IMPACT OF INTERNAL CONTROL ON THE PERFORMANCE OF NON-FINANCIAL LISTED FIRMS IN AN EMERGING COUNTRY

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Abstract

Internal controls play an important role in any firm since they help achieve both financial and non-financial performance. Internal controls are designed to minimize risks, protect assets, ensure reliable financial reporting, increase performance, and facilitate compliance (Bashaija, 2022). This study is conducted to investigate the impact level of internal control on the performance of non-financial firms listed on the Vietnam Stock Exchange. Data were collected through a survey questionnaire with 506 survey questionnaires from listed non-financial firms. Quantitative research methods are applied to evaluate the impact of internal control on performance. The results show that internal control including five components has a significant impact on financial performance, and components of the control environment, risk assessment, control activities, and communications have direct positive effects on non-financial performance. Monitoring activities have no impact on non-financial metrics. Besides, the study also shows that non-financial indicators directly influence the financial indicators of listed non-financial firms. Based on the findings, some recommendations are proposed for enhancing the performance of non-financial listed firms.

Keywords: Internal Control, Financial Performance, Non-Financial Performance, Listed Firms

Authors' individual contribution: Conceptualization — T.Q.N.; Methodology — T.T.H.P.; Validation — V.H.P.; Writing — Review & Editing — M.D.T. and T.T.H.P.; Visualization — T.L.N.; Supervision — T.Q.N., T.L.N., and V.H.P.

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1. INTRODUCTION

Non-financial firms listed on Vietnam's stock market are large-scale business firms and account for a large proportion of listed firms. With a variety of business forms and different industries, non-financial firms have contributed significantly to the total value of the national product and the economic development of Vietnam. Therefore, performance is the top concern of non-financial firms, along with improving qualifications, productivity, and quality. To achieve this goal, firms have to build for themselves a business and development strategy to adapt to market fluctuations, and, at the same time, must organize strict internal control to bring better performance.

With the diversity of production and business activities, the growth rate is increasing at each firm, especially in the process of accelerating the market capitalization of the business environment in developing countries like Vietnam. Currently, capital investors are gradually separating from the role of firm management, so effective internal control is an urgent need, a means to help business managers evaluate the effectiveness of their actual operations for the implementation of the set goals. Internal control will help the board of directors achieve operational objectives and prevent activities that do not comply with the law. Good performance will play an essential role in corporate governance and create motivation for each department and individual in the enterprise to operate effectively in order to improve the competitiveness of the firm.

In Vietnam today, firms are aware of the role of internal control (Do, 2022; Tran & Tran, 2021). In particular, the State's documents have focused on the establishment of the supervisory board in joint-stock firms. Decree No. 5/2019/ND-CP of the Vietnam Government stipulates internal audit work in state agencies, public non-business units, and firms. The decree takes effect from April 1, 2019. According to this decree, firms are required to carry out internal audits, including listed firms. The decree also encourages other firms to carry out internal audit work.

In the context of Vietnam, the corporate governance of a public firm has to comply with the provisions of this law, the Law on Enterprises, other relevant provisions of the law, and the principles which ensure the effective operation of the board of directors and board of supervisors; improve the responsibility of the board of directors towards the firm and shareholders; disclose timely, complete, accurate, and transparent firm's activities information; and ensure that shareholders have fair access to information.

However, in recent years, the performance of firms in general and non-financial firms, in particular, has not been as expected. In which internal control has not been paid much attention, typically there are many scandals in governance work that have caused many harmful consequences in corporate culture and caused the stock price of firms to plummet. This shows that neither the board of directors nor the investors can rely solely on the report from the board of management to comprehensively assess the governance and risk control in the firm in which they have invested.

For these reasons, the impact of internal control on performance has attracted the attention of many researchers. A large number of empirical studies with the goal of examining the relationship between internal control and financial performance have been confirmed such as Tseng (2007), Mawanda (2008), Byanguye (2007), Muraleetharan (2010), Nyakundi et al. (2014), Mary et al. (2014), Wambugu (2014), Channar et al. (2015). In the context of Vietnam, there are many studies on the relationship between internal control and financial performance, such as Chu (2016), Ho (2016); and some other factors impacting performance (Nguyen et al., 2022; Do et al., 2021). However, the topic of the impact of internal control on the performance, both financial and non-financial aspects, of listed firms is much more interesting.

This study is to provide empirical evidence on whether to accept or reject the relationship between internal control and the performance of non-financial firms listed on the Vietnam Stock Exchange. From there, based on the findings, the study is expected to make some recommendations for improving internal control and, as a result, enhance the performance of listed firms. Performance is measured through financial and non-financial indicators. Financial indicators are measured through return on assets (ROA), return on equity (ROE), return on investment (ROI), return on sales (ROS), gross profit margin (GOS), earnings per share (EPS), non-financial performance indicators are measured through labor productivity, business operational goals achievement and compliance with regulations; employees' satisfaction with their works, and customers satisfaction with the firm's products and services. Within the scope of this research, the relationship between internal control and specific performance through financial and non-financial indicators has been much investigated.

This research is important for listed firms and stakeholders. It also contributes to the literature and practice in the field of accounting in emerging countries and Vietnam as the case study.

The remainder of this study is structured as follows. Section 2 reviews the suitable literature. Section 3 describes the model, data collection, and techniques employed in the conduct of the research. Section 4 sets out key results, while Section 5 shows some discussions. Section 6 gives some conclusions and recommendations and potential further research.

2. LITERATURE REVIEW

The issue of internal control, performance, and its relationship is of much interest to scholars. Below some typical studies are analysed.

Tseng (2007) used a sample of firms listed on the US stock market in the period from August 2002 to February 2006 to analyze the relationship between internal control and financial performance. In the study, internal control was measured through the disclosed weaknesses of firms and market value is a proxy of financial performance. With the use of the residual income model, Tseng (2007) pointed to weak internal controls in firms with low market value.

Mawanda (2008) employed correlation and regression analysis to examine the impact of internal control on financial performance. Internal control was measured by the control environment, internal audit, and control activities. Financial performance was measured through three groups of indicators of liquidity, accountability, and reporting. The control variables included the policy of the government, the local government, and the Ministry of Education. The study showed a positive impact of internal control on financial performance.

Byanguye (2007) conducted a correlation regression analysis to investigate the relationship between internal control and the value of money for funded projects in Kamuli province. Control environment, risk assessment, information and communication systems, and control and supervision activities were components of internal control.

Economic indicators, efficiency indicators, and effectiveness indicators are surrogates for project values.

Muraleetharan (2010) used the squared test and the regression analysis to examine the relationship between internal control and performance. The study used a questionnaire survey method with a sample of 181 respondents. The study proved the hypothesis that internal control has a positive impact on financial performance. However, the study did not prove the impact of two components of the control environment and information system on financial performance.

Nyakundi et al. (2014) employed both qualitative and quantitative methods to investigate the impact of internal control on performance in small and medium firms in Kisumu city, Kenya. Data used in the statistical analysis included both primary data (collected through questionnaires) and secondary data (through financial statements). The results revealed that internal control has a significant impact on the change of financial performance in small and medium firms.

Mary et al. (2014) demonstrated the positive impact of internal control on the financial performance of sugarcane firms in Kenya through regression analysis and correlation analysis. The study concluded that internal control explained 42.8% of the variation in performance in these firms. Internal control measures included the control environment, risk assessment, information systems, and control activities. The financial performance of firms was measured through three indicators of unit cost, target achievement, and profitability.

Zipporah (2015) measured the impact of internal control on firm performance in Nairobi, Kenya. The study used secondary data which is the annual reports of 35 firms for the period 2013–2014, through multivariable regression analysis, with the dependent variable return on assets (ROA) and other variables. The independent variables were five components of internal control. The results showed that four components of the control environment, risk assessment, control activities, and information and communication of internal control have a positive impact on ROA. In contrast, the monitoring activities factor had a negative impact on ROA.

Channar et al. (2015) studied the relationship between the effectiveness of internal control and the performance of banks in Hyderabad, India. The study evaluated the effectiveness of internal control in different types of banks including private, public, and Islamic banks, and examined the differences in profitability of these banks by ANOVA test. The results showed that internal control was most effective in the private banking sector, followed by public banks and Islamic banks. Private banks also had the highest profitability, followed by public and Islamic banks. The study also concluded that internal control had a positive relationship with the performance of banks.

Kinyua (2016) investigated the relationship between internal control and firm performance of listed firms on the Nairobi Stock Exchange. The findings showed that internal control affected firm performance which was measured by profitability. The study runs a regression test of the relationship between determinants such as control environment, internal audit function, control activities, risk management, corporate governance, firm policies, and the government's policies on performance. The results showed that each of the above determinants influences profitability. However, the study had not tested the relationship between information and communication, and profitability.

Odek and Okoth (2019) investigated the effect of internal control on the performance of distribution firms in Kenya. The study examined the relationship between the elements of internal control including control activities, risk assessment, and information and communication with financial activities. The correlation regression illustrated that components of internal control have a relationship with profitability, and the relationship was statistically significant. Thus, the regression results indicated that there was a positive relationship between internal control and the performance of manufacturers in Kenya.

Ibrahim et al. (2017) concluded the positive relationship between internal control and financial performance in medical firms. Especially, in the five elements of internal control, three factors control activities, internal audit, and supervision had the most significant impact. The authors also emphasized that medical firms need to design internal control effectively for improving financial performance.

Florio and Leoni (2017) studied Italian listed firms but investigated only whether there existed a relationship between the level of firm implementation of the risk management system and performance or not. They detected that firms with advanced levels of corporate risk management practice had better performance.

Chen (2018) investigated the relationship between internal control, social responsibilities, and the financial performance of listed firms in the food and beverage industry in China. He concluded that the quality of internal control (based on firms' disclosure reports, the riskiness of assets, strategies, operation, and compliance) had a positive relationship with firm performance. On the other hand, the study by Yang et al. (2020), using data from the heavy pollution industry in China from 2009 to 2018, also showed internal control quality had a significant positive impact on investment activities to protect the environment and firms' financial performance.

Adagye (2015) showed that weak internal control in small firms affected the productivity of their employees in achieving organizational goals. Theoretically, labor productivity depended on specific job performance. Many factors affected labor productivity, such as managers' attitudes, organizational culture, personal problems, job content, corporate reward policies, and financial rewards. Employees are people with feelings, needs, and wants that could influence their behavior, and attitudes and actions affected their productivity in the workplace (Muogbo, 2013).

Cheng et al. (2014) examined the link between internal control and performance using a large sample of firms (who reported internal control according to Sarbanes-Oxley Act (SOX) Section 404) from 2004 to 2011. They detected that when internal control was effective, it would make the unit's performance higher. This was demonstrated through 1) reducing the ability to occupy corporate resources and 2) improving the quality of internal reports, leading to better operational decisions for the entity. At the same time, the study also proved that when internal control in small firms was effective, these firms were more profitable in their operational and manufacturing business. Thus, the study once again affirmed that internal control had a positive impact on the achievement of operational efficiency of the units.

Mokono and Njogu (2022) proved the low positive impact of internal control on the performance of listed banks in Kenya. In contrast, Bashaija (2022) conducted a study with banks in Rwanda, but reveal the strong impact of internal controls on performance.

Based on the review of the literature, some hypotheses are designed for testing below:

H1: Control environment has a positive impact on financial performance.

H2: Risk assessment has a positive impact on financial performance.

H3: Information and communication have a positive impact on financial performance.

H4: Control activities have a positive impact on financial performance.

H5: Monitoring activities have a positive impact on the effectiveness of financial performance.

H6: Control environment has a positive effect on non-financial performance.

H7: Risk assessment has a positive impact on non-financial performance.

H8: Information and communication have a positive impact on non-financial performance.

H9: Control activities have a positive effect on non-financial performance.

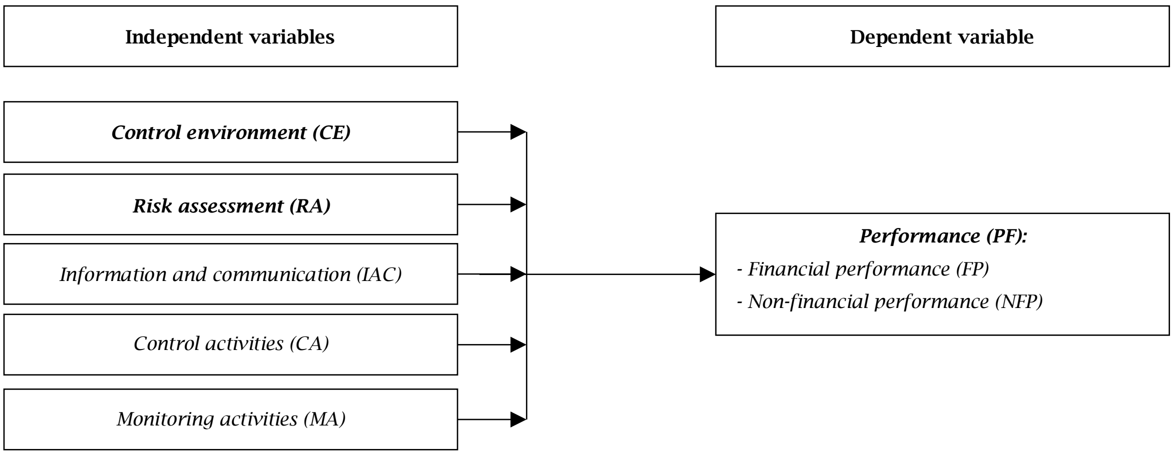
H10: Monitoring activities has a positive effect on non-financial performance.

H11: Non-financial performance has the same effect as financial performance.

3. RESEARCH METHODOLOGY

Based on the literature review, we propose a research model as below:

Figure 1. Proposed research model



Also, based on the literature review, the quantitative survey questionnaire was deployed to the survey subjects identified in the following forms: 1) in person, 2) by mail, 3) by email, and 4) by Google Docs. The survey results collected 569 votes out of a total of 2,152 distributed. After filtering invalid questionnaires due to many empty boxes or incomplete information, we chose to use 506 valid feedbacks, reaching the rate of 23.51%. Independent and dependent variables and attributes are presented in Appendix.

We used the SPSS Statistics version 22 software and the SmartPLS model for analysis. Descriptive statistical analysis was aimed to collect information about the nature of the research data according to the specific variables and the central tendency of the research data. To test the quality of the scale, we used Cronbach's alpha. Next, we analyzed the exploratory factor analysis (EFA) to help extract the determinants for the following analysis. Then we used partial least squares structural equation modeling (PLS-SEM) to estimate complex cause-and-effect relationship models with latent variables. Thereby, they analyze, explore, and test their conceptual models and theories.

4. RESEARCH RESULTS

4.1. Descriptive statistics

The factors belonging to the control environment all received the lowest score of 1 and the highest score of 5. Factor CE3.1, *"The firm has policies and procedures for authorizing and approving the professionalism at each appropriate level"*, was rated the highest with an average value of 3.67. Factor CE5.3, *"The performance evaluation results are communicated and feedback to each individual in detail and periodically reviewed"*, had the lowest average value of 3.23.

The determinants belonging to the risk assessment all received the lowest score of 1 and the highest score of 5. Factor RA9.3, *"The board of directors, has analyzed and evaluated the change from the leader, influence on the management activities and operating philosophy of the firm's internal control"*, was rated the highest with an average value of 3.97. Factor RA6.4 *"The firm's management encourages reporting of events to identify risks"*, had the lowest mean value of 3.12.

The determinants belonging to control activities all received the lowest score of 1 and the highest score of 5. Factor CA10.2, *"Different levels of the entity may have different degrees of control"*, was rated the highest with a mean value of 3.13. Factor CA10.6, *"Duties of officers and employees in functional departments are reviewed by competent persons"*, had the lowest mean value of 2.45.

The factors assigned to information and communication all received the lowest score of 1 and the highest score of 5. Factor IAC14.2, *"Firms apply an intranet system for manufacturing information to be provided in a timely and up-to-date manner to members of the business"*, was rated the highest with a mean value of 3.54. Factor IAC14.4, *"Information on production and business of firms is easy to access and search when needed"*, had the lowest mean value of 3.24.

The factors belonging to supervision all received the lowest score of 1 and the highest score of 5. Factor MA16.5, *"Incorporating regular assessment into the company's production and business processes"*, was rated highest with a mean value of 3.49. Factor MA16.7, *"The evaluation methods of firms are used and adjusted flexibly, in accordance with the changing speed of production and business processes"*, had the lowest mean value of 3.27.

4.2. Checking the reliability of scales

After running SPSS Statistics to determine the reliability of the scales, the results showed that the variables of RA9.2 *"Assessment of changes in business methods of the unit"* had a total variable correlation coefficient of 0.198 < 0.3; RA9.3, *"The board of directors has analyzed and assessed that the change from leadership affects management activities and the operating philosophy of the firm's internal control"* had a total variable correlation coefficient of 0.129 < 0.3. Therefore, we removed these variables.

After removing unsatisfactory variables, we rerun SPSS Statistics for the remaining scales. The results are presented in Table 1 below:

Table 1. Cronbach's alpha coefficient of the scales

Components	*Cronbach's alpha*
Control environment	0.948
Risk assessment	0.914
Control activities	0.952
Information and communication	0.913
Monitoring activities	0.903

4.3. Exploratory factor analysis and correlation between variables

Exploratory factor analysis (EFA): The factor analysis results in Table 2 show that the Kaiser–Meyer–Olkin (KMO) index was 0.912 > 0.5, which proved that the data used for factor analysis was completely appropriate.

The result of Bartlett's test was 21,421.874, with the significance level value of Sig. = 0.000 < 0.05 (rejecting the hypothesis H_0*: Observed variables are not correlated with each other in the population*). Therefore, the hypothesis about the correlation matrix between the variables was a rejected identity matrix. That was, the variables were correlated with each other and satisfied the factor analysis conditions (Table 2).

Table 2. KMO and Bartlett's coefficients

Criteria	*Model*
KMO index	0.912
Bartlett's	21,421.874
Bartlett's test with sig. value	0.000
Total value of variance extracted	57.362
Minimum eigenvalues	1.626

The results show that the remaining observed variables after removing the scales did not satisfy the reliability. The total variance value extracted was 50.525%, which is all satisfactory > 50%. Thus, it could be said that these factors explain 50.525% of the data variability. The eigenvalue coefficients of all factors are high (> 1), and factors with eigenvalues (lowest) of 2.219 all satisfy > 1.

Multivariate regression analysis: First, the fit of the model, the reliability of the model measuring the results, and the accuracy of the convergence are checked.

According to Nguyen and Vu (2020), the model fit standardized root mean square residual (*SRMR*) = 0.055 < 0.08 great model.

Based on the data above, in Figure 2, the reliability of Cronbach's alpha, composite reliability ≥ 0.7 was consistent with the model.

Degree of convergence: The magnitude of the average variance coefficient ≥ 0.5 achieved the exact degree of convergence.

Second, evaluation of the degree of multicollinearity between the indicators: coefficient: variance inflation factor (VIF) ≥ 5 the model does not have multicollinearity.

According to Figure 2 and Table 3, we see that all the variables of internal control are: *CE, RA, CA, IAC,* and *MA* have an impact on financial performance (*FP*) (*ROA, ROE, ROI, ROS, GOS, EPS*) and non-financial performance (*NFP*) (Enterprise's labor productivity; Enterprise operating achievement and compliance with regulations; Employees are satisfied with their work; Customers are satisfied with the company's products and services), which is statistically significant ($p < 0.05$). However, *MA* does not affect the Labor productivity of the enterprise; Achieving business goals and complying with regulations; Employees are satisfied with their work; Customers are satisfied with the company's products and services.

With the model of the impact of internal control on business performance, among the statistically significant relationships, the impact of *RA* on business performance is the strongest, and the weakest is the impact of *CE* on business performance.

Figure 2. The SmartPLS model shows the reliability and convergence of the model

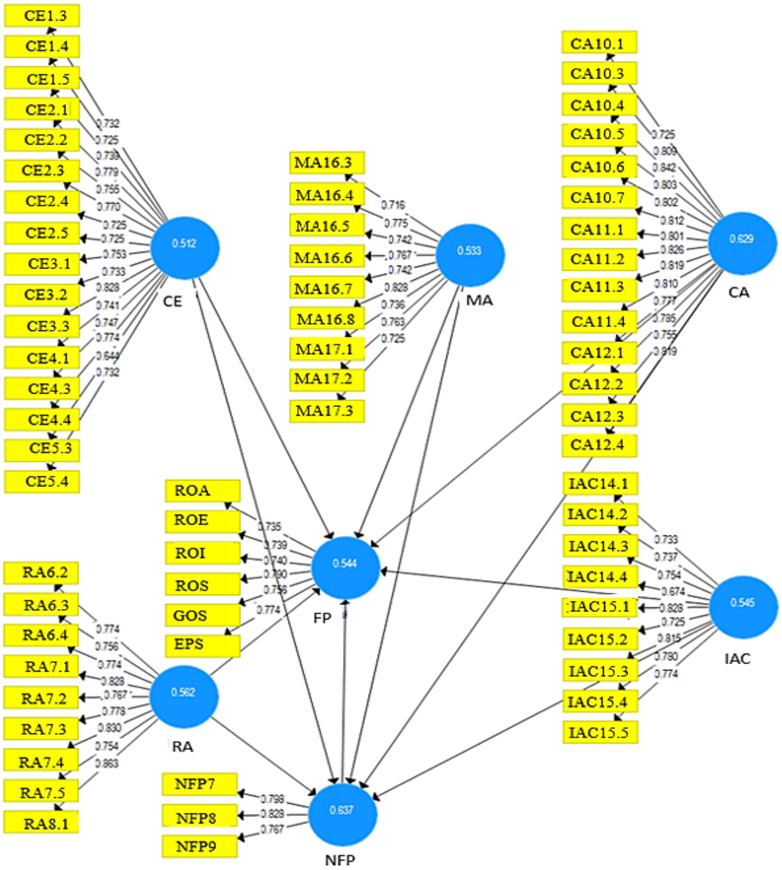


Figure 3. Impact of internal control on performance

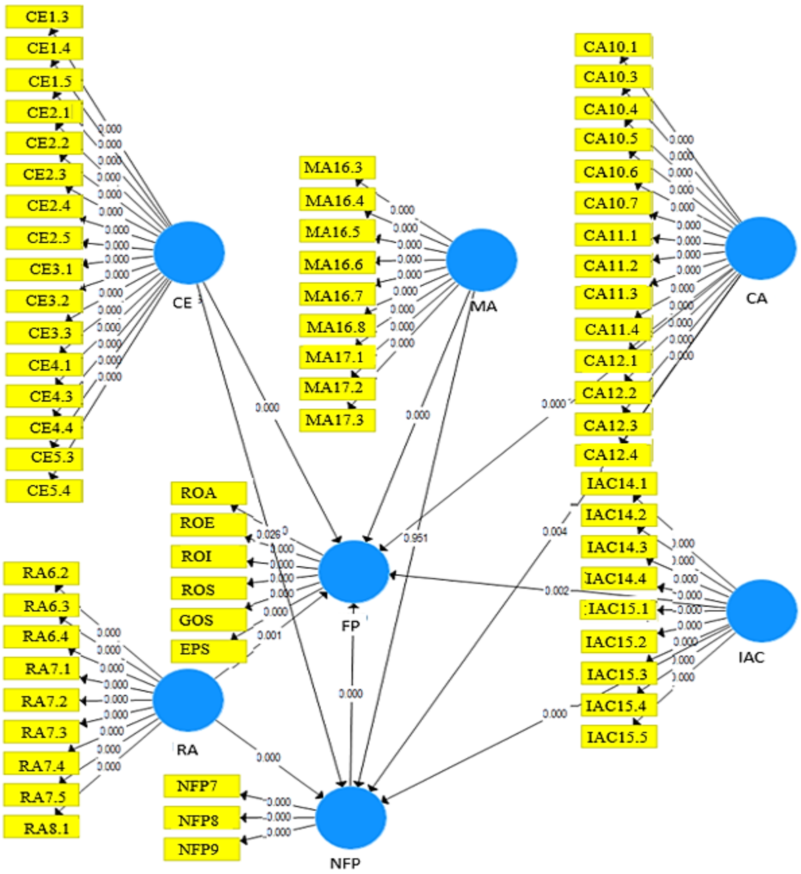


Table 3. Model test results

Impact	*Original sample (O)*	*Sample mean (M)*	*Standard deviation*	*T-statistics (O/S)*	*P-values*
RA → FP	0.164	0.164	0.049	3.359	0.001
RA → NFP	0.276	0.281	0.040	6.876	0.000
MA → FP	0.283	0.289	0.046	5.864	0.000
MA → NFP	0.003	0.002	0.041	0.062	0.951
CA → FP	0.063	0.068	0.040	1.570	0.000
CA → NFP	0.135	0.144	0.047	2.867	0.004
NFP → FP	0.205	0.207	0.044	4.615	0.000
CE → FP	0.038	0.045	0.053	0.713	0.000
CE → NFP	0.147	0.149	0.066	2.231	0.026
IAC → FP	0.151	0.149	0.049	3.074	0.002
IAC → NFP	0.024	0.028	0.064	0.367	0.000

5. DISCUSSION

The control environment has a positive impact on financial performance (*FP*) which is measured by *ROA, ROE, ROI, ROS, GOS, EPS* ($\beta = 0.038$; $p = 0.000 < 0.05$). This result supports hypothesis *H1*.

The control environment has a positive effect (in the same direction) on non-financial performance (Labor productivity, Achieving business objectives and complying with regulations; Employee satisfaction with work, and Customers are satisfied with the firm's products and services) ($\beta = 0.147$; $p = 0.026 < 0.05$), this result supports hypothesis *H6*.

Risk assessment has a positive effect on financial performance (*ROA, ROE, ROI, ROS, GOS, EPS*, and *FP* ($\beta = 0.164$; $p = 0.001 < 0.05$)). This result supports hypothesis *H2*.

Risk assessment has a positive effect (in the same direction) on non-financial performance (Labor productivity, Achievement of business objectives and compliance with regulations; Employee satisfaction with the job; Customers are satisfied with the firm's products and services) ($\beta = 0.276$; $p = 0.000 < 0.05$). This result supports hypothesis *H7*.

Information and communication have a positive effect on financial performance (*ROA, ROE, ROI, ROS, GOS, EPS*) ($\beta = 0.151$; $p = 0.002 < 0.05$). This result supports hypothesis *H3*.

Information and communication affecting the same direction are effective non-financial (Labor productivity of firms, Achievement of operational goals of the business and compliance with regulations; Employees' satisfaction about the work, customers' satisfaction about the product and services) ($\beta = 0.024$; $p = 0.00 < 0.05$). This result supports hypothesis *H8*.

Control activities have a positive influence on financial performance (*ROA, ROE, ROI, ROS, GOS, EPS*) ($\beta = 0.063$; $p = 0.000 < 0.05$). This result supports hypothesis *H4*.

Control activities have a positive effect (in the same direction) on non-financial performance (Labor productivity, Achievement of business objectives and compliance with regulations; Employees' satisfaction with work, and Customers' satisfaction with the firm's products and services) ($\beta = 0.135$; $p = 0.004 < 0.05$). This result supports hypothesis *H9*.

Monitoring activities have a positive effect on financial performance (*ROA, ROE, ROI, ROS, GOS, EPS*) ($\beta = 0.283$; $p = 0.000 < 0.05$), this result supports hypothesis *H5*.

Monitoring activities have no effect on non-financial performance (Labor productivity, Achievement of business objectives and compliance with regulations, Satisfied employees, and satisfied customers about the firm's products and services) ($\beta = -0.03$; $p = 0.951 > 0.05$). This result rejects hypothesis *H10*.

Non-financial performance (Labor productivity, satisfied employees at work, Satisfied customers with the firm's products and services) has a positive effect (in the same direction) on financial performance (*ROA, ROE, ROI, ROS, GOS,* and *EPS*) ($\beta = 0.205$; $p = 0.05$). This result supports hypothesis *H11*.

The components of internal control are risk assessment; information and communication; control activities; monitoring activities that have a positive effect on the financial performance of the firms. This result is also appropriate and consistent with the results of the studies of Tseng (2007), Mawanda (2008), Byanguye (2007), Muraleetharan (2010), Nyakundi et al. (2014), Mary et al. (2014), Wambugu (2014), Zipporah (2015), Channar et al. (2015), Kinyua (2016), Odek and Okoth (2019), Ibrahim et al. (2017), Florio and Leoni (2017), Chen (2018), Yang et al. (2020), Chu (2016), Ho (2016), Dang (2017), and Nguyen (2019).

The components of internal control are risk assessment, information, and communication, and control activities have a positive association with a firm financial performance. This finding is consistent with the results of studies by Adagye (2015), Muogbo (2013), Ewa and Udoayang (2012), Syafii et al. (2015), Anggraini and Setiawan (2011), Cheng et al. (2014).

6. CONCLUSION

This study reveals that internal control including five components has a significant impact on financial performance, and components of the control environment, risk assessment, control activities, and communications have direct positive effects on non-financial performance. Monitoring activities have no impact on non-financial metrics. Besides, the study also shows that non-financial indicators directly influence the financial indicators of listed non-financial firms. Based on the findings, some suggestions are proposed below.

Control environment: Firms should have specific and clear guidelines on the code of conduct and ethics in meetings or writing. Members of the company and the board of directors must always comply with the company's ethics, laws, and codes of conduct. In particular, through daily meetings and meetings, the board of directors regularly disseminates knowledge about integrity and ethical values to employees. Regarding possible conflicts of interest such as employees violating ethical principles and conduct or problems arising with suppliers, customers, and other subjects, the board of directors should find the causes and take timely remedial measures. The firm should also put in place policies to encourage individuals and organizations to report unethical and illegal behavior and stipulate that the director should encourage employees to communicate with managers and other individuals when there is doubt and reward and discipline the right people.

The capacity and ethical qualities of managers greatly influence the effectiveness of internal control and the performance of firms, especially non-financial firms listed on the Vietnam Stock Exchange. To improve the firm performance, the board of directors first always pays attention to the design and implementation of effective internal control. The firm's organizational structure must be suitable for the objectives, scale, business activities, and geographical location of the business. It is also essential to implement a regulation on the supervision of decentralized and stratified activities and ensure that appropriate managers approve arising transactions.

Attribute CE3.1 *"Firms have policies and procedures for the authorization and approval of transactions at each appropriate level"* that is not selected by firms as "agree" and "strongly agree", accounting for 79.5%. This rate is very high > 50%, which means that there are some officers and employees who have not been assigned suitable jobs related to their jobs. To improve performance, listed firms should have policies and procedures for authorization and approval of operations at each appropriate level. There should be regular supervision and appropriate inspection of the activities delegated to employees. Firms should convey and improve professional skills for employees so that employees can clearly understand their duties and promote their capacity and qualities at work.

Attributes CE4.1, CE4.2, and CE4.3 are not selected by firms as "agree" and "strongly agree", accounting for a high rate > 50%. That proves that employees in the unit have not been paid attention to and arranged jobs in accordance with the employees' capacity and qualifications. In order to improve this situation and firm performance and, at the same time, create confidence for employees to continue their long-term dedication and develop their capabilities, the board of directors and the firm need to materialize/describe the requirements on qualifications and skills for each employee position, pay attention to the qualifications and capacity of employees when being recruited, and enact adequate employee policies to attract qualified individuals. At the same time, periodically, firms should take timely measures to handle incompetent employees such as organizing training, retraining, sending employees to study to improve their qualifications, participating in training sessions, and intensive training.

Attributes CE5.1, CE5.2, CE5.3, and CE5.4 are not selected by firms as "agree" and "strongly agree", accounting for a high rate of > 50%. Human resource policies of firms have not been fully promoted. To improve the performance, the board of directors and the firm need to define reporting responsibilities by establishing organizational structure and delineating responsibilities and authorities; establish clear and consistent policies and standards for recruiting, training, evaluating, promoting, rewarding, and firing employees. The performance evaluation must be communicated and feedback to each individual specifically, detailed and reviewed periodically and more often.

Risk assessment: Firms should develop a business risk assessment process related to financial statements (including risk assessment, impact estimate, probability of occurrence, actions, etc.). One of the critical contents of a risk assessment is determining the objectives. In addition to determining the firm's overall goals, it is necessary to decide on the operational and financial objectives appropriate to the size and complexity of the firm. On the other hand, the firm should design a monitoring activities system to identify potential risks to take timely measures in the production and business process. The board of directors also regularly encourages individuals and organizations to report events to identify corresponding risks in the course of operations.

Firms should identify and analyze many different risks affecting their business, including progress risk, revenue risk, profit risk, contract risk, etc. Therefore, management has to fully assess and recognize risks when making important decisions (launching new projects or products, developing strategic plans, investment plans) and taking appropriate measures to prevent and mitigate risks.

Periodically, the board of directors should consider the risk of fraud in the firm's production and business activities. The assessment of fraud risk by considering incentive policies and pressures that employees in the company are subjected to. At the same time, the board of directors considers and makes appropriate decisions when risks may occur.

Control activities: Firms should establish control activities on a selective basis to minimize risks and achieve objectives in aspects of 1) combination with risk assessment activities to minimize business risks and achieve set goals; 2) design according to the entity's production and business characteristics; 3) controlling strictly production and business processes of the unit; 4) periodically, an inspection of the departments' work related to production and business; 5) development of a revenue and expenditure process and corresponding financial regulations according to the unit's production and business characteristics.

In the 4.0 technology era, in order to survive and develop, the firm should focus on the use of information technology in business and general control procedures in the computer environment. The firm should invest in building the relevant infrastructure suitable for the firm's production activities, establish a security system in control activities, and use appropriate technology in the control activities for the firm's business processes.

The firm should develop control activities through policies and procedures such as the board of directors establishes the necessary procedures and policies to control quality and implement the work of its officers and employees as well as departments in the firm. The board of directors should establish responsibilities for managers, promptly carry out supervisory activities, and promptly remedy errors in the firm's production and business activities. At the same time, attention should be paid to capable and responsible employees in production and business activities. Periodically, management reviews the promulgated policies and procedures.

Information and communication: Firms should collect or create appropriate, timely, and quality information on their own. The firm should use "mailboxes" to manage sensitive and confidential information for effective management of the organization; Information must be provided fully, accurately, and promptly to the board of directors of the company. Rewards and penalties within the firm should be promoted widely, as it is an effective way to obtain critical and sensitive information needed to curb fraud lawsuits.

Regarding internal communication, the firm should design well internal communication and information channels, so information on the production and business is provided in timely and updated to members of the firm. The internal information should be easily accessed and searched by internal employees when necessary.

Regarding external communication, if the information is received from external parties such as suppliers, customers, state management agencies, etc., periodically or regularly, the board of directors will respond to all employees' suggestions inside and outside the organization related to the business's production and business. Firms should establish information channels such as hotlines, and special information channels for the board of directors to receive appropriate and timely information from the outside. Along with that, firms should choose a communication method suitable to their business and production characteristics.

Monitoring activities: Firms should maintain regular assessments continuously or separately. Monitoring activities based on production and business activities of firms. When a firm changes its production and business cycle, it is necessary to carefully investigate the degree of change in order to choose an appropriate assessment method. Firms need to combine with an internal control to establish an assessment method suitable to the unit's production and business characteristics. At the same time, the sanctions for handling violations and the level of assessment are adjusted by firms in accordance with reality. The board of directors should have objectivity in the regular and periodic evaluation of the enterprise's activities.

However, the findings of this research should be more comprehensive if the investigation of the impact of listed firms by business lines or firm sizes is conducted. So, further research on this gap is identified and discussed.

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APPENDIX

Table A.1. Attributes in the research model (Part 1)

Factors	*Attribute names*
	Control environment (CE)
CE1.1	In production and business activities, the board of directors always adheres to ethics, laws, and codes of conduct
CE1.2	The business has specific instructions and clearly announced the code of conduct and ethics in meetings or in writing
CE1.3	The board of directors always finds causes and takes timely handling measures if employees violate ethical principles and conduct
CE1.4	Firms deal with arising problems with suppliers, customers and other entities fairly and honestly
CE1.5	Through daily meetings, the board of directors regularly disseminates knowledge about integrity and ethical values to employees
CE2.1	The board of directors always pays great attention to and attaches importance to the design and implementation of effective internal controls
CE2.2	The firm's organizational structure is suitable to its objectives, scale, business activities, and geographical location of the business
CE2.3	There is full supervision and monitoring of decentralized activities
CE2.4	The firm's organizational structure different from similar-sized firms in the industry
CE2.5	All arising transactions are approved by appropriate managers
CE3.1	The firm has policies and procedures for the authorization and approval of transactions at each appropriate level
CE3.2	The firm has appropriate supervision and control for the activities delegated to employees
CE3.3	The employees clearly understand their duties and those of individuals related to their works
CE4.1	The firm specifies/describes the qualifications and skills requirements for each employee position
CE4.2	The business pays great attention to the qualifications and capabilities of employees when being recruited
CE4.3	The firm has an adequate policy for employees to attract qualified individuals
CE4.4	Firms take measures to handle incompetent employees in a timely manner
CE5.1	Define reporting responsibilities by establishing organizational structure, delineating responsibilities and authority
CE5.2	The firm has clear and consistent policies and standards for recruiting, training, evaluating, promoting, rewarding, and firing employees
CE5.3	Performance appraisal results are communicated and feedback to each individual specific and detailed and periodically reviewed
CE5.4	New employees are aware of their responsibilities as well as the expectations of the board of directors
	Risk assessment (RA)
RA6.1	The board of directors has developed a firm risk assessment process related to financial statements (including risk assessment, impact estimation, actions)
RA6.2	The board of directors set operational and financial objectives appropriate to the size and complexity of the firm
RA6.3	The firm has a monitoring system that identifies potential risks
RA7.1	Management fully assesses and recognizes risks when making key decisions (launching new projects or products, developing strategic plans)
RA7.2	The firm has a process of reviewing risks after implementing mitigation/control measures to identify risks
RA7.3	The firm's management processes are effective, communicating risks to employees and stakeholders
RA7.4	The management considers the materiality of the identified risks
RA7.5	The board of directors set out measures to prevent and overcome risks
RA8.1	The board of directors considers the risk of fraud that may occur in the course of production and business activities of the firm
RA8.2	Assess the risk of fraud by reviewing the incentive policies and the pressures that employees in the firm are subjected to
RA8.3	Periodically, the board of directors reviews and analyze cases and departments that may commit fraud
RA8.4	Board of risk management reviews and makes appropriate decisions when risks may occur
RA9.1	The board of directors has identified the risks, the legal environment, and the competition among competitors in the same industry that affect the firm activities
RA9.2	Evaluate changes in the way the entity does business
RA9.3	The board of directors has analyzed and evaluated the change from leadership to the firm's management activities and operating philosophy
	Control activities (CA)
CA10.1	Firms combine risk assessment activities to reduce business risks and achieve objectives
CA10.2	Control activities are considered and built in accordance with the production and business characteristics of the firm
CA10.3	Control the production and business processes of the unit
CA10.4	Periodically, the board of directors regularly inspects the work that the departments have done related to production and business
CA10.5	Different levels of the unit can have different levels of control
CA10.6	Consider the assignment of responsibilities according to the principle of non-duality
CA10.7	The firm builds the corresponding revenue and expenditure process and financial regulations
CA11.1	The firm always focuses on the use of information technology in business and general control procedures in the computer environment
CA11.2	The firm's infrastructure is suitable for production and business activities
CA11.3	Set up security management in control operation
CA11.4	The firm uses appropriate technology in the firm's business operations
CA12.1	The board of directors sets up necessary procedures and policies to control the quality and implement the work of the employees and departments
CA12.2	The board of directors set up responsibilities for managers, timely implements monitoring activities, and promptly corrects errors
CA12.3	The board of directors pays great attention to capable and responsible employees in the process of production and business activities
CA12.4	Periodically, the board of directors reviews the policies and procedures adopted

Table A.1. Attributes in the research model (Part 2)

Factors	*Attribute names*
	Information and communication (IAC)
IAC13.1	The firm employs "mailboxes" to collect sensitive and confidential information for the effective management of the organization
IAC13.2	Information is provided fully, accurately, and timely to the board of directors
IAC13.3	Intracompany rewards and punishments have been and continue to be effective to obtain the critical and sensitive information needed to curb fraud lawsuits
IAC14.1	The firm has well-established information and communication channels
IAC14.2	Firms apply the intranet system so that information on production and business of firms is provided timely and updated to members of the firms
IAC14.3	The information on production and business is consistent with the decision-making requirements of the board of directors
IAC14.4	Information on the business production of the firm is easy to access and search when needed
IAC15.1	The board of directors responds to all suggestions of employees inside and outside the organization related to the business's production
IAC15.2	The board of directors receives all information from external stakeholders such as suppliers, customers, state management agencies, etc.
IAC15.3	Issues arising in the operations are discussed directly between the board of directors and key managers through regular or daily meetings
IAC15.4	Firms set up and provide information from hotlines and special information channels
IAC15.5	Firms choose communication methods suitable to their production and business characteristics
	Monitoring activities (MA)
MA16.1	Supervision is a daily activity and is built on the production and business activities of the firm
MA16.2	Research the degree of change in the business process when choosing the evaluation method
MA16.3	The firm sets up methods of assessment that are suitable for the characteristics of production and business of the unit
MA16.4	All employees of the firm have an understanding of the evaluation
MA16.5	Incorporating regular evaluation into the firm's business processes
MA16.6	The sanctions for handling violations and the level of assessment are adjusted by enterprises in accordance with the reality
MA16.7	The evaluation methods of firms are employed and adjusted flexibly to suit the changing speed of production and business processes
MA16.8	The board of directors has objectivity in the regular and periodical evaluation of the activities of the firm
MA17.1	Management and the board of directors need to reevaluate the results of the evaluation regularly and separately
MA17.2	The board of directors takes appropriate disciplinary action when violations occur
MA17.3	The firm has measures to overcome the shortcomings of the internal control system
	Performance (PF)
ROA	ROA — Return on assets
ROE	ROE — Return on equity
ROI	ROI — Return on investment
ROS	ROS — Return on sales
GOS	GOS — Gross profit margin
EPS	EPS — Earnings per share
NFP7	Labor productivity
NFP8	Achieve operational goals of the firm and comply with regulations
NFP9	Employees' satisfaction with the work, customers' satisfaction with the product and services