ปัจจัยที่มีผลต่อการมุ่งเน้นความฉลาดทางการตรวจสอบภายใน หลักฐานเชิงประจักษ์จากบริษัทจดทะเบียนในตลาดหลักทรัพย์แห่งประเทศไทย

FACTORS DETERMINING THE INTERNAL AUDIT INTELLIGENCE ORIENTATION EMPIRICAL EVIDENCE FROM LISTED FIRMS ON THE STOCK EXCHANGE OF THAILAND

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บทคัดย่อ

ปัจจุบันองค์กรได้พบกับการเปลี่ยนแปลงอย่างรวดเร็วจึงเป็นความท้าทายที่จะกำหนดบทบาทหน้าที่การตรวจสอบภายในให้สอดคล้องกับสภาพแวดล้อมที่เปลี่ยนแปลงตลอดเวลา หน่วยงานตรวจสอบภายในจึงได้เพิ่มความฉลาดให้กับการตรวจสอบภายในซึ่งจะช่วยให้หน่วยงานตรวจสอบภายในสามารถเตรียมพร้อมรับมือกับสภาพแวดล้อมที่เปลี่ยนแปลงและสามารถตอบสนองได้อย่างทันท่วงที การศึกษาครั้งนี้มีวัตถุประสงค์เพื่อศึกษาปัจจัยนำที่มีอิทธิพลต่อการมุ่งเน้นความฉลาดทางการตรวจสอบภายในของบริษัทจดทะเบียนในตลาดหลักทรัพย์ประเทศไทย เก็บรวบรวมข้อมูลจากการตอบแบบสอบถามที่ส่งถึงผู้บริหารฝ่ายตรวจสอบภายในของบริษัทจดทะเบียนในตลาดหลักทรัพย์แห่งประเทศไทยจำนวน 134 แห่ง การวิเคราะห์ข้อมูลใช้การถดถอยแบบวิธีกำลังสองน้อยที่สุด ผลการวิจัยพบว่าวิสัยทัศน์ที่มุ่งเน้นความยั่งยืนขององค์กร, การสนับสนุนจากผู้บริหารระดับสูง, ระบบบัญชีที่ดี, การยอมรับเทคโนโลยี มีผลกระทบทางบวกต่อการมุ่งเน้นความฉลาดทางการตรวจสอบภายใน การศึกษานี้ให้ข้อมูลที่เป็นประโยชน์แก่บริษัทและนักวิชาการที่สนใจที่จะระบุถึงปัจจัยนำที่กำหนดการมุ่งเน้นความฉลาดทางการตรวจสอบภายใน

คำสำคัญ: การมุ่งเน้นความฉลาดทางการตรวจสอบภายใน, วิสัยทัศน์ที่มุ่งเน้นความยั่งยืนขององค์กร, การสนับสนุนจากผู้บริหารระดับสูง, ระบบบัญชีที่ดี, การยอมรับเทคโนโลยี, ความวุ่นวายของสภาพแวดล้อม

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Abstract

Organizations have encountered rapid changes, which the challenges of defining the role of internal audit complicated by a dynamic business environment. Internal audit department adds intelligence to internal audit task can help department alertness to the environment and a timely and appropriate response**.** This study examines antecedent factors influencing internal audit intelligence orientation of listed firms on the Stock Exchange of Thailand. Data was collected from responses to a questionnaire addressed to internal audit executive of 134 listed firms on the Stock Exchange of Thailand. Ordinary least squared (OLS) regression analysis examines the association between the five antecedent factors and internal audit intelligence. Results reveal that corporate sustainability vision, top management support, best accounting system, and technology acceptance has a positive effect on internal audit intelligence orientation. This study provides useful information to firms and academics who are interested to identify the determinants of internal auditing intelligence orientation.

Keywords: internal audit intelligence orientation, corporate sustainability vision, top management support, best accounting system, technology acceptance, environmental turbulence

Introduction

In the aftermath of corporate scandals, the global financial crisis, and Asian financial crises, internal auditing has become an important aspect of the corporate governance in an organization (Shamsuddin, Manijegar, Kirupanangtan, Rahman, & Selvanathan, 2014; Soh & Martinov-Bennie, 2011). Internal audit guides the company to achieve its goals, addressing in a systematic and methodical process of evaluating and improving the effectiveness of risk management, control, and governance (Maria, 2012). Internal audit is one of the most powerful means of monitoring, promoting good governance system in a company and financial compliance of an organization (Alzeban & Gwilliam, 2014). Therefore, internal audit has become a value creator improving the effectiveness of risk management, control and governance systems (Dellai & Omri, 2016).

Organizations have encountered rapid changes in an environment, economic complexity, technological advancements, and expanded regulatory requirements in recent years. Survival in such competitive and highly complex conditions requires alertness to the environment and a timely and appropriate response, which successful adaptation and response depends on organizational intelligence (Khanghahi & Jafar, 2013). Moreover, intelligence includes a set of concepts, methods, and processes to improve business decisions, using information from multiple sources and applying past experience to develop an exact understanding of business dynamics (Ghazanfari, Jafari, & Rouhani, 2011; Maria, 2005). Thus,

create intelligence for internal audit, which improves internal audit department effectiveness influence on firm value.

Much of prior research in this area has investigated the organizational factors that influence the effectiveness of internal audit department. Factors affecting the internal audit intelligence orientation are characteristic of the audit team, activity and audit process, management support, the size of internal audit department, and the organization relationship (Alzeban & Gwilliam, 2014; Arena & Azzone, 2009). Thus, given the significance of the internal audit department effectiveness, the main part of the model investigates how various factors influence the internal audit intelligence orientation, separated into internal (changes within the company) and external (changes in the environment) factors. Internal factors affecting internal audit intelligence orientation including corporate sustainability vision, top management support, and best accounting system. External factors affecting internal audit intelligence orientation comprise technology acceptance and environmental turbulence. To achieve this objective, the study uses questionnaires to obtain information to address the research question: "What is the influence of corporate sustainability vision, top management support, best accounting system, technology acceptance, and environmental turbulence on internal audit intelligence orientation?"

Literature review

This study was presented five antecedent that will help to enhance internal audit intelligence orientation of organization, leading to the operational outcome. From the literature review, the five antecedent of internal audit intelligence orientation includes corporate sustainability vision, top management support, best accounting system, technology acceptance, and environmental turbulence. The following Figure 1 below presents the conceptual model constructed to answer how five antecedent influence internal audit intelligence orientation.

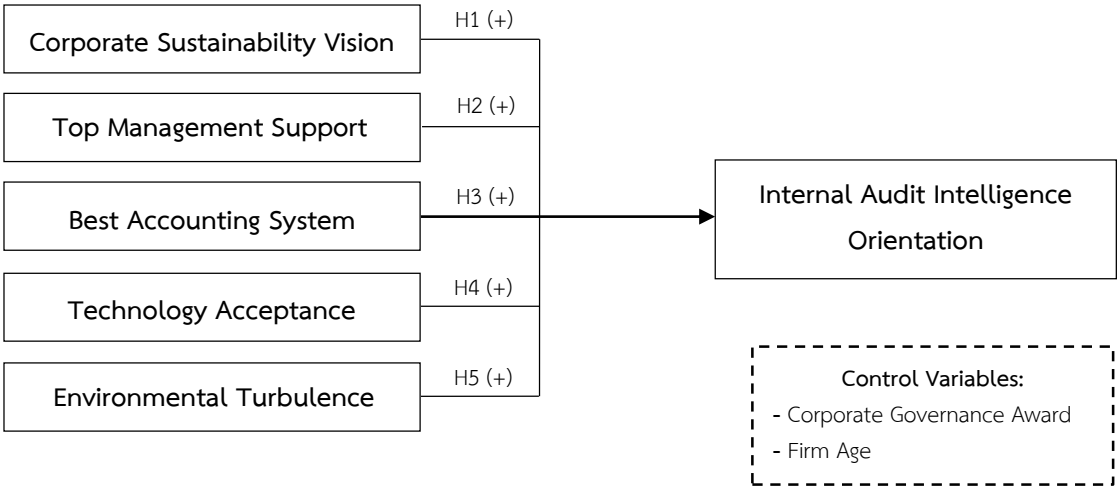

Figure 1 Conceptual Model of Antecedents of Internal Audit Intelligence Orientation

The contingency theory is usually applicable in the context of effectiveness achievement. Several researches have used the contingency theory in the attainment of effectiveness at organizational level (Kepes, Delery, & Gupta, 2009; Morton & Hu, 2008). Therefore, much previous research displayed the effect of contingency theory in relation to effectiveness achievement. This study focus on the achievement of effectiveness in the area of internal audit. Then, this study used the contingency theory to explain the relationship between structural contingent antecedents and internal audit intelligence orientation. The assumption of the contingency theory is that internal audit intelligence orientation is established and enhanced by an exogenous factor (i.e., technology acceptance, environmental turbulence) and an endogenous factor such as vision, top management support, and accounting system. Moreover, an appropriate internal audit function is likely to vary from organization to organization (Arena & Azzone, 2009). The successful implementation of intelligence in an internal audit function depends on internal factors such as corporate sustainability vision, top management support, and best accounting system of the firms, and external factors such as technology acceptance and environmental turbulence.

The control variables of this research are corporate governance award and firm age in SET which may affect internal audit function. Corporate governance award indicates the main factors pursuing internal audit internal audit effectiveness, corporate success and corporate competitive advantage (Bebchuck, Cohen, & Wang, 2013; Gompers, Ishii, & Metrick, 2003). Firm age has an impact on internal audit activities (Doyle, Ge & McVay, 2007).

Corporate sustainability vision

Corporate sustainable vision is defined as a view of the business focusing on the improvement and development in the ongoing work to add value to the business and sustainable growth in the long term. The corporate sustainable vision of responsiveness to both internal and external needs, which it determines the role of internal audit functions (Hass, Abdolmohammadi, & Burnaby, 2006). Moreover, to accomplish sustainable accounting requires support by a long-term vision that may require changes to current policies management's vision which are significantly positive with supportive practice (Moore, Konrad, & Hunt, 2010). Thus, the research hypothesis is as follows:

H1: Corporate sustainable vision has a positive influence on internal audit intelligence orientation.

Top management support

Top management support refers to supporting the auditing process by fulfilling the necessary resources, providing finances, providing transport if required, providing training, introducing auditors to new technology and procedures, and budgeting funds for certification and other facilities that facilitate the internal auditing work. Top management has an important say in the resources devoted to the internal audit units. They are also likely to give input to the internal audit work plan which provides the internal audit department with the

empowerment required for it to perform its duties and responsibilities (Ali, Gloeck, Ali, Ahmi, & Sahdan, 2007). The management support is almost crucial to the operation and internal audit from fulfilling the necessary resources, finance, transport if required, providing training, introducing auditors with new technology and procedures, budgeting funds for certification and other facilities that facilitate the internal auditing works (Hailemariam, 2014). The management support is almost crucial to the operation and internal audit because all other determinants of internal audit effectiveness derive from the support of top management (Cohen & Sayag, 2010; Van Gansberghe, 2005). Thus, the research hypothesis is as follows:

H2: Top management support has a positive influence on internal audit intelligence orientation.

Best accounting system

Best accounting system refers to a suitable accounting system that continually improves and develops to analyze, summarize, interpret, and present accurate and timely accounting information. Accounting systems can provide value-added information for managerial decision-making and control activity to achieve the department's performance objectives (Al-Dalabeeh & Al-Zeaud, 2012). Ditkaew (2013) found that accounting information system quality was positively related to the effectiveness of internal control and reliable decision-making. Additionally, Sedevich Fons (2012) states that the company directors usually resort to quality cost and accounting systems to support internal audit quality. The use of the computerized accounting systems reduced the risk of auditors' lack of experience and knowledge, decreased the risk of auditors' lack of independence (Marand & Bayaz, 2015). Moreover, accounting information systems have a positive relationship with internal auditing (Tan, 2016). Thus, the research hypothesis is as follows:

H3: Best accounting system has a positive influence on internal audit intelligence orientation.

Technology acceptance

Technology acceptance refers to an organization's beliefs, attitudes and intentions toward the technology by two related beliefs: perceived usefulness and perceived ease of use, in that firms tend to utilize technologies for accomplishing goals (Davis, Bagozzi & Warshaw, 1989; Parasuraman, 2000). Technology features have a large impact on technology acceptance in the internal audit profession as influencing system usage, perceived usefulness, and perceived ease of use (Kim & Park, 2009). The utilization of technology can encourage interorganizational collaboration and the coordination activity (Katila & Mang, 2003). Therefore, technology acceptance leads to more active plans and strategies between partners (Seggie, Kim, & Cavusgil, 2006). When interfirm processes are contributed, network operations between organizations can be generated through the implementation of technology (Frels, Shervani, & Srivastava, 2003). Likewise, technology availability can increase process innovations or

improvements, and reduce operating costs (Goutsos & Karacapilidis, 2004; Johnson, Sohi, & Grewal, 2004). Thus, the research hypothesis is as follows:

H4: Technology acceptance has a positive influence on internal audit intelligence orientation.

Environmental turbulence

Environmental turbulence refers to the uncertainty of external factors that influence internal audit activities, including stakeholders' expectations and change in technology, legal, and professional standards. Environmental turbulence (i.e., globalization and stakeholder needs) encourages the internal audit to provide timely and accurate assurance of financial and operational information (Brown, Wong, & Baldwin, 2007; Gonzalez, Sharma, & Galletta, 2012). Thus, the research hypothesis is as follows:

H5: Environmental turbulence has a positive influence on internal audit intelligence orientation.

Research Method

Sample Selection and Data Collection Procedure

This study, population and sample were 594 Thai-listed firms in Thailand. The database in this research is drawn from The Stock Exchange of Thailand on its website: www.set.or.th. The key informant is the internal audit executive, internal audit director or internal audit manager of each firm for high, rich information in internal audit intelligence. The questionnaires were constructed covering contents according to each variable that was operationalized for empirical studies. The number of questionnaires was directly distributed to 594 listed firms. The successful questionnaire mailing was 593 surveys, and one was undelivered due to relocation. However, there are 136 questionnaires answered and received including 2 questionnaires had no key informant. Thus, 134 questionnaire responses were returned and usable. The effective response rate was approximately 22.60%. According to Aaker, Kumar and Day (2001), the response rate for a mail survey, without an appropriate follow-up procedure, if greater than 20% is considered acceptable.

Moreover, to test non-response bias and to detect and consider possible problems with non-response errors was investigated by t-test that followed to Armstrong and Overton (1977). A total of 134 return questionnaires are divided into two groups: the first and the second wave data is 67 and 67 respectively. There were no statistically significant differences between first and second groups at a 95% confidence level as firm capital ($t = -0.422$, $p > 0.05$), total assets ($t = 0.080$, $p > 0.05$), firm period operation in SET ($t = -0.526$, $p > 0.05$), and CG scoring ($t = -1.542$, $p > 0.05$). Therefore, it was implied that these received questionnaires show insignificant non-response bias for the analysis.

Variable Measurement

To measure each construct in the conceptual model, all variables are anchored by five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree) excluding control variables. In addition, all construct are developed for measuring from definition of each constructs and examine the relationship from theoretical framework and prior literature reviews. Hence, the variable measurements of this study are described as follows:

Dependent Variable

Internal audit intelligence orientation is measured by the ability of an organization to planning flexibility, integrate of method, skill, and skepticism of internal auditor, innovate, and use technology in a way that evaluates and improves the effectiveness of risk management, control, and governance processes for the decision process, to enable effective actions, achieve business goals and add value to the firm (Institute of Internal Auditors, 2014; Pirttimaki & Hannula, 2003; Wells, 2008). This construct is developed as a new scale from the definition and literature, including five items.

Independent Variables

This study has five independent variables; including 1) corporate sustainability vision is measured by corporate response vision to sustainable growth in the long-term, participative of design vision, supporting the research and development, and advanced technology. This construct is developed as a new scale from the definition and literature, including four items. 2) top management support is measured by the firm to supporting the operation such as resource, budget, training, develop the management system, and management technique implementation. This construct is developed from Asaolu, Adedokun & Monday (2016) and Hailemariam (2014), including four items. 3) best accounting system is measured by accounting system process, which is a technological and organized set of manual and computerized accounting methods, procedures; and presents accurate and timely accounting data for management decisions. This construct is developed from Chaikambang, Ussahawanitchakit & Boonlua (2012), including four items. 4) technology acceptance is measured by system usage, behavioral intention to use, attitude toward using, perceived usefulness, perceived ease of use. This construct is developed from Vasarhelyi, Alles, Kuenkaikaew, & Littley. (2012), including four items. 5) environmental turbulence is measured by perceptions of the stakeholders' expectation, change in technology, regulation, and professional standards. This construct is developed from Laohamethanee & Ussahawanitchakit (2012), including a four items.

Control Variables

Corporate governance award (CGA) evaluate CG scoring (2016) of listed companies by the Stock Exchange of Thailand. In this study, corporate governance award is represented by a dummy variable in which "0" means a corporation has a CG scoring lower

than “very good,” and “1” means a corporation has a CG scoring more than or equal to “very good.”

Firm Age in SET (FAS) is the period of time the firm has been in the Stock Exchange of Thailand. The requirement of the number of operational years is divided into dummy variables in which “0” means that the firm has been in SET less than 15 years, and “1” means the firm has been in SET 15 years or more (Kaneko, Ussahawanitchakit & Muenthaisong, 2013).

Reliability and Validity

The results of measurement reliability and validity show in table 1.

Table 1: Result of Validation and Reliability

Variables	Factor Loadings	Cronbach’s Alpha
Corporate Sustainability Vision (CSV)	.644 - .756	.840
Top Management Support (TMS)	.840 - .854	.933
Best Accounting System (BAS)	.654 - .847	.883
Technology Acceptance (TEA)	.627 - .892	.875
Environmental Turbulence (ENT)	.475 - .600	.730
Internal Audit Intelligence Orientation (IAIO)	.773 - .900	.894

Reliability of collected data was tested by Cronbach’s alpha to measure internal consistency of respondents’ answer for all items in the questionnaires. As shows in Table 1, the result of all reliability in Cronbach’s alpha coefficients is demonstrated. Cronbach’s alpha is a range between 0.730 and 0.933, which exceeds 0.70, to indicate high reliability (Hair et al., 2010). For testing the validity, this study uses a confirmatory factor analysis (CFA) to examine the construct validity of the instrument by investigating the relationships of a large number of items can be reduced to a smaller set of factors. Table 1 shows factor loadings of each construct that shows a value more than 0.40 (ranging from 0.475 to 0.900). This analysis has a high potential to inflate the component loadings. Therefore, a higher rule-of-thumb, a cut-off value of 0.40 is accepted (Hair, Babin & Anderson, 2010). All factor loadings are greater than 0.40 cut-off point and are statistically significant.

Statistical Techniques

All dependent and independent variables in this study are the metric scale. Therefore, OLS regression is appropriate technique to test all hypotheses. From the conceptual model and hypotheses, the following equation models are formulated:

Equation : IAIO $= \alpha_1 + \beta_1 CSV + \beta_2 TMS + \beta_3 BAS + \beta_4 TEA + \beta_5 ENT + \beta_6 CGA + \beta_7 FAS + \varepsilon$

Results and Discussion

Table 2 shows descriptive statistics and correlation matrix for all variables. This study provides descriptive statistics as mean score and standard deviation (S.D). The mean score of variables are ranging from 4.097 - 4.276. Correlation coefficients of variables are ranging from 0.107 - 0.646. With respect to potential problems relating to multicollinearity, variance inflation factors (VIF) were used to test the intercorrelations among independent variable. In this study, the VIFs range from 1.063 to 2.448, well below the cut-off value of 10 (Hair et al., 2010), meaning that the independent variables are not correlated with each other. Therefore, there are no substantial multicollinearity problems encountered in this study.

Table 2: Descriptive Statistics and Correlation Matrix

Variables	CSV	TMS	BAS	TEA	ENT	IAIO	CGA	FAS
Mean	4.097	4.170	4.267	4.276	4.271	4.229	n/a	n/a
S.D	.571	.626	.628	.540	.532	.519	n/a	n/a
CSV	1							
TMS	.471**	1						
BAS	.392**	.225*	1					
TEA	.107	.450**	.193	1				
ENT	.351**	.394**	.393**	.646**	1			
IAIO	.455**	.611**	.366**	.459**	.441**	1		
CGA	.206*	.097	.092	-.010	.141	.123	1	
FAS	-.024	.003	.156	-.042	.009	.124	.102	1

** p<0.01, * p<0.05

Table 3 shows the results of the OLS regression analysis of the effect of corporate sustainability vision, top management support, best accounting system, technology acceptance, and environmental turbulence on the internal audit intelligence orientation.

Table 3: Results of OLS Regression Analysis for Effects of Antecedents of Internal Audit Intelligence Orientation

Independent Variables	Dependent Variables[a]
	Internal audit intelligence orientation (IAIO)
Corporate Sustainability Vision (CSV)	**.173****
	(.085)
Top Management Support (TMS)	**.429****
	(.083)
Best Accounting System (BAS)	**.297****
	(.073)

Table 3: Results of OLS Regression Analysis for Effects of Antecedents of Internal Audit Intelligence Orientation (Cont.)

Independent Variables	Dependent Variables[a]
	Internal audit intelligence orientation (IAIO)
Technology Acceptance (TEA)	**.317****
	(.093)
Environmental Turbulence (ENT)	- .115
	(.093)
Corporate governance award (CGA)	.057
	(.124)
Firm Age in SET (FAS)	.184
	(.122)
Adjusted R^2	**.535**
Maximum VIF	**2.448**

** p<0.01, * p<0.05, [a] Beta coefficients with standard errors in parenthesis

Table 3 demonstrated the hypothesis testing results. Firstly, the results demonstrate that corporate sustainability vision has a significant and positive effect on internal audit intelligence orientation (β_1 = .173, p < .01). According to prior research, sustainable accounting requires a long-term vision (Moore, Konrad & Hunt, 2010). Moreover, the corporate sustainable vision determines the role of internal audit functions (Hass, Abdolmohammadi, & Burnaby, 2006).**Therefore, H1 is supported.**

Secondly, the results suggest that top management support has a significant and positive effect on internal audit intelligence orientation (β_2 = .429, p < .01). It is consistent with top management support that is expressed in terms of supporting the auditing process by fulfilling the necessary resources to execute duties and responsibilities, the internal audit department can hire qualified staff and provide continuous training and development, budgeting funds for certification, and other facilities that facilitate the internal auditing work (Cohen & Sayag, 2010;0 Hailemariam, 2014). Top management support was strongly and consistently related to the three internal audit dimensions such as auditing quality, auditee evaluations and the added contributions (Cohen & Sayag, 2010). **Therefore, H2 is supported.**

Thirdly, the results reveal that best accounting system has a significantly positive effect on internal audit intelligence orientation (β_3 = .297, p < .01)**.** Prior research showed that firms with a higher degree of accounting system implementation effectiveness lead to higher degrees of information value (Al-Dalabeeh & Al-Zeaud, 2012). The use of the computerized accounting systems reduced the risk of auditors' lack of experience and knowledge, decreased the risk of auditors' lack of independence, reduced the risk of lack of sufficient awareness of the clients' activities and the environment, reduced the risk of improper implementation of

the content tests, reduced the wrong judgment risk as a result of the implementation of the content test methods, reduced the sampling risk in the content tests and ultimately reduced the risk of the inappropriate auditing team composition (Marand & Bayaz, 2015). Internal auditors in Turkey believe that accounting information systems contribute positively to their work, therefore accounting information systems has a positive relationship on internal auditing (Tan, 2016). **Therefore, H3 is supported.**

Fourthly, the results demonstrate that technology acceptance has a significantly positive effect on internal audit intelligence orientation (β_4 = .317, p < .01). According to prior research**,** technology features have a large impact on technology acceptance in the internal audit profession as influencing system usage, perceived usefulness, and perceived ease of use (Kim & Garrison, 2009). Moreover, technology acceptance can increase process innovations or improvements, and reduce operating costs (Goutsos & Karacapilidis, 2004; Johnson, Sohi & Grewal, 2004). **Therefore, H4 is supported.**

Finally, the results show that environmental turbulence has not significant on internal audit intelligence orientation (β_5 = -.0115, p > .05). Some empirical evidence indicates that an audit environment may negatively impact audit practice. According to reducing the litigation environment had a significant impact on audit judgment and audit opinion decision making (Arnold, Collier, Leech, & Sutton, 2001; Geiger & Raghunandan, 2001; Geiger, Raghunandan, & Rama, 2006). However, this negative result has been investigated in context of an external audit. **Therefore, H5 is not supported.**

Contributions

Theoretical Contribution

This study is an attempt to provide a clearer understanding of internal and external factors of internal audit intelligence orientation. It provides an acknowledgment expanding on previous knowledge and literature of internal audit intelligence orientation. Contribution lies in the application of a contingency perspective to the relationship between internal and external factor and internal audit intelligence orientation. In this study internal factors consist of corporate sustainability vision, top management support, and best accounting system. External factors consist of technology acceptance and environmental turbulence. This study findings indicate that corporate sustainability vision, top management support, best accounting system, technology acceptance, and environmental turbulence has a positive effect on internal audit intelligence orientation. Specifically, it can be stated that corporate sustainability vision, top management support, best accounting system and technology acceptance do matter more in internal audit intelligence orientation than environmental turbulence.

Managerial Contribution

This study provides useful contributions and implications to executives and internal audit managers regarding available internal audit intelligence in organizations. This

study is a guideline for the development of the internal audit department and the internal audit task. The organization has internal audit department success by creating internal audit intelligence orientation. Factors that make the organization have internal audit intelligence consist corporate sustainability vision, top management support, best accounting system and technology acceptance, which can be done as follows. Firstly, firm set of the guidelines, the way and policies focusing on survival goals and long-term growth make the operation of the organization achieve its goals better. Secondly, the firm has linked accounting entry systematically will ensure accounting information accurately, completely and timeliness. The firm focus on to linked accounting system and management system systematically help integrate of information apply to decision making. Thirdly, the firm has top management support the necessary resources, budget, and other facilities make the operation more efficient. Executives encourage staff to learn and train new techniques and new procedures, emphasizes the development of management system, and focus on applying new techniques and new methods of operation always. Finally, organization's beliefs, attitudes, and intentions towards the technology, which consist of system usage, behavioral intention to use, attitude toward usage, perceived usefulness, perceived ease of use.

Conclusion

Economic crisis, corporate failures, malpractices and growth in the number of reported fraud cases has emphasized on the importance of an effective internal auditing. An effective internal auditing is crucial as it plays an important role in improving control systems, analyzing risks and providing objective assurance and consulting services. Firms have internal audit intelligence orientation can help internal audit effectiveness. This study examines antecedent factors influencing internal audit intelligence orientation of listed firms in Thailand. Antecedent factors include corporate sustainability vision, top management support, best accounting system, technology acceptance, and environmental turbulence. The data were collected by mail survey. Internal audit executives are the key informants for rich information in internal audit. Results reveal that corporate sustainability vision, top management support, best accounting system, and technology acceptance has a positive effect on internal audit intelligence orientation. The first limitation is the small sample size. The sample size of this study has only 134 respondents. As a result, it may affect the analysis of the power of the statistical test so that the results of the hypotheses are also impacted. Secondly, this research used questionnaires to collect the data and explore through a cross-sectional survey. Therefore, future research may develop longitudinal data and/or mixed methods designed to investigate other internal and external factors affect internal audit intelligence orientation.

References

Aaker, D. A., Kumar, V., & George, S. Day. (2001). **Marketing research**, *7*.

Al-Dalabeeh, A. Kh., & Al- Zeaud, H. A. (2012). Accounting information systems and their role in the measurement and cost thrifting in public shareholding industrial companies in Jordan. **International Journal of Business and Management, 7**(12), 97-106.

Ali, A. M., Gloeck, J. D., Ali, A., Ahmi, A., & Sahdan, M. H. (2007). Internal audit in the state and local governments of Malaysia. **Southern African Journal of Accountability and auditing research, 7**(1), 25-57.

Alzeban, A., & Gwilliam, D. (2014). Factors affecting the internal audit effectiveness: A survey of the Saudi public sector. **Journal of International Accounting, Auditing and Taxation, 23**(2), 74-86.

Arena, M., & Azzone, G. (2009). Identifying organizational drivers of internal audit effectiveness. **International Journal of Auditing, 13**(1), 43-60.

Armstrong, J. S. & Overton, T. S. (1977). Estimating nonresponse bias in mail surveys. **Journal of Marketing Research, 14**(3), 396-402.

Arnold, V., Collier, P. A., Leech, S. A., & Sutton, S. G. (2001). The impact of political pressure on novice decision makers: are auditors qualified to make going concern judgements?. **Critical Perspectives on Accounting, 12**(3), 323-338.

Asaolu, T. O., Adedokun, S. A., & Monday, J. U. (2016). Promoting good governance through internal audit function (IAF): The Nigerian experience. **International Business Research, 9**(5), 196.

Bebchuk, L. A., Cohen, A., & Wang, C. C. (2013). Learning and the disappearing association between governance and returns. **Journal of financial economics, 108**(2), 323-348.

Brown, C. E., Wong, J. A., & Baldwin, A. A. (2007). A review and analysis of the existing research streams in continuous auditing. **Journal of Emerging Technologies in Accounting, 4**(1), 1-28.

Chaikambang, C., Ussahawanitchakit, P., & Boonlua, S. (2012). Strategic cost management and goal achievement: evidence from food businesses in Thailand. **International Journal of Business Strategy, 12**(4), 1-27.

Cohen, A., & Sayag, G. (2010). The effectiveness of internal auditing: an empirical examination of its determinants in Israeli organisations. **Australian Accounting Review, 20**(3), 296-307.

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: a comparison of two theoretical models. **Management science, 35**(8), 982-1003.

Dellai, H., & Omri, M. A. B. (2016). Factors Affecting the Internal Audit Effectiveness in Tunisian Organizations. **Research Journal of Finance and Accounting, 16**, 16.

Ditkaew, N. (2013). The effect of accounting information system quality in the effectiveness of internal control and reliable decision making to enhance the performance of Thai industrial firms. **Journal of International Business and Economics, 13**(1), 39-50.

Doyle, J., Ge, W., & McVay, S. (2007). Determinants of weaknesses in internal control over financial reporting. **Journal of accounting and Economics, 44(**1-2), 193-223.

Frels, J. K., Shervani, T., & Srivastava, R. K. (2003). The integrated networks model: Explaining resource allocations in network markets. **Journal of marketing, 67**(1), 29-45.

Geiger, M. A., & Raghunandan, K. (2001). Bankruptcies, audit reports, and the reform act. *Auditing:* **A Journal of Practice and Theory, 20**(1), 187-195.

Geiger, M. A., Raghunandan, K., & Rama, D. V. (2006). Auditor decision-making in different litigation environments: The Private Securities Litigation Reform Act, audit reports and audit firm size. **Journal of Accounting and Public Policy, 25**(3), 332-353.

Ghazanfari, M. J. S. R. M., Jafari, M., & Rouhani, S. (2011). A tool to evaluate the business intelligence of enterprise systems. **Scientia Iranica, 18**(6), 1579-1590.

Gompers, P., Ishii, J., & Metrick, A. (2003). Corporate governance and equity prices. **The quarterly journal of economics, 118**(1), 107-156.

Gonzalez, G. C., Sharma, P. N., & Galletta, D. F. (2012). The antecedents of the use of continuous auditing in the internal auditing context. **International Journal of Accounting Information Systems, 13**(3), 248-262.

Goutsos, S., & Karacapilidis, N. (2004). Enhanced supply chain management for e-business transactions. **International Journal of Production Economics, 89**(2), 141-152.

Hailemariam, S. (2014). **Determinants of internal audit effectiveness in the public sector, case study in selected Ethiopian public sector offices**. (Doctoral dissertation, Jimma University).

Hair, J. F., Babin, B. J., & Anderson, R. E. (2010). **Multivariate data analysis: A Global Perspective** (7th ed.).

Hass, S., Abdolmohammadi, M. J., & Burnaby, P. (2006). The Americas literature review on internal auditing. **Managerial Auditing Journal, 21**(8), 835-844.

Institute of Internal Auditors (IIA), (2014). **Institute of Internal Auditors**. Retrieved from: www.theiia,org/index

Johnson, J. L., Sohi, R. S., & Grewal, R. (2004). The role of relational knowledge stores in interfirm partnering. **Journal of Marketing, 68**(3), 21-36.

Katila, R., & Mang, P. Y. (2003). Exploiting technological opportunities: the timing of collaborations. **Research policy, 32**(2), 317-332.

Kaneko, P., Ussahawanitchakit, P., & Muenthaisong, K. (2013). Strategic Target Costing Effectiveness and Goal Achievement: Empirical Evidence from Exporting Gem and Jewelry Buwinesses in Thailand. **International Journal of Business Strategy, 13**(3), 127-159.

Kepes, S., Delery, J., & Gupta, N. (2009). Contingencies in the effects of pay range on organizational effectiveness. **Personnel Psychology, 62**(3), 497-531.

Khanghahi, M. E., & Jafari, P. (2013). A Model for Organizational Intelligence in Islamic Azad University (Zone 8). **Mathematics Education Trends and Research**.

Kim, H., & Park, Y. (2009). Structural effects of R&D collaboration network on knowledge diffusion performance**. Expert Systems with Applications, 36**(5), 8986-8992.

Kim, S., & Garrison, G. (2009). Investigating mobile wireless technology adoption: An extension of the technology acceptance model. **Information Systems Frontiers, 11**(3), 323-333.

Laohamethanee, W., & Ussahawanitchakit, P. (2012). Audit professional skepticism: an empirical investigation of certified public accounting (CPAs) in Thailand. **Journal of International Management Studies, 12**(4).

Marand, A.A. & Bayaz, M.L.D. (2015). Survey the Effect of the Computerized Accounting Systems on the Auditing Risk Management. **International Journal of Review in Life Sciences, 5**(10), 607-618.

Maria, F. (2005). **Improving the utilization of external strategic information.** (Master of Science Thesis, Tampere University of Technology).

Maria, R. A. D. U. (2012). Corporate governance, internal audit and environmental audit-the performance tools in Romanian companies. **Accounting and Management Information Systems, 11**(1), 112.

Moore, M. E., Konrad, A. M., & Hunt, J. (2010). Creating a vision boosts the impact of top management support on the employment of managers with disabilities: The case of sport organizations in the USA. **Equality, Diversity and Inclusion: An International Journal, 29**(6), 609-626.

Morton, N. A., & Hu, Q. (2008). Implications of the fit between organizational structure and ERP: A structural contingency theory perspective. **International Journal of Information Management, 28**(5), 391-402.

Parasuraman, A., & Grewal, D. (2000). The impact of technology on the quality-value-loyalty chain: a research agenda. **Journal of the academy of marketing science, 28**(1), 168-174.

Pirttimaki, V., & Hannula, M. (2003). Process models of business intelligence. **Frontiers of E-Business Research**, 250-260.

Sedevich Fons, L. A. (2012). Integration of quality cost and accounting practices. **The TQM Journal, 24**(4), 338-351.

Seggie, S. H., Kim, D., & Cavusgil, S. T. (2006). Do supply chain IT alignment and supply chain interfirm system integration impact upon brand equity and firm performance?. **Journal of business research**, **59**(8), 887-895.

Shamsuddin, A., Manijegar, D. B., Kirupanangtan, K., Rahman, S., & Selvanathan, S. (2014). Factors that determine the effectiveness of internal audit functions in the Malaysian public sectors. **International Journal of Business, Economics and Law, 5**(1), 9-17.

Soh, D. S., & Martinov-Bennie, N. (2011). The internal audit function: Perceptions of internal audit roles, effectiveness and evaluation. **Managerial Auditing Journal, 26**(7), 605-622.

Tan, Ö. F. (2016). Impact of Accounting Information Systems on Internal Auditors in Turkey. **Marmara Üniversitesi Öneri Dergisi.**

Van Gansberghe, C. N. (2005). Internal auditing in the public sector: a consultative forum in Nairobi, Kenya, shores up best practices for government audit professionals in developing nations. **Internal Auditor, 62**(4), 69-74.

Vasarhelyi, M. A., Alles, M., Kuenkaikaew, S., & Littley, J. (2012). The acceptance and adoption of continuous auditing by internal auditors: A micro analysis. **International Journal of Accounting Information Systems, 13**(3), 267-281.

Wells, D. (2008). Business analytics–getting the point. **Retrieved August, 12**, 2011.