

# Factors Affecting Internal Audit Effectiveness: Empirical Evidence from Vietnam

Thu Trang Ta <sup>1</sup>, Thanh Nga Doan <sup>2,\*</sup>

<sup>1</sup> School of Accounting and Auditing, National Economics University, Vietnam; trangtt@neu.edu.vn

<sup>2</sup> School of Accounting and Auditing, National Economics University, Vietnam; doanthanhnga@neu.edu.vn

\* Correspondence: doanthanhnga@neu.edu.vn; Tel.: (+84 906290208)

**Abstract:** The study investigates the key factors affecting the internal audit effectiveness in Vietnam. The factors that are studied in this research include Independence of internal audit, Competence of internal auditors, Management support for internal audit and Quality of internal audit work. The authors have utilized quantitative and qualitative analyses in combination with a logistics regression model and other available analytical tools for conducting the research in SPSS software. All statistics processed in the paper were based on primary data which was collected through semi-structured in-depth interviews and online surveys of 144 internal auditors of non-financial companies listed on Vietnamese stock market in 2021. The results reveal that factors including independent of internal audit and management support for internal audit has a positive impact on the effectiveness of internal audit, while competence of internal auditors and quality of internal audit work do not affect the effectiveness of internal audit.

**Keywords:** Effectiveness; Internal audit; Vietnam

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## 1. Introduction

The changes in the economy and political environment, information technology have significantly affected corporate governance. Enterprises are facing many business risks leading to many different types of financial fraud in recent years. Detecting and preventing business risks and large-scale financial frauds have several limitations of challenging issues for board of directors, senior management and internal audit activities. In order to strengthen the functions and responsibilities of internal audit, the effectiveness of internal audit functions should be researched and supplemented in the legal system and professional standards. Specially, after collapsing the number of fraudulent financial reporting in the century 20th, the governance agencies and professional associations have reformed the legal system to enhance internal audit function in corporate governance, risk management process and control process. According to IPPF (2017), internal auditing is an independent, objective assurance and consulting activity designed to add value and improve an organization's operations. It helps an organization accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control, and governance processes. Due to the important role of internal audit in the organization, the effectiveness of internal audit has become a subject of research in the world for a long time and in different countries (Mihret & Yismaw 2007; Ahmad et al. 2009; Arena & Azzone 2009; Baharud-din et al. 2014; Alzeban & Gwilliam 2014; Sakour & Laila 2015; Dellai & Omri, 2016). However, studies in the world focusing on factors affecting the effectiveness of internal audit functions, mainly conducted in the public and banking sectors, the researches of effectiveness of internal audit of listed companies is limited.

In Vietnam, the effectiveness of internal audit has several limitations because many listed companies have lack of understanding of function and responsibilities of internal

auditor and how to support the internal auditors' effective operations. For Vietnamese studies, in regard to internal audit of non-financial listed companies, there are a little of researches related this topic. Therefore, the overall research objectives of the paper is to research the factors affecting the effectiveness of internal audit of non-financial companies listed on Vietnam's stock market.

## 2. Literature review and Hypotheses

Researches on factors affecting the effectiveness of internal audit in two aspects including the effectiveness of internal audit function and factors affecting the effectiveness of internal audit. Some studies have presented several factors affecting internal audit effectiveness as following.

Firstly, the effectiveness of internal audit is based on the internal audit concept of IIA (Mihret et al. 2010; Gros et al. 2017). The important objective of internal audit is to provide an independent and objective audit and advisory function, designed to create added value and complete organizational activities. Internal audit helps the organization achieve its goals by adopting a systematic and systematic approach to assess and improve the effectiveness of risk management processes, control processes, corporate governance (Hass et al. 2006; Yee et al. 2008; Walter & Gruandaru 2012; Dellai & Omri 2016, IPPF 2017). Especially, Yee et al. (2008) conducted the research through interviewing 83 Singaporean senior, middle and junior managers to assess their perceptions about both the role and effectiveness of internal audit. These results suggest that both Singaporean senior and junior managers appreciate internal auditors that serve in the business partner role. In addition, this paper further expands and develops the literature on the role and effectiveness of internal auditing from the perspective of internal audit customers. Dellai & Omri (2016) examined factors affecting internal audit effectiveness in the Tunisian context and collected responses from chief audit executives of 148 Tunisian organizations. This research gave the several measurement for internal audit effectiveness including compliance with IIA Standards, internal audit planning, issuing internal audit reports, implementation of internal audit recommendations and evaluation and improvement of control, risk management and governance processes.

Secondly, the factors have affected the effectiveness of internal audit including the independence of internal auditor and the department of internal audit, competence of internal auditors, support from managers for the internal audit department, quality of audit work. Mutchler (2003), Al-Akra et al. (2016) have pointed out that the independence of internal audit department and internal auditors is an important factor affecting the effectiveness of internal audit. Dellai & Omri (2016) showed that that effectiveness of internal audit is positively influenced by the independence of internal audit. The competence of auditors in the audit department is the most important factor affecting the effectiveness of all internal audit activities (Al-Twajry et al. 2003; Alzeban & Gwilliam 2014). The support from the manager to the internal audit department is a key factor in accepting and improving the role of the internal audit department in the business (Ahmad et al. 2009; Alzeban & Gwilliam 2014; Dellai & Omri 2016). In particular, Alzeban & Gwilliam (2014) assessed factors affecting internal audit effectiveness in Saudi Arabia with interviewing 203 managers and 239 internal auditors from 79 Saudi Arabian public sector organizations. This results showed links between management support and internal audit effectiveness are likely generalizable beyond the Saudi public sector context. In addition, Dellai & Omri (2016) have found out the positive relationship between management support with internal audit effectiveness. Mihret & Yismaw (2007); Alzeban and Gwilliam (2014) have pointed out the impact of quality of audit work on the effectiveness of internal audit.

From the overview of previous studies, we can see that there are 4 main factors affecting the effectiveness of internal audit, specifically as follows:

### 2.1. Independence of internal audit and effectiveness of internal audit function

Independence is the freedom from conditions that threaten the ability of the internal audit activity to carry out internal audit responsibilities in an unbiased manner. To achieve the degree of independence necessary to effectively carry out the responsibilities of the internal audit activity, the chief audit executive has direct and unrestricted access to senior management and the board. Especially, the chief audit executive must report to a level within the organization that allows the internal audit activity to fulfill its responsibilities. The chief audit executive must confirm to the board, at least annually, the organizational independence of the internal audit activity. Independence is a factor that performs its functions without facing conditions that can lead to an impartiality of internal audits exercising their responsibilities (IPPF 2017). Independence is one of the mandatory requirements in the system of professional ethical standards for auditors. However, due to the characteristic of the organizational structure of internal auditors in the enterprise, the internal audit department and internal auditors are an integral part of the organizational structure. In order to ensure the independence for the implementation and give opinions of the internal audit, the independence between the internal audit department and the staff of the internal audit department with other departments within the entity such as senior management, head of other department. These relationships lead to be studied to assess the influence on effectiveness of internal audit. Mutchler (2003), Baharud-din et al. (2014), Al-Akra et al. (2016) have pointed out that the independence of internal audit department and internal auditors is an important factor affecting the effectiveness of internal audit. In order to measure the independence of internal audit. IPPF (2017) has introduced requirements for the reporting function of internal audit including administrative reports to senior management and the functional reporting of professional responsibilities to the Board of Director/Audit Committee or the Board Controller. Internal auditors have the right to unrestricted to documents, personnel and other departments in collecting audit evidence, avoiding conflicts of interest between internal auditors with other department, senior management (Goodwin & Yeo 2001; Christopher et al. 2009). In addition, Alizadeh (2011) has shown that the independence of internal audit is one of five factors that play an important role in affecting the effectiveness of internal audit. Soh & Bennie (2011), Alzeban & Gwilliam (2014) think that the position of the internal audit department in the organization such as the internal audit department of the Board or Director (Audit Committee) or the senior management has a positive relationship with the effectiveness of internal audit. Abdolmohammadi (2009) and Arena & Azzone (2009) have presented in order to increase the effectiveness of internal auditing that the Chief Audit Executives must be a member of the Internal Audit Institute of the United States. When becoming members of the Internal Audit Institute to help internal audit, the auditors strictly comply with the requirements of professional ethical principles, especially the independence of internal auditor. Based on the previous studies and researches, the authors establish the first research hypothesis:

**Hypothesis H1:** Independence of internal audit has a positive effect on the effectiveness of internal audit.

## 2.2. Competence of internal auditors and effectiveness of internal audit function

IPPF (2017) also emphasizes the importance of the professional competence of internal auditors. Internal auditors must possess the knowledge, skills, and other competencies needed to perform their individual responsibilities. The internal audit activity collectively must possess or obtain the knowledge, skills, and other competencies needed to perform its responsibilities. It encompasses consideration of current activities, trends, and emerging issues, to enable relevant advice and recommendations. Internal auditors are encouraged to demonstrate their competence by obtaining appropriate professional certifications and qualifications.

The competence of internal auditors is the most important factor affecting the effectiveness of all internal audit activities (Al-Twaijry et al. 2003; Alzeban & Gwilliam 2014). Previous studies pointed out that competence of internal auditors is a critical determinant

of internal auditor effectiveness. Al-Matarneh (2011), Mihret & Woldeyohannis (2008), Ali & Owais (2013) suggested that the measurement of the competence of internal audit is based on necessary education, professional qualifications, experience and the number of training hours of an internal auditor and updating continuing professional training. Moreover, Fanning & Piercey (2014) pointed out soft skills such as communication, persuasion and interaction skills with organizational divisions are important measures affecting the effectiveness of internal audit. Al-Twajry et al. (2003) have confirmed that adequate level of competencies of internal auditor in training, experience, knowledge and professional qualifications have a positive influence on the effectiveness of internal auditor. Other studies found that the lack of competence of internal auditor is an obstacle to effectiveness of IA in a number of African countries (Mihret & Yismaw 2007; Onumah & Yao Krah 2012; Walter & Guandaru 2012). Based on previous international and Vietnamese studies, the following hypothesis are designed:

**Hypothesis H2: Competence of internal auditors has a positive effect on the effectiveness of internal audit.**

### *2.3. Management support for internal audit and effectiveness of internal audit function*

The support and commitment of management also are important factors to make effectiveness of internal audit. The success of internal function will depend on the strength of management's support for the internal audits' work and auditing process. They have to accept the fact that the IA process is just as critical and important activity as any other process within the organization. Some researchers found that without management approval, support, and encouragement, the IA audit process are likely to face failure and worse – time and money wasted. The support from the manager to the internal audit department is a key element in accepting and appreciating the role of the internal audit department in the business. In IPPF (2017), the internal audit department needs to have the support of senior management and the Board of Directors to perform the duties and responsibilities in overseeing the control and risk management, corporate governance in enterprise. Mihret et al., 2010 conducted the research in public organization in the US. The results of the research showed that management support is the most important impact on the effectiveness of internal audit. Gramling et al. (2004), Salameh et al. (2011), Ahlawat & Lowe (2004), Aikins (2011), Octavia (2013) show that the positive attitude of managers to internal audit plays an important role in the audit planning process and the effectiveness of internal audit. Ahmad et al. (2009) on their study on internal audit in the public sector and local government of Malaysia found that management support is a factor that influences the implementation of the audit recommendations and the internal audit department is supported the number of auditors and the appropriate budget for implementation of audit process and development of internal audit function. Dellai & Omri (2016) found out the positively influenced by the management support for internal audit. The Board of Directors will support the approval of internal audit regulations and plans, appointment, resigning and salary decisions for Internal Auditors. For managers, support for internal audit in administrative approval of personnel and allocated budget for internal auditors to implement the audit plan, actively support for the audit department internally in training and professional development. In addition, senior management should be aware of the importance of the internal audit's role in the organization and support the internal audit's compliance with the laws, responsibilities, and authority of Internal auditors.

Internal audit department must ensure that internal audit resources are appropriate, sufficient, and effectively deployed to achieve the approved plan. Therefore, Onumah & Yao Krah (2012) found that ineffectiveness of internal audit was mainly hindered by the absence of management support and insufficient resources for the internal audit department. In addition, Alzeban & GWilliam (2014) found that management support was strongly related to the three auditing effectiveness dimensions. Therefore, the hypothesis is established as follows:

**Hypothesis H3:** Management support for internal audit has a positive effect on the effectiveness of internal audit.

#### 2.4. Quality of internal audit work and effectiveness of internal audit function

Cohen & Sayag (2010), Dejnaronk et al. (2016) showed that performing the audit work in accordance with the internal audit standards affecting effectiveness of internal audit. Mihret & Yismaw (2007) performed research examined the relationship between the internal audit quality with effectiveness of internal audit. This studies pointed out the quality of internal audit have an influence on the internal audit effectiveness. Aaron & Gabriel (2010) pointed out the quality of audit work was measured by annual audit plan, the areas audited, the regular follow – up by internal audit,... The following hypotheses is developed:

**Hypothesis H4:** Quality of internal audit work has a positive effect on the effectiveness of internal audit.

### 3. Research Methodology

Based on literature review on effectiveness of internal audit, the authors identify factors significantly influencing effectiveness of internal audit and and measure them according to appropriate methods, from which choosing suitable independent variables and regression models. Then, the authors collected relevant studies to build up an appropriate model. After that, primary data was collected through semi-structured in-depth interviews and online surveys of internal auditors of non-financial companies listed on Vietnamese stock market. Then, collected data is cleansed by removing duplicate and inhomogeneous elements and raw statistics are processed using SPSS Statistics 20 software to exploit regression analysis and descriptive statistics.

In this research, the sample is chosen according to the convenient sampling method by selecting non-probability samples. Internal auditors selected to survey are individuals who are working for non-financial companies listed on Vietnamese stock market. The formula for determining the minimum sample size for research to achieve reliability. The size of the sample applied in the study is based on the requirements of Exploratory Factor Analysis (EFA) and multivariate regression. For exploratory factor analysis EFA: the minimum sample size should be more than 100 samples. For multivariate regression analysis: the minimum sample size needed is calculated by the formula is  $50 + 8 * 4 = 82$  (4 independent variables). Therefore, 144 respondents satisfy both above formulas.

The author used regression with the dependent variable Internal audit effectiveness to assess the effect of variables on internal auditors' effectiveness. The factors described in the exploratory analysis (EFA) above are the independent variables affecting. The following is an example of a regression model:

$$HL = \beta_0 + \beta_1DL + \beta_2NL + \beta_3HT + \beta_4CL + \epsilon_i \quad (1)$$

Where is HL: Internal audit effectiveness, DL: Independence of internal audit, NL: Competence of internal auditor, HT: Management support for internal audit, CL: Quality of internal audit work.

Researchers designed a questionnaire with 38 observations including 1 dependent variable and 4 independent variables, using the 5-level Likert scale (Score 1: Absolutely disagree, Score 5: Absolutely agree).

Dependent variable is Internal audit effectiveness. In this study, the authors decided to measure Internal audit effectiveness with 12 observations.

Independent variables are variables that affect the dependent variable. In this research, there are four (4) variables considered four factors that are Independence of internal audit (DL) with 9 observations, Competence of internal auditor (NL) with 9 observations, Management support for internal audit (HT) with 4 observations and Quality of internal audit work (CL) with 4 observations. The scales of variable are inherited from

previous studies by Goodwin & Yeo (2001), Mutchler (2003), Christopher et al. (2009), Aaron & Gabriel (2010), Walter & Guandaru (2012), Baharud-din et al. (2014), Alzeban & Gwilliam (2014), Dellai & Omri (2016), Al-Akra et al. (2016).

#### 4. Analysis of Results

##### 4.1. Descriptive Statistical Analysis

The table below present the general information related to the demographic information of internal auditors.

**Table 1.** Demographic information of respondents.

| Demographic information of respondents. |                                                                                                 | Observation | Percentage (%) |
|-----------------------------------------|-------------------------------------------------------------------------------------------------|-------------|----------------|
| Gender                                  | Male                                                                                            | 54          | 37.5           |
|                                         | Female                                                                                          | 90          | 62.5           |
|                                         | <b>Total</b>                                                                                    | <b>144</b>  | <b>100</b>     |
| Working experience                      | < 5 years                                                                                       | 22          | 15.2           |
|                                         | > 15 years                                                                                      | 4           | 2.9            |
|                                         | from 11 years - 15 years                                                                        | 54          | 37.5           |
|                                         | from 5 years - 10 years                                                                         | 64          | 44.4           |
|                                         | <b>Total</b>                                                                                    | <b>144</b>  | <b>100</b>     |
| Working position                        | Internal auditor                                                                                | 98          | 68             |
|                                         | Deputy head of department of internal audit                                                     | 28          | 19.4           |
|                                         | Head of department of internal audit                                                            | 18          | 12.5           |
|                                         | Internal audit assistance                                                                       | 4           | 0.1            |
|                                         | <b>Total</b>                                                                                    | <b>144</b>  | <b>100</b>     |
| Education degree                        | Bachelor                                                                                        | 72          | 50.0           |
|                                         | Master                                                                                          | 66          | 45.8           |
|                                         | PhD                                                                                             | 6           | 4.2            |
|                                         | <b>Total</b>                                                                                    | <b>144</b>  | <b>100</b>     |
| Professional Certificate                | Yes (CPA, ACCA, CIA, CMA, FRM,...)                                                              | 52          | 36.1           |
|                                         | No                                                                                              | 92          | 63.9           |
|                                         | <b>Total</b>                                                                                    | <b>144</b>  | <b>100</b>     |
| Internal audit department               | Yes                                                                                             | 106         | 73.6           |
|                                         | No                                                                                              | 38          | 26.4           |
|                                         | <b>Total</b>                                                                                    | <b>144</b>  | <b>100</b>     |
| Internal audit function                 | Control Board                                                                                   | 12          | 8.3            |
|                                         | Internal audit department (in-house)                                                            | 104         | 72.2           |
|                                         | Combination between internal audit department and outsourcing a part of internal audit function | 22          | 15.3           |
|                                         | Outsourcing 100% internal audit function                                                        | 6           | 4.2            |
|                                         | <b>Total</b>                                                                                    | <b>144</b>  | <b>100</b>     |

Source: Results from the authors' study.

##### 4.2. Reliability Analysis - Cronbach's Alpha

The Cronbach's Alpha coefficient for all items is higher than 0.6. The Corrected Item-Total Correlation of each observed independent and dependent variable is greater than 0.4 except for HL6, HL7, HL8, HL9, HL10, HL11, HL12, DL8, DL9, NL7, NL8, NL9, HT4. As a result, the study's scale only remained 25 observations for subsequent EFA review.

**Table 2.** Cronbach's Alpha.

| Variables                    | Symbol | Number of observed variables | Cronbach's Alpha | Cronbach's Alpha if Item Deleted             |
|------------------------------|--------|------------------------------|------------------|----------------------------------------------|
| <b>Dependent variables</b>   |        |                              |                  |                                              |
| Internal audit effectiveness | HL     | 12                           | 0.647            | 0.870 (HL6, HL7, HL8, HL9, HL10, HL11, HL12) |
| <b>Independent variables</b> |        |                              |                  |                                              |

|                                       |    |   |       |                       |
|---------------------------------------|----|---|-------|-----------------------|
| Independence of internal audit        | DL | 9 | 0.793 | 0.932 (DL8, DL9)      |
| Competence of internal auditor        | NL | 9 | 0.704 | 0.894 (NL7, NL8, NL9) |
| Management support for internal audit | HT | 4 | 0.788 | 0.845 (HT4)           |
| Quality of internal audit work        | CL | 4 | 0.858 |                       |

Source: Results from the authors' study.

#### 4.3. Exploratory factors analysis

The KMO coefficient calculated from the sample is 0.754 greater than 0.5. Thus, the sample size of the survey sample is eligible to conduct factor analysis. Barlett's test with the hypothesis H0: the correlation between observed variables is zero in the overall statistically significant because the P-value (Sig.) Determined from the sample is 0.00 less than significant level of 0.05 (or 5%). Therefore, it is possible to reject the hypothesis H0 or it can be concluded that the observed variables are correlated with each other in the whole.

To identify the main factors, the author uses a factor extraction method based on Eigenvalue values. The analysis results show that with 25 items to evaluate the effectiveness of the internal audit of companies listed on the Vietnamese stock market, five main factors can be extracted. According to the calculation results from the sample, these 5 factors explain 73,276% of the variation of the data set. The EFA analysis results that identify the observed variables for each factor are shown in the following Table 3:

**Table 3.** Rotated Component Matrixa.

|     | Component |      |      |      |      |
|-----|-----------|------|------|------|------|
|     | 1         | 2    | 3    | 4    | 5    |
| DL5 | .902      |      |      |      |      |
| DL6 | .848      |      |      |      |      |
| DL3 | .837      |      |      |      |      |
| DL7 | .825      |      |      |      |      |
| DL2 | .794      |      |      |      |      |
| DL4 | .785      |      |      |      |      |
| DL1 | .732      |      |      |      |      |
| NL2 |           | .924 |      |      |      |
| NL1 |           | .896 |      |      |      |
| NL5 |           | .832 |      |      |      |
| NL4 |           | .754 |      |      |      |
| NL6 |           | .745 |      |      |      |
| NL3 |           | .618 |      |      |      |
| HL3 |           |      | .814 |      |      |
| HL2 |           |      | .798 |      |      |
| HL5 |           |      | .779 |      |      |
| HL4 |           |      | .738 |      |      |
| HL1 |           |      | .631 |      |      |
| CL3 |           |      |      | .876 |      |
| CL2 |           |      |      | .865 |      |
| CL1 |           |      |      | .827 |      |
| CL4 |           |      |      | .788 |      |
| HT1 |           |      |      |      | .787 |
| HT3 |           |      |      |      | .774 |
| HT2 |           |      |      |      | .710 |

Source: Results from the authors' study.

#### 4.4. Analysis of Descriptive Statistics

The results of analysis of descriptive statistic are presented as follows:

Table 4. Descriptive Statistics.

| Factors/<br>Items            | Contents                                                                                                                              | Minimum     | Maximum  | Mean          | Std. Deviation |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|-------------|----------|---------------|----------------|
| <b>Dependent variables</b>   |                                                                                                                                       |             |          |               |                |
| <b>HL</b>                    | <b>Effectiveness of internal audit</b>                                                                                                | <b>3</b>    | <b>5</b> | <b>4.3444</b> | <b>0.45063</b> |
| HL1                          | Internal audit is performed in accordance with the audit chapter and audit manual, legal requirement of company                       | 3           | 5        | 4.4583        | 0.52908        |
| HL2                          | Internal audit communicates timely the engagement results                                                                             | 3           | 5        | 4.375         | 0.54223        |
| HL3                          | Internal audit makes appropriate recommendations for improving the organizational process                                             | 3           | 5        | 4.3472        | 0.58526        |
| HL4                          | Internal audit establishes a follow – up process to ensure that corrective actions have been effectively implemented                  | 3           | 5        | 4.25          | 0.52407        |
| HL5                          | Internal audit review the effectiveness and efficiency of operations and programs                                                     | 2           | 5        | 4.2917        | 0.59191        |
| <b>Independent variables</b> |                                                                                                                                       |             |          |               |                |
| <b>F1</b>                    | <b>Independence of internal audit</b>                                                                                                 | <b>2.86</b> | <b>5</b> | <b>3.9921</b> | <b>0.58969</b> |
| DL1                          | Internal auditor is not sufficiently independent to perform their professional obligations and duties.                                | 1           | 5        | 4.0417        | 0.84649        |
| DL2                          | The chief audit executive reports to a level within the organization that allows the internal audit to full fill its responsibilities | 1           | 5        | 3.9444        | 0.7485         |
| DL3                          | The chief audit executive has not direct contact to the board (to top level management)                                               | 2           | 5        | 3.9722        | 0.69144        |
| DL4                          | The internal audit department has not direct contact with senior management other than the finance director                           | 2           | 5        | 4.00          | 0.67135        |
| DL5                          | Conflict of interest is not rarely present in the work of internal auditors                                                           | 3           | 5        | 3.9722        | 0.64942        |
| DL6                          | Internal auditors rarely face interference by management while they conduct their work                                                | 3           | 5        | 3.9444        | 0.64762        |
| DL7                          | Internal auditors have not free access to all departments and employees in the organization                                           | 3           | 5        | 4.0694        | 0.61269        |
| <b>F3</b>                    | <b>Management Support for internal audit</b>                                                                                          | <b>3</b>    | <b>5</b> | <b>4.1157</b> | <b>0.4516</b>  |
| HT1                          | Senior management provides internal auditors the support that they expect                                                             | 3           | 5        | 4.2083        | 0.47285        |
| HT2                          | Senior management supports internal audit to perform its duties and responsibilities                                                  | 3           | 5        | 4.1111        | 0.51882        |
| HT3                          | Internal audit department has adequate budget given the amount of auditing work planned                                               | 3           | 5        | 4.0278        | 0.55595        |
| <b>F4</b>                    | <b>Quality of internal audit work</b>                                                                                                 | <b>1.5</b>  | <b>5</b> | <b>3.6597</b> | <b>0.77631</b> |
| CL1                          | The annual audit plan is determined completely by internal auditor                                                                    | 1           | 5        | 3.5833        | 0.98938        |
| CL2                          | The area audits audited are very significant to the organization                                                                      | 1           | 5        | 3.2361        | 1.06801        |
| CL3                          | The internal audit is able to cover all organizational units and all issues                                                           | 1           | 5        | 3.5556        | 1.00546        |
| CL4                          | There is regular follow-up by the internal audit staff to examine actions taken to correct the problem found                          | 3           | 5        | 4.2639        | 0.55647        |

Source: Results from the authors' study.

#### 4.5. Analysis of regression model

In order to evaluate the influence of factors on the effectiveness of internal audit, the author conducted regression with the dependent variable as the effectiveness of internal audit of non-financial companies listed on Vietnamese stock market. The independent variables affecting are the factors identified in the exploratory analysis (EFA) above. The results of correlation analysis between the dependent and independent variables are as follows:

**Table 5.** Correlations.

|    |                     | HL     | DL     | NL     | HT     | CL     |
|----|---------------------|--------|--------|--------|--------|--------|
| HL | Pearson Correlation | 1      | .439** | .179   | .517** | .323** |
|    | Sig. (2-tailed)     |        | .000   | .132   | .000   | .006   |
|    | N                   | 144    | 144    | 144    | 144    | 144    |
| DL | Pearson Correlation | .439** | 1      | .267*  | .432** | .301*  |
|    | Sig. (2-tailed)     | .000   |        | .023   | .000   | .010   |
|    | N                   | 144    | 144    | 144    | 144    | 144    |
| NL | Pearson Correlation | .179   | .267*  | 1      | .319** | .500** |
|    | Sig. (2-tailed)     | .132   | .023   |        | .006   | .000   |
|    | N                   | 144    | 144    | 144    | 144    | 144    |
| HT | Pearson Correlation | .517** | .432** | .319** | 1      | .357** |
|    | Sig. (2-tailed)     | .000   | .000   | .006   |        | .002   |
|    | N                   | 144    | 144    | 144    | 144    | 144    |
| CL | Pearson Correlation | .323** | .301*  | .500** | .357** | 1      |
|    | Sig. (2-tailed)     | .006   | .010   | .000   | .002   |        |
|    | N                   | 144    | 144    | 144    | 144    | 144    |

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

Source: Results from the authors' study.

The results of correlation analysis showed that the independent variables affecting the dependent variable HL were statistically significant with 1% significance level. However, the NL variable has a low correlation (0.179) with the Sig value. = 0.132 > 0.05, indicating that the NL variable does not affect the dependent variable HL. Thus, in the next regression analysis, it is necessary to remove the NL variable from the model. Regression analysis results are as follows:

**Table 6.** Statistical values of the regression model.

| Model Summary |                   |          |                   |                            |
|---------------|-------------------|----------|-------------------|----------------------------|
| Model         | R                 | R Square | Adjusted R Square | Std. Error of the Estimate |
| 1             | .580 <sup>a</sup> | .336     | .307              | .37526                     |

a. Predictors: (Constant), CL, DL, HT

Source: Results from the authors' study

The value of determination coefficient  $R^2$  is 0.336, which showed the regression model of the relationship between the three main factors to the effectiveness of internal audit which can explain 33.6% of the variation of the effectiveness of internal audit of non-financial companies listed on Vietnam's stock market.

**Table 7.** Analysis of variance - ANOVA.

| ANOVA <sup>a</sup> |            |                |    |             |        |                   |
|--------------------|------------|----------------|----|-------------|--------|-------------------|
|                    | Model      | Sum of Squares | df | Mean Square | F      | Sig.              |
| 1                  | Regression | 4.842          | 3  | 1.614       | 11.461 | .000 <sup>b</sup> |
|                    | Residual   | 9.576          | 68 | .141        |        |                   |
|                    | Total      | 14.418         | 71 |             |        |                   |

a. Dependent Variable: HL.

a. Predictors: (Constant), CL, DL, HT.

Source: Results from the authors' study.

ANOVA analysis results in Table 7 to test the suitability of the regression model with an observed F value of 11.461 with a P-value (Sig.) Of 0.000 is less than the significance

level of 0.05. Therefore, it can be concluded that the regression model is suitable to describe the relationship between factors to the effectiveness of internal audit.

The evaluation of the impact of each factor on effectiveness of internal audit is shown by the regression coefficients  $\beta_i$  in the regression model. These factors are determined by the least square method, the results of calculation from the sample of survey shown in Table 8.

**Table 8.** Coefficients<sup>a</sup>.

| Model      | Unstandardized Coefficients |            | Standardized Coefficients | t     | Sig. | Collinearity Statistics |       |
|------------|-----------------------------|------------|---------------------------|-------|------|-------------------------|-------|
|            | B                           | Std. Error | Beta                      |       |      | Tolerance               | VIF   |
| (Constant) | 1.619                       | .495       |                           | 3.271 | .002 |                         |       |
| 1 DL       | .187                        | .085       | .244                      | 2.196 | .032 | .789                    | 1.267 |
| HT         | .368                        | .113       | .369                      | 3.250 | .002 | .757                    | 1.321 |
| CL         | .116                        | .106       | .117                      | 1.094 | .278 | .846                    | 1.182 |

a. Dependent Variable: HL

Source: Results from the authors' study

However, to ensure the significance of the regression model, it is necessary to test assumptions about the meaning of the regression coefficient (if the regression coefficient is 0 then, the corresponding variable has no significance in the Regression model). Pair of hypotheses is tested:

$$H_0: \beta_i = 0 \quad (2)$$

$$H_1: \beta_i \neq 0 \quad (3)$$

The test of this hypothesis can be based on the probability value P - value (Sig.) to draw conclusions.

Based on the P-value values corresponding to each independent variable in Table 1.17, it can be seen that the independent factors (DL and HT) have P-value values less than the significance level of 0.05. It can be said that, with the sample, there is enough evidence to reject the  $H_0$  hypothesis. As such, it can be said that the Independence of the internal audit (DL) and the management support for internal audit (HT) both have impact on the effectiveness of the internal audit (HL). The sign of the regression coefficients reflects the impact of independent factors on dependent factors. According to the survey results, the values of  $\beta_i$  of these two factors have positive signs, proving that these factors have the positive effect on the effectiveness of internal audit. The standardized regression coefficient (Beta) is used to evaluate the impact of each independent factor on effectiveness of internal audit. It can be seen that the HT factor has a standardized regression coefficient of 0.369 higher than with the standard regression coefficient of DL factor, it shows that HT factor has a stronger influence on the effectiveness of internal audit. VIF of factors affecting less than 10 proves no multi-collinear phenomenon.

## 5. Conclusion

Through linear regression results, two factors, the independence of internal audit and the management support for internal audit have the positive impact on the effectiveness of internal audit.

The result showed independent of internal audit has a positive impact on the effectiveness of internal audit which is consisted with the results of Mutchler (2003), Alizadeh (2011), Baharud-din et al. (2014), Al-Akra et al. (2016). Internal auditors have the right to unrestricted to documents, personnel and other departments in collecting audit evidence, avoiding conflicts of interest between internal auditors with other department, senior management, board of director, which is similar to Goodwin & Yeo (2001) and Christopher et al. (2009).

Related to management support for internal audit, the result pointed out that this factors has a positive influence on effectiveness of internal audit which is agreed with previous studies such as Albrecht et al. (1988), Gramling et al. (2004), Salameh et al. (2011), Ahlawat & Lowe (2004), Aikins (2011), Octavia (2013), Baharud-din et al. (2014), Dellai & Omri (2016). The analysis of the results pointed that the Board of Directors will support the approval of internal audit regulations and plans, appointment, resigning and salary decisions for Internal Auditors. For managers, support for internal audit in administrative approval of personnel and allocated budget for internal auditors to implement the audit plan, actively support for the audit department internally in training and professional development.

However, this research disagree with Al-Twaijry et al. (2003), Alzeban & Gwilliam (2014) and Baharud-din et al. (2014) that the auditor's competence and quality of internal audit work have no effect on the effectiveness of internal audit.

In summary, the research systematized and pointed out the overview and characteristics of internal audit, theoretical framework for factors affecting the internal audit effectiveness including independence of internal auditor, competence of internal auditor, management support for internal audit, quality of internal audit work. The research verified the relationship between these factors and the effectiveness of internal auditor in non-financial listed companies in Vietnam's stock market. The research has pointed out that independence of internal audit and management support have positive impact on the effectiveness of internal audit of non-financial companies listed on Vietnamese stock market.

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