



The Factors Affecting Quality of Internal Audit and Firm Value: An Empirical Investigation of Listed Firms in Thailand

ปัจจัยส่งผลกระทบต่อคุณภาพการตรวจสอบภายในและมูลค่าขององค์กร การตรวจสอบเชิงประจักษ์ของบริษัทจดทะเบียนในตลาดหลักทรัพย์แห่งประเทศไทย

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การวิจัยนี้มีวัตถุประสงค์เพื่อศึกษาถึงปัจจัยที่ส่งผลกระทบต่อคุณภาพการตรวจสอบภายใน โดยมีปัจจัยที่เป็นสาเหตุ คือ วิสัยทัศน์ของผู้บริหาร การกำกับดูแลกิจการ ระบบบัญชีที่เหมาะสม และความรุนแรงทางการแข่งขัน สำหรับตัวแปรคุณภาพการตรวจสอบภายใน ประกอบด้วย สภาพแวดล้อมการดำเนินงาน การประเมินความเสี่ยง การวางแผนการตรวจสอบภายใน การปฏิบัติงานตรวจสอบภายใน และการรายงานการตรวจสอบภายใน นอกจากนี้ได้ทดสอบความสัมพันธ์ระหว่างคุณภาพการตรวจสอบภายในต่อมูลค่าขององค์กร โดยใช้แบบสอบถามเป็นเครื่องมือในการเก็บข้อมูลจากผู้บริหารฝ่ายการตรวจสอบภายในของบริษัทที่จดทะเบียนในตลาดหลักทรัพย์แห่งประเทศไทย จำนวนที่ใช้ในการวิเคราะห์ข้อมูล 132 ราย ผลการวิจัยพบว่า การกำกับดูแลกิจการ ระบบบัญชีที่เหมาะสม และความรุนแรงทางการแข่งขัน มีความสัมพันธ์ทางบวกต่อคุณภาพการตรวจสอบภายในโดยรวม สำหรับคุณภาพการตรวจสอบภายในโดยรวมและรายด้าน ได้แก่ สภาพแวดล้อมการดำเนินงาน การปฏิบัติงานตรวจสอบภายใน และรายงานการตรวจสอบภายใน มีความสัมพันธ์ทางบวกต่อมูลค่าขององค์กร แสดงให้เห็นว่าองค์กรต้องยึดมั่นในการบริหารงานตามหลักธรรมาภิบาล มีระบบบัญชีที่เหมาะสม รวมถึงมีกระบวนการดำเนินงานตามสภาพแวดล้อมที่เปลี่ยนแปลงไปได้จะช่วยเพิ่มความสามารถในการใช้ข้อมูลได้ถูกต้องรวดเร็ว ทำให้มีคุณภาพการควบคุมภายใน การวิจัยนี้เป็นประโยชน์ต่อผู้บริหารฝ่ายตรวจสอบภายในรวมถึงองค์กร เพื่อที่จะช่วยสนับสนุนให้เกิดผลการดำเนินงานทางการเงินและไม่ใช้ทางการเงินที่ดีขึ้น

คำสำคัญ : คุณภาพการตรวจสอบภายใน ; มูลค่าขององค์กร ; การกำกับดูแลกิจการ ; ระบบบัญชีที่เหมาะสม ; ความรุนแรงทางการแข่งขัน



ABSTRACT

The objective of the research is to study the factors affecting quality of internal audit. The antecedent variables included management vision, corporate governance, accounting system fit, and competition intensity. The quality of internal audit variables were in 5 dimensions: operational environment, risk assessment, internal audit planning, internal audit operations, and internal audit report. Furthermore, this research also investigated the relationship between the quality of internal audit variables and firm value. The questionnaire was conducted as an instrument to collect data from internal audit management in the listed firms in the Stock Exchange of Thailand. The complete responses were 132 sets of questionnaires. The results indicated that corporate governance, accounting system fit, and competition intensity had positive relationship with total quality of internal audit. Moreover, the internal audit quality in total and each dimension i.e. operational environment, internal audit operations, and internal audit report had positive effects on firm value. The findings indicated that the organizations should be persistent to good governance of management and should have a good accounting system, as well as a good operational process according to the changing environment in order to increase ability to obtain accurate information quickly, leading to good quality of internal audit. The research findings can be applied to the management of internal audit and organization as for determining qualified internal audit, as well as for improving the better financial and non-financial performance.

Keywords : Quality of Internal Audit ; Firm Value ; Corporate Governance ; Accounting System Fit ; Competition Intensity

Introduction

In business operation, every organization should be ready for changes from internal and external environment in economy, politics, society, culture, and technology. As a result, an organization has to face challenges in organizational management. In scandalous cases in accounting and world financial crisis such as Enron and WorldCom in the USA and Sumitomo in Japan, lack of governance in business operation caused lack of corporate governance in internal control to prevent and control dishonesty, leading to lack of governance and quality of financial report and audit as well as effectiveness of evaluation (Rickling, Bitter and West, 2020). Therefore, many countries reform corporate governance by focusing on governance of internal audit and quality of financial report.

At present, audit committee is set and authorized to promote good corporate governance. Audit committees are helpful for the company board in managing visions, giving straightforward comments on financial reports and internal audit systems, supervising the operation of internal audit according to related laws and regulations, and revealing complete information concerning financial reports according to related standards and rules in order to make financial reports reliable with good quality and firm value creation (Ghafran and O'Sullivan, 2017). The authorized scope of the audit committee is concerned with supervision in financial reports, auditors, internal audit, and the operation of internal auditors (Al-Akra, Abdel-Qader and Billah, 2016). If the audit committee operates their authorities completely, the efficiency and effectiveness



of auditors' operation will increase, especially on supervision of reports and internal audit in an organization (Koutoupis, Pazarskis and Drogalas, 2018). Organizations should continuously enhance employees' self-development to increase their operational capability in internal audit which will lead to organizations' sustainable success (Wimuktayon, Pongpanpattana and Intakhan, 2019). Organizations can increase firm value by obtaining good suggestions and advices from internal auditors (Shahimi, Mahzan and Zulkifli, 2016). Moreover, according to previous studies, internal auditors involve with risk management and results in firm value for an organization (Callahan and Soileau, 2017)

Regarding the studies on quality of internal audit, the internal factors and effects of internal audit are still scarcely studied, especially the findings from the listed company in the Stock Exchange of Thailand. In addition, previous research is not clear and diverse in term of measurement on quality of internal audit. The role determination of internal audit quality are studied in 2 concepts: internal audit and internal control. According to the committee of sponsoring organizations of the treadway commission (COSO Framework) and literature, internal audit is an activity to build confidence and independent consultancy with the purpose to add value and improve organizational operation. It is helpful for organizations to achieve their objectives with systematic methods of evaluation and improvement to increase effectiveness of risk management and supervision (The Institute of Internal Auditors: IIA, 2018). In internal control, the operational process is determined together by committee, administrators, and employees in every level to reasonably ensure the achievement of the planned method or operation. The objectives of the internal control includes 5 factors: control environment, risk assessment, control activities, information and communication and monitoring and evaluation (COSO, 2013)

In this research, internal audit quality consists of 5 dimensions: operational environment, risk assessment, audit planning, internal audit operations and internal audit report (The Institute of Internal Auditors: IIA, 2018; COSO, 2013). The present research studied the effects of internal audit quality on firm value, and factors affecting 4 parts of internal audit quality i.e. management vision, corporate governance, accounting system fit, and competition intensity. The main research questions were in two parts. 1) Does the quality of the internal audit regarding the operational environment, risk assessment, planning, audit, internal audit and internal audit report affect the firm value? 2) Do the management vision, corporate governance, accounting system fit, and competition intensity affect total quality of internal audit?

Literature Review

The literature is reviewed under the framework of studies in internal audit quality and firm value of organizations by using resource advantage theory and agency theory to explain the relationship among variables in the study as well as by applying the concepts of internal audit from previous studies in the contexts of the present study.

The present research applies resource advantage theory to explain relationship among studied variables. The concept of the resource advantage theory is that resource can build advantages for business positions and success by using the resource worthily (Hunt and Morgan, 1997) The resources of an organization are regarded as a part of strategic business strategies both in the forms of tangible and intangible



assets such as distinctive potentials of human resource, distinctive information system, and modern innovation etc. These resources bring competitive advantages, leading to future good performance of an organization (Klinsukhon, Phornlaphatrachakorn and Wongkhae, 2018) In the present study, resource advantage theory is used to explain internal audit quality as valuable resources of an organization which is helpful for effective internal audit and leads to firm value (Abbott et al., 2016). The second theory used in this research is agency theory of Jensen and Meckling (1976) which explains relationship among people or groups. The principals are business owners or shareholders who employ agents i.e. administrators to manage work for them and control them not to work improperly. The principals have to provide returns as incentives to agents otherwise conflict of interest may occur since the agents or administrators may try to form maximum value for the principals if such methods are also useful for themselves. It is possible for the agents to conceal information, avoid responsibility, and do unethical operation leading to agency problems and stakeholders' damage. As a result, registered firms must have effective internal audit to ensure that the financial reports are highly effective which can reduce the unbalance of data and the conflicts among working units, administrators and shareholders (Al-Rassas and Kamardin, 2016) Accordingly, the present research uses agency theory to explain relationship among antecedents and internal audit quality.

The Committee of Sponsoring Organizations of the Treadway Commission (COSO) is the committee of 5 professional institutes in the United States: The American Institute of Certified Public Accountants (AICPA), The Institute of Internal Auditor (IIA), The Financial Executives Institute (FEI), The American Accounting Association (AAA), and Institute of Management Accounting (IMA). COSO has studied and developed internal audit according to the concept of COSO 2013 which includes 5 components of internal audit. Firstly, Control Environment is to determine top-down policy under responsibility of CEO and audit committee. Secondly, Risk Assessment involves with defining risk appetite and risk deviation which result from risky incidents on operational achievement, leading to organizations to be flexible for more risks. Thirdly, Control Activities is to impose policy and set control activities in operational procedures for supervision as well as to form reporting system for reviewing actual activities according to the objectives. Fourthly, Information and Communication is the flow of information and communicative activities as needed from corporate committee, administrators, and owners of procedures in every level of organizations. Finally, Monitoring Activities is to supervise and follow-up the procedure owners in routine operation and assessment from other independent working units and such assessment must relate to objectives of procedures, related risks, and control activities in the procedures. Moreover, 17 principles are added to the main components of internal audits into items relating to 5 components in order to make the internal audit process effective with 87 points of focus of each principle (COSO, 2013). Regarding the literature of internal audit quality and firm value, the study of Rae, Sands and Subramaniam, (2017) examined relationship among COSO factors and effects on examination function of organizations. They found that control environment is associated with three dimensions of information and communication (information accuracy, information openness, communication, and learning). According to Waseem, Ali and Arif, (2017), level of risk management implementation has a significant positive relationship with enterprise risk management system. Similarly, the study of Koutoupis and Pappa, (2018) found that the application of COSO internal control framework could



drive to excellence in management and effectiveness of business supervision. Mahsina and Hidayati, (2016) studied factors of internal audit by using COSO Framework and suggested that every organization must arrange risk management and internal control system in order to achieve the objectives of the organizations. The main focus of risk management and internal control system is on internal audit. Similarly, Saleem, Zraqat and Okour, (2019) studied the effect of internal audit quality on enterprise risk management in accordance to COSO framework. They found the significant effects of internal audit quality in organizational risk management dimension. According to COSO Framework, independence of internal auditors was on the first rank of factors with significant effects on enterprise risk management. In addition, Klinsukhon, Phornlaphatrachakorn and Wongkhae, (2018) studied relationship among internal audit intelligence orientation (including dynamic internal audit planning, internal audit method integration, technology-based internal audit implementation, internal audit innovation orientation, and internal audit skepticism competency) and firm value. They found very high positive influence on firm value. Furthermore, Khammongkol, Phornlaphatrachakorn and Janjarasjit, (2018) studied the effects of internal audit excellence capability on firm goal achievement by determining internal audit excellence capability in internal audit proficiency, internal audit governance, internal audit skepticism, internal audit transparency, and internal audit integration. They also found positive effects on firm goal achievement. In another study, Jiang, André & Richard, (2018) found positive relationship between internal audit function quality and firm complexity, and confirmed that complex firms had higher demand for monitoring and advising and, therefore, a greater need for formal controls. In addition, internal audit function quality is positively related to board monitoring and audit committee diligence but negatively associated with CEO power, which suggests that IAF quality is influenced by other key players in corporate governance. In addition, the study of Wimuktayon, Pongpanpattana and Intakhan, (2019) found that capability of internal audit in internal audit planning, internal audit report, and follow-up had positive effects on achieve goals. Therefore, the first hypothesis H1a-e in the present research i.e. was set that internal audit quality on operational environment, risk assessment, audit planning, internal audit operations, and internal audit report had positive relationship with firm value. Furthermore, the present research tested the hypothesis to confirm such relationship according to H1 that the total internal audit quality had positive relationship with firm value.

Regarding the literature of antecedents on each factor of internal audit quality, the study of Khammongkol, Phornlaphatrachakorn and Janjarasjit, (2018) found that internal audit well roundedness, innovative culture, technology complementarity, and competition complexity had direct effects on internal audit excellence capability. Effective corporate governance leads to management and internal audit according to the concept of COSO (Koutoupis and Pappa, 2018; Rae, Sands and Subramaniam, 2017) Similarly, Koutoupis, Pazarskis and Drogalas, (2018) found positive relationship between corporate governance and internal audit. In addition, previous research also revealed that interaction of internal audit competence, internal audit independence, and internal audit size with support from top management significantly and positively influence organization performance of Nigerian federal universities (Bello, Ahmad and Yusof, 2018). Therefore, this research expected that there were positive relationship among management vision, corporate governance, accounting system fit and competition intensity on internal audit



quality. Accordingly, H2 was set that management vision had positive relationship with total quality of internal audit; H3 was set that corporate governance had positive relationship with total quality of internal audit; H4 was set that accounting system fit had positive relationship with total quality of internal audit; and H5 was set that competition intensity had positive relationship with total quality of internal audit.

Objectives

1. To examine the roles of internal audit quality on operational environment, risk assessment, audit planning, internal audit operations, and internal audit report affect firm value
2. To examine the effects of management vision, corporate governance, accounting system fit, and competition intensity on internal audit quality.

Conceptual Framework

According to the above literature review, the researchers determined the research framework with antecedents of management vision, corporate governance, accounting system fit, and competition intensity (Khammongkol, Phornlaphatrachakorn and Janjarasjit, 2018; Koutoupis, Pazarskis and Drogalas, 2018; Koutoupis and Pappa, 2018) 5 dimensions of internal audit quality including operational environment, risk assessment, audit planning, internal audit operations, and internal audit report (Saleem, Zraqat and Okour, 2019; Klinsukhon, Phornlaphatrachakorn and Wongkhae, 2018; Koutoupis and Pappa, 2018; Mahsina and Hidayati, 2016; COSO, 2013) and firm value (Khammongkol, Phornlaphatrachakorn and Janjarasjit, 2018; Bello, Ahmad and Yusof, 2018). The research framework is summarized in Figure 1 below.

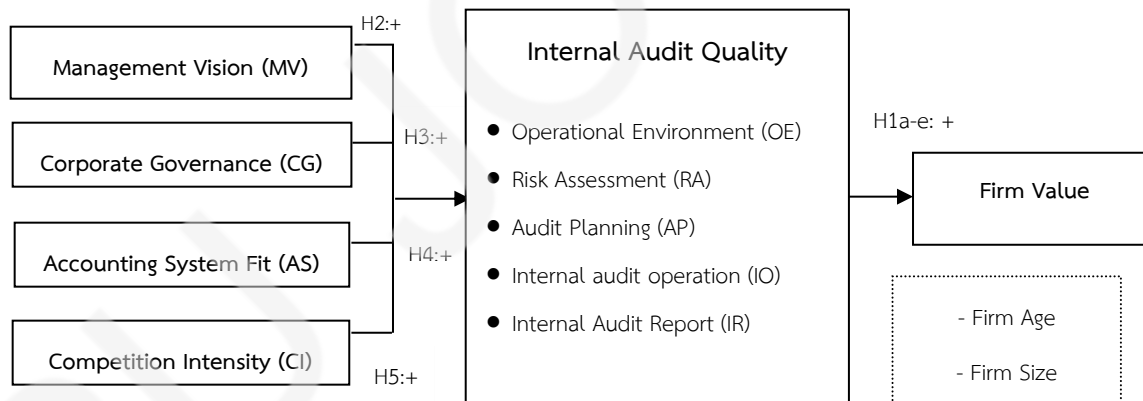


Figure 1: The model of factors affecting internal audit quality and consequences



Research Methodology

Population and Samples

The samples of this research were the listed firms in the Stock Exchange of Thailand. The selection criterion was that such firms were big business with good administrative structures, large capital of operation, and financial statements widely announced to investors (Sutyanto, Andati and Nuryartono, 2017)

Research Instruments

The research instrument was questionnaire distributed by mail to the respondents who were administrators in internal audit units. These people were responsible directly for operating internal audit of organizations, and informing important financial information for economic decision-making (Pararit, Ussahawanitchakit and Boonlua, 2017) The contents of the questionnaires were divided into 6 parts. Part 1 was concerned with general information of the respondents whereas Part 2 was concerned with general information about the listed firms in the Stock Exchange of Thailand. Part 3 involved with opinions about internal audit quality in 20 items covering the contents of 5 factors: 4 items of operation environment concerning the enterprise' perceived importance on work standard setting, ethics, creation of good internal audit atmosphere, and arrangement for job description papers; 4 items of risk assessment concerning integration of knowledge, skills, specialization, and experience which related to the method of risk management in all activities; 4 items of audit planning concerning the enterprise's awareness in setting clear internal audit plans covering all work activities by using time and resource effectively; 4 items of internal audit operations concerning the enterprise's focus on audit operation, job validation and review, and proper performance evaluation; and 4 items of internal audit report concerning the enterprise's perceived important on report presentation according to the standards of internal audit operation with suggestions for improvement according to users' needs timely and accurately. Part 4 was concerned with opinions about the outcome of internal audit quality covering the contents of firm value (4 items) concerning the enterprise's financial status, organization performance in comparison with the previous year, growth rate, and increase of market segmentation with acceptance of customers and business field. Part 5 involved with factors affecting on internal audit quality in 16 items covering the contents of management vision (4 items) concerning the administrators' perceived importance on setting objectives, targets, operational guidelines with transparency, concreteness, and auditable systems; corporate governance (4 items) concerning the enterprise's persistence to management with good governance, laws and regulations, moral and ethics, and accuracy and honesty in work operation with consideration on creation of value for all stakeholders; accounting fit (4 items) concerning the enterprise's support for development of modern accounting system, application of information technology with effectiveness of data processing, employees' continuous self-development; and competition intensity (4 items) concerning fluctuated environment, intense competition, diversity of demands, and complexity of operation which should be improved for good and proper operational system. And Part 6 was concerned with comments and suggestions about factors and consequences of internal audit quality. Part 1 and 2 were in the form of choice selection whereas Part



3 – 5 were in 5-point Likert Scale i.e. 1 (least agree) and 5 (mostly agree). The statistics used for quantitatively analyzing the questionnaire data were frequency, percentage, mean, standard deviation, and multiple regression analysis. The data interpretation on Part 3 – 5 was based on the method of Best & Kalm (1993) 4.50-5.00 = most, 3.50-4.49 = much, 2.50-3.49 = moderate, 1.50-2.49 = little, and 1.00-1.49 = least.

After the questionnaire was developed, it was validated on content validity and construct validity in order to ensure the congruence of the item contents and the objectives of the study, the clarity of the item contents and language use, and the objectivity of each item according to the research objectives. The validation was done by experts and each issue was modified according to the experts' suggestions and the statistical test on factor loading. After the instrument modification, the questionnaire was piloted with another group of 30 people who were not the samples in the study but had similar demographical characteristics with the sample group. This test was for finding out confidence according to Cronbach by using Alpha coefficient. After that the researcher improved the research instrument for using in data collection with the sample group.

Measurement of variables

Internal audit quality refers to qualitative aspects indicating usefulness of internal audit for economic decision-making of financial statement users on 5 dimensions: operational environment, risk assessment, audit planning, internal audit operations, and internal audit report.

1. Operational environment was referred to organizational ability to design flexible and concrete activities to improve business environment according to organizational goals (Koutoupis and Pappa, 2018; Klinsukhon, Phornlaphatrachakorn and Wongkhae, 2018; COSO, 2013).

2. Risk assessment was referred to organizational ability to integrate methods for effectively examine risks and manage possible uncertainty in each activity of an organization (Koutoupis and Pappa, 2018; COSO, 2013)

3. Audit planning was referred to organizational ability to clearly and effectively identify audit activities covering all possible risks (Koutoupis and Pappa, 2018; COSO, 2013).

4. Internal audit operations was referred to organizational ability to review and assess performance according to work guidelines by using time and resource qualitatively (Koutoupis and Pappa, 2018; COSO, 2013).

5. Internal audit report was referred to organizational ability to examine proposed important issues of internal audit according to standards and needs of related people timely and accurately (Koutoupis and Pappa, 2018; Klinsukhon, Phornlaphatrachakorn and Wongkhae, 2018; COSO, 2013)

The researcher reduced the number of variables by combining 5 variables into one factor regarded as another variable for finding out the factor score of the developed factor. Then the variables of total quality of internal audit was analyzed for hypothesis testing.

Firm Value was referred to the positive direction of the enterprise' financial and non-financial performance which was measured by the enterprise's sales growth, market segmentation, stable image, and fame (Klinsukhon, Phornlaphatrachakorn and Wongkhae, 2018; Shahimi, Mahzan and Zulkifli, 2016)



Management vision was referred to perception of administrators to focus on continuous improvement and development of work for sustainable firm value of organizations (Khammongkol, Phornlaphatrachakorn and Janjarasjit, 2018; Bello, Ahmad and Yusof, 2018)

Corporate governance was referred to administration under laws, rules and regulation both inside and outside of an organization by considering to increase value for all stakeholders (Koutoupis and Pappa, 2018; Khan et al., 2016; Talab, Abdul Manaf and Abdul Malak, 2017; Gros, Koch and Wallek, 2017; Halbouni, Obeid and Garbou, 2016)

Accounting system fit was referred to accounting process with continuous improvement and development for analyzing, summarizing, interpreting and presenting accounting data accurately and timely (Ahmad, 2018; Khammongkol, Phornlaphatrachakorn and Janjarasjit, 2018; Raiborn, et.al, 2017; Tan, 2016).

Competition intensity was referred to external factors from fluctuated environment depending on various demands which had effects on internal audit activities (Khammongkol, Phornlaphatrachakorn, and Janjarasjit, 2018; Jiang, André and Richard, 2018)

In this research, there were 2 control variables: firm size and firm age. The previous study of Khanh and Nguyen (2018) found that firm size had effects on internal audit quality whereas another study of (Okpara, Ezirim and Mohammed, 2017). Found that both firm size and firm age had effects on performance and strategies to operate business. Therefore, this research set firm size and firm age as control variables in equations of regression analysis with variables of internal audit quality and firm value. For, firm age was represented by a dummy variable of which 0 meant the firm had been in business less than or equal to 15 years, and 1 meant the firm had the period of time in operation of more than 15 years. In addition, firm size was represented by a dummy variable in which 0 meant a firm had total assets less than or equal to 50,000,000,000 bath, and 1 meant a firm had total assets more than 50,000,000,001 bath.

Data Collection

The population and the samples of this research included 518 firms in The Stock Exchange of Thailand (The Stock of Exchange of Thailand, 2018) After the questionnaire distribution, 3 sets of undelivered mails were returned because of moving or changing addresses so the total questionnaire mails were 515. Later, 132 sets of completed questionnaires were returned i.e. 25.63%. However, the response rate of more than 20% was regarded as acceptable without the follow-up (Aaker, Kumer and Day, 2001)

Data Analysis

Factor analysis was used to investigate relationship among the questionnaire items by reducing the number of related items. This research used confirmatory factor analysis (CFA) as shown in Table 1 by considering from factor loadings of each variable between 0.474 – 0.935, above 0.40 according to the rule of Hair et al, (2006) in order to test validity of the questionnaire items. In addition, the reliability of the questionnaire was assessed with Cronbach's Alpha Coefficient and found that each variable was at the range of 0.837 – 0.974, above 0.70 according the rule of Hair et al., (2006). The results of the reliability test revealed that the instrument had internal consistency. Table 1 shows the statistical details of factor loading and Cronbach's alpha for each listed variable. The analyzing results indicated that the variables in this study



were reliable and valid for collecting data.

Table 1 Results of Measurement Validation

Variables	Factor Loadings	Cronbach's Alpha
Firm Value (FV)	0.744 – 0.935	0.840
Operational Environment (OE)	0.529 – 0.738	0.842
Risk Assessment (RA)	0.524 – 0.814	0.854
Audit Planning (AP)	0.530 – 0.709	0.837
Internal Audit Operations (IAO)	0.596– 0.800	0.888
Internal Audit Report (IAR)	0.856 – 0.910	0.923
Management Vision (MV)	0.486 – 0.844	0.974
Corporate Governance (CG)	0.474 – 0.762	0.929
Accounting System Fit (ASF)	0.755 – 0.833	0.964
Competition Intensity (CI)	0.762 – 0.816	0.959

The present research used an ordinary least square (OLS) method to test relationship and estimate the parameters of the given variables. Since the data in this research were interval and numerical, OLS analysis was regarded as appropriate for analyzing such relationship (Ngo et al., 2016). The equations used to test the relationship in this study are as follows.

Equations 1:	FV	=	$\alpha_1 + \beta_1 OE + \beta_2 RA + \beta_3 AP + \beta_4 IAO + \beta_5 IAR + \beta_6 FA + \beta_7 FS + \epsilon_1$
Equations 2:	FV	=	$\alpha_2 + \beta_8 TQIA + \beta_9 FA + \beta_{10} FS + \epsilon_2$
Equations 3:	TQIA	=	$\alpha_3 + \beta_{11} MV + \beta_{12} CG + \beta_{13} ASF + \beta_{14} CI + \beta_{15} FA + \beta_{16} FS + \epsilon_3$

Note: FV is firm value, TQIA is total quality of internal audit, OE is operational environment, RA is risk assessment, AP is audit planning, IAO is internal audit operations, IAR is internal audit report, MV is management vision, CG is corporate governance, ASF is accounting system fit, CI is competition intensity, FA is firm age, FS is firm size, and ϵ is error term.

The results of descriptive statistics and correlation matrix analysis of the variables are presented in Table 2. The relationship of independent variables was determined from VIF values which were found 1.12 – 2.27. According to the rule of Neter, Easserman & Kutner (1985), the value below 10 indicates that each independent variable does not have high relationship. Therefore, it is concluded in the present study that the problem of multicollinearity of the independent variables did not occur.

Table 2 The results of Correlation analysis of organizational variables on firm value, internal audit quality and factor affecting internal audit quality

Variables	FV	OE	RA	AP	IAO	IAR	MV	CG	ASF	CI	FA
Mean	4.04	4.37	4.23	4.44	4.34	4.26	4.36	4.42	4.23	4.37	n/a
SD	0.33	0.32	0.31	0.31	0.37	0.30	0.38	0.32	0.43	0.43	n/a
VIF	-	2.05	2.14	2.18	2.12	2.27	2.26	2.12	1.62	1.51	1.12
OE	.542**										
RA	.540**	.638**									
AP	.466**	.583**	.688**								
IAO	.632**	.451**	.422**	.620**							
IAR	.604**	.517**	.613**	.495**	.588**						
MV	.576**	.361**	.688**	.282**	.438**	.481**					
CG	.563**	.497**	.472**	.393**	.393**	.580**	.682**				
ASF	.666**	.428**	.422**	.450**	.546**	.530**	.539**	.554**			
CI	.530**	.389**	.613**	.194**	.305**	.333**	.524**	.453**	.384**		
FA	.072	-.004	.123	-.178	-.119	.100	-.025	.053	-.049	.196	
FS	.170	.147	.082	.269	.271**	-.113	.065	.143	.206	.021	-.123

**p < 0.01, N= 132

The results of descriptive statistics and correlation matrix analysis of the variables are presented in Table 2. The relationship of independent variables was determined from VIF values which were found 1.12 – 2.27. According to the rule of Neter, Easserman and Kutner (1985) the value below 10 indicates that each independent variable does not have high relationship. Therefore, it is concluded in the present study that the problem of multicollinearity of the independent variables did not occur.

Results and Discussion

Regarding the general information of the respondents, most of them were female (59.80%) at the age of 41-50 years (37.10%), single status (70.00%), educational level higher than bachelor's degree (71.00%), work experience with the firm more than 15 years (45.50%), average income per month at 70,001 – 90,000 (47.70%), and current job position as administrators in internal audit (65.90%) followed by managers in internal audit (25.80%).

Regarding business profiles of the listed firms in Stock Exchange of Thailand, the industrial types of these firms were in real estate and construction (18.90%), followed by financial business (16.70%). These firms has registered in Stock Exchange of Thailand for more than 15 years (48.50%) and run business more than 15 years (68.90%). The firms' registered capital stocks were at 5,000,000,001 - 9,000,000,000 baht



(41.70%) with total assets at 10,000,000,001 - 50,000,000,000 baht (34.80%) and debt to equity ratio at 2-3 folds (45.50%). Most firms which responded the questionnaire received awards of success or excellence in operation (88.60%)

Table 3 Results of Ordinary Least Square Regression Analysis

Internal Audit Quality	Hypothesis	Firm Value		t-value	P-value
		B	Std. Error		
Operational Environment (OE)	H1a	0.189	0.087	2.178	0.031**
Risk Assessment (RA)	H1b	0.145	0.089	1.628	0.106
Audit Planning (AP)	H1c	- 0.097	0.092	-1.054	0.294
Internal Audit Operations (IAO)	H1d	0.382	0.089	4.312	0.000***
Internal Audit Report (IAR)	H1e	0.195	0.091	2.129	0.035**
Firm Age (FA)	-	0.191	0.128	1.498	0.137
Firm Size (FS)	-	0.109	0.132	0.828	0.409
F = 18.564, Adjusted R ² = 0.518, Maximum VIF = 2.282, Durbin Watson = 1.799					
<i>Beta coefficients with standard errors in parenthesis, *** p<0.01, ** p<0.05</i>					

Table 3 presents the results of the regression analysis to test the relationship among factors affecting total internal audit quality i.e. H1a-e and organizational firm values according to Equation 1. The regression analyzing results indicates that internal audit quality on operational environment (H1a, b1 =0.189, p < 0.05), internal audit operations (H1d, b4 =0.382, p < 0.01), and internal audit report (H1e, b5 =0.195, p < 0.05) had positive relationship with the firm values of the organizations at the significant level of 0.05 and 0.01. However, the findings reveals that risk assessment (H1b, b2 =0.145, p > 0.05) and audit planning (H1c, b3 = -0.097, p > 0.05) did not have relationship with the firm values of the organizations at the significant level of 0.05.

Regarding the control variables, firm age and firm size were not found with statistical significance at 0.05. Therefore, the findings were concluded according to H1a, H1d and H1e. The results revealed that operational environment, internal audit operations and internal audit report had positive relationship with the firm values of the organizations. This indicated that internal audit quality on operational environment, internal audit operations, and internal audit report were important to support the organization to operate work effectively, obtain information according to the needs to determine directions, support appropriate decision-making under uncertain situations, and use resource worthily. The findings were consistent to those in previous studies of Klinsukhon, (Phornlaphatrachakorn and and Wongkhae, 2018). These studies found that dynamic internal audit planning, internal audit method integration and internal audit innovation orientation had effects on firm values. The findings which the dimensions of risk assessment and audit planning were not as hypothesized were consistent to the suggestions of questionnaire respondents that

success in the past could not guarantee the same method to lead to success in the future due to the occurrence of various changes

Table 4: The test results of relationship between the total internal audit quality and the firm values of the organizations

Total Quality of Internal Audit	Hypothesis	Firm Value		t-value	P-value
		B	Std. Error		
Total Quality of Internal Audit:	H1	0.686	0.065	2.178	0.000***
Firm Age (FA)		0.285	0.127	1.498	0.045
Firm Size (FS)		0.083	0.130	0.828	0.526
F = 40.381, Adjusted R ² = 0.474, Maximum VIF = 1.049, Durbin Watson = 1.703					
<i>Beta coefficients with standard errors in parenthesis, *** p<0.01</i>					

Table 4 shows the results of the regression analysis to test the relationship between the total internal audit quality and the firm values of the organizations (H1 Total), according to Equation 2. The analyzing results indicated that the total internal audit quality (H1_Total, $b_8 = 0.686$, $p < 0.01$) had positive relationship with the firm values of the organizations with the statistical significance of 0.01. However, two control variables did not have statistical significance at 0.01. The findings were consistent to the results of the regression analysis in Equation 1 in Table 3. In overall, it can be concluded that the internal audit quality was an important factor to support the firm values of the listed firms in the Stock Exchange of Thailand. Therefore, the findings confirmed H1 Total. The findings indicated that the total internal audit quality had effects on the firm values of the organizations. This is consistent to previous studies which found that internal audit intelligence orientation supported firm value (Klinsukhon, Phornlaphatrachakorn and Wongkhae, 2018). This is also consistent to the study of Khammongkol, Phornlaphatrachakorn and Janjarasjit, (2018) which suggested that internal audit excellence could inform useful details for decision-making and firm goal achievement.

**Table 5** The test results of relationship between factors affecting the total internal audit quality

The Factors Affecting the TQIA	Hypothesis	Total Quality of Internal Audit		t-value	P-value
		B	Std. Error		
Management Vision (MV)	H2	0.011	0.101	0.091	0.927
Corporate Governance (CG)	H3	0.299	0.098	3.067	0.003**
Accounting System Fit (ASF)	H4	0.308	0.086	3.597	0.000***
Competition Intensity (CI)	H5	0.163	0.083	1.976	0.050**
Firm Age (FA)	-	-0.194	0.140	-1.391	0.167
Firm Size (FS)	-	0.177	0.139	1.281	0.203
F= 16.264, Adjusted R ² = 0.411, Maximum VIF = 2.260, Durbin Watson = 2.304,					
Beta coefficients with standard errors in parenthesis, *** p<0.01, ** p<0.05					

Table 5 presents the results of the regression analysis to test the relationship between factors affecting the total audit quality in Equation 3. The tested variables were management vision (H2), corporate governance (H3), accounting system fit (H4), and competition intensity (H5) which were expected to have effects on the total internal audit quality. The results of the regression analysis showed that corporate governance (H3, $b_{12} = 0.299$, $p < 0.05$), accounting system fit (H4, $b_{13} = 0.308$, $p < 0.01$), and competition intensity (H5, $b_{14} = 0.163$, $p < 0.05$) had positive relationship with the total audit quality with statistical significance of 0.05 and 0.01 respectively. However, management vision (H2, $b_{11} = 0.011$, $p > 0.05$) did not have relationship with the total internal audit quality, and the control variables did not have statistical significance of 0.05.

Therefore, the findings confirmed H3, H4, and H5. Corporate governance, accounting system fit, and competition intensity had positive relationships with the total internal audit quality. This is consistent to the findings of the previous study Khammongkol, Phornlaphatrachakorn and Janjarasjit, (2018) which found that internal audit well roundedness, innovation culture, technology complementarity and competition complexity had positive effects on internal audit excellence capability. This is also consistent to another study Ahmad, (2018) which found that accounting information system fit had positive effects on internal audit quality. The variable of management vision were not as hypothesized. This could be explained that management vision might not be the factor which directly affected internal audit quality, but it might be a parameter driving internal audit quality to occur. This is consistent to the study of Bello, Ahmad and Yusof (2018) which found that top management support was moderating variable between internal quality and organizational performance.

Other comments and suggestions from the questionnaire respondents could be summarized as follows. Success in the past could not guarantee that the same method would lead to success in the future due to the occurrence of various changes. Effective internal audit must have human resources with sufficient skills and comprehensive internal audit planning. Risk-based audit might seriously affect organizations and



internal audit should be regularly measured both from inside and outside. Auditors should be supported to participate in training to regularly accumulate knowledge. Administrators with perceived importance of internal audit is helpful for increasing effectiveness of internal audit. Audit planning with coverage of risks will enhance the firms' stability.

Conclusion

The results of this study reveal that the important factors affecting internal audit quality i.e. corporate governance, accounting system fit, and competition intensity had positive effects on total internal audit quality; and total internal audit quality had positive effects on firm value. Moreover, the analysis of internal audit quality in each dimension showed that the internal audit quality on operational environment, internal audit operations, and internal audit report had positive relationship with the firm values. These findings indicate that internal auditors should be aware of quality of the internal audit. Top management should be aware of the importance of internal audit. They should set standards of work operation, code of conduct, job description with the integration of ethics as guidelines of practice to be more practical. Top management should regularly behaves as a good model and should not force the employees to the over-expected targets. In addition, an organization should be persistent to good corporate governance, have modern accounting system to increase ability to obtain information accurately and timely, and learn how to improve work procedure proper for changing environment and beneficial for increasing internal audit quality and firm value. Top management is the main mechanism in business supervision for good work performance. Therefore, reporting performance in various working units should be supervised on policy, business supervision, business ethics, risk management, and strong and effective systems of control and audit through websites or annual report because the disclosure of such information has main effects on decisions of stakeholders.

Suggestion and Limitations

Administrators in internal audit in listed firms in Stock Exchange of Thailand can use the findings of the study to determine guidelines for effective internal audit. Personnel in internal audit have an important role in work operation so they should be focused on employee recruitment and selection. Firm committee should have knowledge in finance and risk management; be persistent to code of conduct, and support employees to regularly participate in training.

Future research should study with different groups of samples such as internal auditors in governmental higher education or particular business such as food business, financial business, tourism business etc. in order to know various data which are useful for data users.



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