e. risk management. This gives rise to the following hypothesis:

H2 CEO's risk-taking propensity is positively related to risk-management implementation level.

Internal audit roles in risk-management implementation

From the resource-based view perspective (Wernerfelt 1984), Carmeli and Tisher (2004) suggest that internal audit is one of the critical elements of an organisation's intangible assets (resources) and its association with strategic management and organisation's performance. In this regard, Carmeli and Tisher (2004) found that internal audit is positively associated with organisation's strategy and performance, apparently helping the employees to focus on doing the right things and doing them right, through consulting, motivating, deterrence and process improvement. In addition, Swinkels (2012) viewed internal audit as valuable resources (i.e. contributory to efficiency and effectiveness of organisation operations) as well as the organisation's overall control system. Furthermore, according to Swinkels (2012), the resource-based view challenges internal audit to indicate their distinctive competencies and ascertain why it is part of the valuable resources pertaining to their roles and responsibilities.

Furthermore, in 1999, The Institute of Internal Auditors or IIA defined new internal auditing roles as

...an independent, objective assurance and consulting activity designed to add value and improve an organisation's operations. It helps an organisation to accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control and governance processes. (IIA 1999)

The above definition is designed to embrace the expanding role of internal audit, as in recent years, this profession has evolved from a narrow focus on internal control to include risk management and corporate governance (Brody and Lowe 2000; Goodwin-Stewart and Kent 2006; Walker et al. 2003). Walker et al. (2003) assert that internal audit can help organisations identify and evaluate risks, moving the profession into the front line of risk management. Subsequently, COSO (2004), IIA (2004), IIA (2011) and Reding et al. (2007) further clarify and describe the specific roles of internal audit in risk management which include (1) core internal audit roles, (2) legitimate internal audit role with safeguards and (3) roles internal auditing should not undertake.

Several researchers have studied the specific roles of internal audit in risk management, and they produced mix results (e.g. Beasley et al. 2005; De Zwaan et al. 2011; Ernst and Young 2006; Fraser and Henry 2007; Hajiha and Rafiee 2011; Gramling and Mayers 2006; Kassim et al. 2011a; Mohd Ariff et al. 2008; Sarens 2009; Daud 2011). For example, De Zwaan et al. (2011), Frasey and Henry (2007), Hajiha and Rafiee (2011), Kassim et al. (2011a) found that internal auditors are

involved in assurance activities and directly involved in activities that have been deemed unsuitable by the IIA (2004) and IIARF (2011) in relation to risk management. Meanwhile, Beasley et al. (2005) and Daud (2011) found that internal audit significantly moderates the relationship between the quality of the board of directors, the quality of chief risk officer and the implementation of risk management. Therefore, this study expects there will be a link between the quality of internal audit and the organisation's commitment to implement risk management. As internal auditors already possess good risk assessment skill sets and most have a reasonably broad understanding of risk principles (Hespenheide and Funston 2006), the implementation level can be expected to be high. This leads to the following hypothesis:

H3 The quality of the internal audit function is positively related to risk-management implementation level.

This research model suggests that internal audit quality is likely to be associated with the CEO's personality characteristics to influence the decision in implementing an organisation's strategy, such as risk management. This prediction is in accordance with the resource-based view, which suggests a relationship between the internal audit function and management pertaining to the organisation's strategy and performance (Swinkels 2012; Wernerfelt 1984; Carmeli and Tisher 2004).

A conceptual framework developed by Daud and Ahmad Shukri (2009), adapted from Beasley et al. (2005), has suggested that internal audit quality moderates the relationship between the organisation's internal characteristics (i.e. the quality of the board of directors and quality of chief risk officer) and the implementation of risk management. Daud (2011) found that there is a significant positive association between quality of internal audit which strengthens the relationship between the quality of board of directors and the quality of chief risk officer with the implementation of risk management. Therefore, this study expects that internal audit quality is a moderator to the relationships between CEOs' personality characteristics (i.e. locus of control and risk-taking propensity) and risk-management implementation in the public sector. This gives rise to the following hypotheses:

H4 Internal audit quality moderates the relationship between CEO's locus of control and risk-management implementation level.

H5 Internal audit quality moderates the relationship between CEO's risk-taking propensity and risk-management implementation level.

Hypotheses for the study are summarised in Fig. 1.

Based on the above discussion, the relationship between all variables can be explained in Hierarchical Multiple Regression models as follows:

$$\text{ERM} = \beta_0 + \beta_1 \text{LOC} + \beta_2 \text{RTP} + \varepsilon - \text{MODEL 1}$$

$$\text{ERM} = \beta_0 + \beta_1 \text{LOC} + \beta_2 \text{RTP} + \beta_3 \text{QIA} + \varepsilon - \text{MODEL 2}$$

$$\text{ERM} = \beta_0 + \beta_1 \text{LOC} + \beta_2 \text{RTP} + \beta_3 \text{QIA} + \beta_4 \text{LOC} \times \text{QIA} + \beta_5 \text{RTP} \times \text{QIA} + \varepsilon - \text{MODEL 3}$$

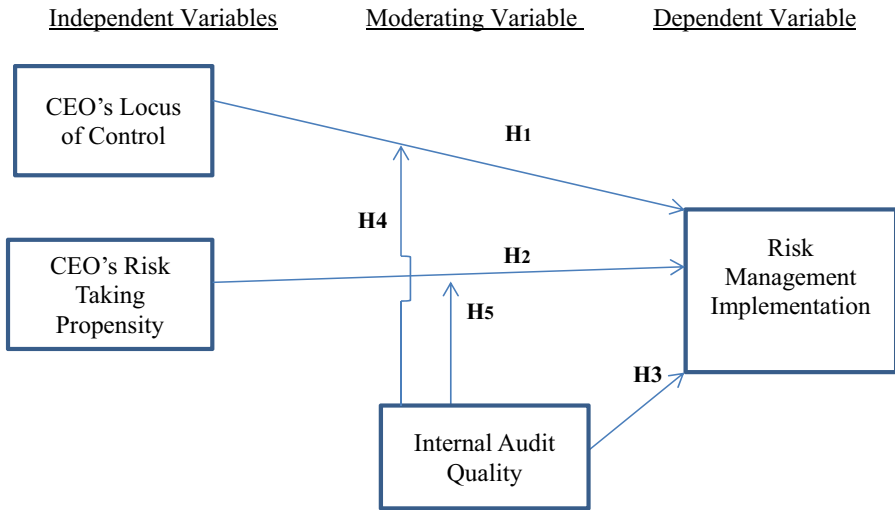


Fig. 1 Research framework

where ERM = risk-management implementation (dependent variable), LOC = locus of control (independent variable), RTP = risk-taking propensity (independent variable), QIA = internal audit quality (moderating variable).

Methodology

The population and sample

The sample comprises federal and state statutory bodies in Malaysia. There are 272 federal and state statutory bodies. Statutory bodies are chosen for the study because these agencies represent a significant group in the Malaysian public sector. These agencies enjoy a certain level of management autonomy where the heads of these agencies are given the leeway to enact separate financial regulations, approach and procedures, including those pertaining to risk-management approach and implementation. In addition, the CEO of these agencies can use their own accounting policies, as long as they are not in conflict with the generally accepted accounting standards, and are not strictly subjected to treasury guidelines compared to the other public-sector agencies. This condition suggests that the responsibility of managing risk and the accountability of actions or decisions made by the statutory agencies rest on top management or the CEO.

Research instruments

Data are collected through questionnaires. The measurement used to assess the implementation of risk management is adapted from the instruments used in Kassim

et al. (2011a). A total of 46 statements are used to measure risk-management activities in (1) planning, (2) implementation, and (3) monitoring phases.

Locus of control variable is measured using the instrument developed by Levenson (1972, 1981) whilst risk-taking propensity is based on the instrument developed by Gene (1993). Prior studies which used the same instruments to measure the above variables include Hiller and Hambrick (2005), Nadkarni and Herrmann (2010), Papadakis et al. (1998), Papadakis and Barwise (2002) and Papadakis (2006).

The size of the internal audit function is used to measure internal audit quality, consistent with prior studies conducted by Hajiha and Rafiee (2011), Azham et al. (2007), Arena and Azzone (2009), Carcello et al. (2005), Mazlina et al. (2006), Paape et al. (2003), Zakaria (2012) and Md Lasa (2010). Studies by Buijink (2000) find that a large number of internal auditors serving the function will have a positive effect on the function's effectiveness. Thus, adequate internal audit size is important to ensure that internal audit function is able to perform its role effectively (Buijink 2000; Md Lasa 2010). As a result, the size of the internal audit function is used in this study to measure internal audit quality. Size is determined from the ratio of natural logarithm of the number of internal auditors and natural logarithm of the number of employees as used in Paape et al. (2003), Arena and Azzone (2009) and Zakaria (2012).

Findings

This study applies hierarchical multiple regression analysis to test the hypotheses developed in the previous section. A sufficient response rate of 20.22% was obtained from the data collection procedure. Out of 272 questionnaires distributed, the total number of valid response is 55, which is within a reasonable minimum rate of respondents (Hair et al. 2007; Velicer and Fava 1998; Zeller 2006). The generally low response rate for risk-management studies is normal with the lowest ever obtained by Beasley et al. (2005) with a percentage of only 10.3% of respondents (175 respondents out of 1770 sampled), Hajiha and Rafiee (2011) with 57 respondents, and Norlida and Isahak (2012), with 55 respondents. In addition, the use of a small sample is noted in a prior study that employs multiple regression analysis such as Kassim et al. (2012) which analysed 61 samples.

The respondents were CEOs of federal and state statutory bodies in Malaysia as shown in Table 1. Based on Table 1, the numbers of respondents between the two categories of statutory bodies are similar, i.e. 29 (52.73%) from federal statutory bodies, and 26 (47.27%) from state statutory bodies.

Table 1 Number of respondents by category of statutory bodies

	Total no. of organisations	Number of respondents	Percentage (%)
Category			
Federal	124	29	52.73
State	148	26	47.27
Total	272	55	100.00

Table 2 Reliability analysis for independent and dependent variables

Variables	Number of items	Cronbach's Alpha (α)
CEO's personality traits		
Locus of control (first component)	3	0.789
Risk-taking propensity (second component)	3	0.643
Overall risk management		0.993
Risk management—planning	15	0.969
Risk management—implementation	24	0.989
Risk management—monitoring	7	0.969

The size of the organisation is represented by the total number of employees. The majority of statutory bodies are medium-sized organisations, i.e. 54.54% of respondents have employees less than 200 people. In addition, the majority of respondents, i.e. 60% have at least 1–3 internal auditors.

Reliability test

The Cronbach's alphas for the two independent variables scales are above the minimum accepted reliability of 0.60 as suggested by Sekaran (2005) and 0.70 as suggested by Hair et al. (2006), as shown in Table 2. The Cronbach's alpha for the dependent variable and its components (i.e. the planning, implementation and monitoring of risk management) are all above the minimum accepted reliability of 0.70 as shown in Table 2.

Hypotheses testing

Research hypotheses were tested using hierarchical multiple regression analysis. The regression analysis is subjected to the five assumptions that must be met before the analysis is carried out. The five assumptions cover the data-loss screening test, normality test, data outliers test, homoscedasticity test and multicollinearity test. The results obtained from the normality test (Table 3), multicollinearity test (Table 4) and homoscedasticity test suggest that all of the assumptions were met.

The z skewness and kurtosis values for all variables in the study are between ± 2.58 , and hence, all the variables are considered normal (Hair et al. 2010).

There appear to be no multicollinearity among the independent variables. Pearson correlation scores show that independent variables correlate at a low

Table 3 Results for normality test

Variables	Skewness	Kurtosis
Risk-management implementation	1.7596	-1.7190
Locus of control	-1.2789	0.2372
Risk-taking propensity	0.3680	-0.8535
Internal audit quality	2.3824	1.7449

Table 4 Results for Pearson correlation, tolerance and VIF values

Variables	LoC	RTP	IAQ
LoC	1.000		
RTP	0.309	1.000	
QIA	-0.048	0.034	1.000
Tolerance	0.899	0.904	0.978
VIF	1.113	1.106	1.023

LoC locus of control, *RTP* risk-taking propensity, *QIA* internal audit quality, *VIF* variance inflation factor

level—between 0.034 and 0.309. Hair et al. (2010) suggested that correlation of 0.9 or above indicates multicollinearity of the variables. In addition, the tolerance score of more than 0.1 and the VIF score below 10 confirmed that there are no multicollinearity issues among the independent variables.

To test for the homoscedasticity, Levene's test was conducted. The Levene statistic is not statistically significant at ($p > 0.05$) indicating homogeneity of the variances.

Table 5 shows the Hierarchical Multiple Regression results for hypotheses H1 and H2 (See Model 1), H3 (See Model 2), H4 and H5 (See Model 3). The results show that CEOs' risk-taking propensity is significantly related ($p < 0.05$) to the implementation of risk management (H2 is supported), while CEO's locus of control and the internal audit quality are not significantly related to risk-management implementation (H1 and H3 are not supported). In addition, the analysis supported the fourth hypothesis (H4), whereby the internal audit quality indicated a positive

Table 5 Results of the hierarchical multiple regression analysis

Dependent variable: risk-management implementation	Expected results	Model 1		Model 2		Model 3	
		Beta	Std err	Beta	Std err	Beta	Std err
Independent variables							
LOC	+	0.029	0.087	0.034	0.088	-0.441	0.230
RTP	+	0.154**	0.074	0.153**	0.074	0.409**	0.158
Moderating variable							
QIA	+	-		0.205	0.336	-2.841	2.576
Interaction							
LOC × QIA	+	-		-		1.788**	0.799
RTP × QIA	+	-		-		-1.116*	0.609
R^2		0.121		0.130		0.251	
R^2 change		0.121*		0.009		0.130*	
Adjusted R^2		0.074		0.058		0.141	
F value		2.551		1.796		2.279	
p value		0.092	0.325	0.165	0.328	0.069	0.313

* Significant at $p < 0.10$

** Significant at $p < 0.05$

R^2 change is the change in the value of R^2 after an interaction effect (model 3)

Table 6 Summary of hypotheses testing and results

Hypothesis	Statement of hypothesis	Expected relationship	Result
H1	The CEO's locus of control has a positive relationship with the implementation of risk-management	+	Not supported
H2	The CEO's risk-taking propensity has a positive relationship with the implementation of risk management	+	Supported
H3	The internal audit quality has a positive relationship with the implementation of risk management	+	Not supported
H4	The internal audit quality as a moderator between CEO's locus of control and the implementation of risk management	+	Supported
H5	The internal audit quality as a moderator between CEO's risk-taking propensity and the implementation of risk management	+	Not supported

significant moderating capability ($p < 0.05$) to influence the relationship between the CEO's locus of control and risk-management implementation. However, the fifth hypothesis (H5) that expected the internal audit quality to moderate the relationship between the CEO's risk-taking propensity and risk-management implementation was indicated a significant capability ($p < 0.10$) but the result shows inverse relationship.

A summary of the hypothesis testing and results is summarised in Table 6.

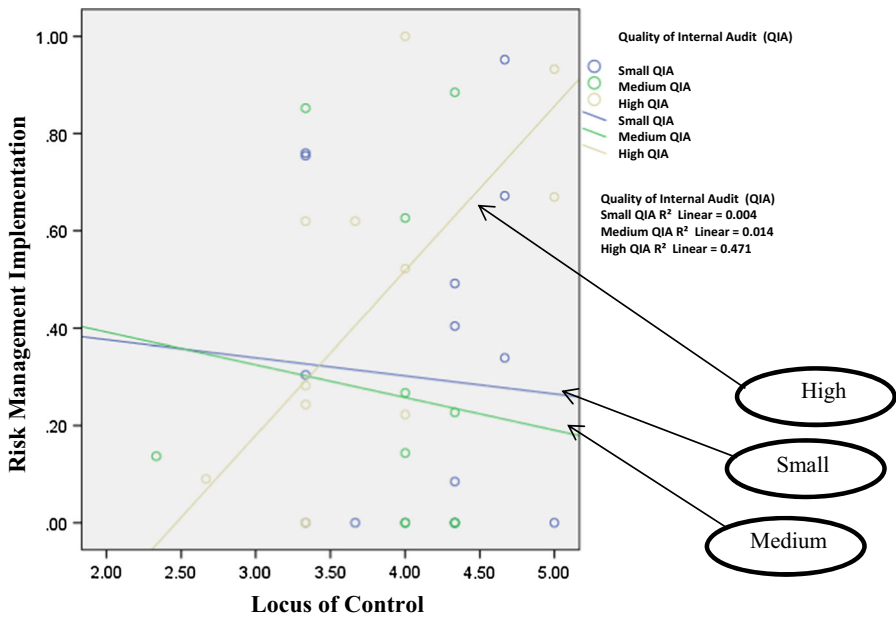


Fig. 2 The relationship between the CEO's locus of control and the implementation of risk management at the level of high quality of internal audit (size of internal audit is 'big'), medium (size of internal audit is 'medium') and low (size of internal audit is 'small')

The impact of the moderating variable

The moderating effect of internal audit quality is depicted in Fig. 2 based on post-hoc simple slope analysis. The graph shows that the impact of the relationships between CEO's locus of control and the implementation of risk management for high internal audit quality is higher than medium and low internal audit quality. The low, medium and high levels of internal audit quality are defined as -1, 0 and +1 standard deviation from the mean, respectively (Mignonac, Herrbach and Guerrero 2006).

Discussion

Risk management in the Malaysian public sector is still at an infancy stage with the level of risk-management implementation at only 32%, which is consistent with Daud (2011). The findings also reveal that CEOs' locus of control is not directly correlated with the implementation of risk management, while CEO's risk-taking propensity is found to be significantly related to risk-management implementation. This result is consistent with previous studies on strategic decisions (e.g. Nadkarni and Hermann 2010; Papadakis 2006) which find CEO's risk-taking propensity influence the implementation of organisational strategy.

The results also suggest that internal audit quality is not directly related to the implementation of risk management consistent with Beasley et al. (2005) and Daud (2011). Nevertheless, this result does not support findings from previous studies (e.g. Fraser and Henry 2007; De Zwaan et al. 2011; Kassim et al. 2011a). Fraser and Henry (2007), De Zwaan et al. (2011) and Kassim et al. (2011a) found that internal audits are directly related with the implementation of risk management, i.e. involved in the prohibitive roles as suggested by IIA (2004) and IARF (2011). Thus, the third research hypothesis (H3) is rejected.

Finally, the hierarchical multiple regression analysis found that the CEO's locus of control is significantly related to the implementation of risk management when internal audit quality moderated the relationship. This finding provides empirical evidence that the internal audit quality contributes to the implementation of risk management in statutory bodies in Malaysia. This result also suggests that the higher the quality of the internal audit, the higher the level of risk-management activities implemented by the CEOs that have lower locus of control personality. This finding suggests that audit quality indirectly relates to risk-management implementation, consistent with COSO (2004), IIA (2004) and IARF (2011). These findings also demonstrate that the internal audit quality may be an influential factor that relates to the implementation of appropriate risk management by the CEOs. These findings are consistent with studies by Daud (2011) who found that the internal audit quality is a moderator to support the relationship between internal organisational characteristics (i.e. the quality of chief risk officer and the quality of the board of directors) with the implementation of risk management. Thus, the fourth hypothesis of this study (H4) is supported as the internal audit quality moderates the relationship between the CEO's locus of control and the implementation of risk management. Surprisingly, this study found that CEO's risk-taking

propensity is significant but inversely related to the implementation of risk management when the internal audit quality is a moderator to the relationship. Findings for H5 suggest that internal audit quality can help to reinforce risk-management implementation when the CEO's risk propensity level is low. This makes sense since organisations with high risk-taking propensity CEOs are proven in this study to be linked to high implementation of risk-management activities. This may result in audit quality not having any significant role in adding to the strength of the relationship. However, in the inverse relationship where the CEO's risk-taking propensity is low, a high-quality audit can be a significant agent to increase risk-management implementation.

As an overall result, there is a significant positive association between the CEO's risk-taking propensity and the implementation of risk management in the public sector. In addition, internal audit quality moderates the relationship between the CEO's locus of control and the implementation of risk management. Interestingly, the higher the internal audit quality (the larger the size of the internal audit function) the better the relationship of the CEO's locus of control with the risk-management implementation. Results of this study provide empirical evidence on the direct and indirect roles of CEO and internal audit on the implementation of risk management in an organisation, specifically in the Malaysian public sector.

Conclusion

This study provides further insights into risk management. First, it addresses the dearth in the risk-management literature, particularly for public-sector agencies. In addition, the study provides empirical evidence as to the possible association of the CEO personality in the implementation of risk management in organisations. The study reveals that the level of risk-taking propensity of a CEO correlates with the level of risk-management implementation. Considering that the level of risk-management implementation in the Malaysian public sector is still low and at the initial stage, it is advisable for the government to consider choosing the right candidate to lead these agencies if the government is serious about risk-management activities in these agencies. Further, the study finds that internal audit quality moderates the relationships between CEO personality characteristics and risk-management implementation, highlighting the significant role of internal audit in risk-management implementation.

The results of hierarchical multiple regression analysis show that only CEO's risk-taking propensity is positively associated with the implementation of risk management and not the CEO's locus of control. Furthermore, the internal audit quality is found to be a moderator to the CEO's locus of control and the implementation of risk management relationship. Findings from this study support prior findings on the important association between CEO's personality factors and internal audit function in risk-management implementation in public-sector organisations. On a positive note, personality characteristics of future CEOs can be a catalyst for the implementation of risk management. In addition, the role of

internal audit in the public sector can also be reviewed and improved, pertaining to its involvement in risk-management implementation.

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