The Determinants of Financial Risk: Evidence from Vietnamese Listed Firms

Nguyen Hoang Thai*, Lai Thi Minh Trang, and Nguyen Thuy Ngan

Faculty of Accounting and Auditing, Vietnam National University - University of Economics and Business, Hanoi, Vietnam
*Corresponding author, Email: thainh@vnu.edu.vn

Abstract

In recent years, the world economy in general and Vietnam in particular, have been heavily affected. In Vietnam, the proportion of enterprises suspending business increased significantly in 2020, which is 81.8% compared to 2019 (Nguyen, 2020). Facing this situation, firms must pay more attention to financial management issues and predict the financial risks. This study aims to investigate the impact of CEO's characteristics on financial risk, by using data from 454 firms listed on HNX and HOSE, with a total observation of 1,362 from 2018 to 2020 (Nguyen, 2020). The results indicate that the age and education level of the CEO are positively correlated with financial risks. In addition, control variables such as profit margin, dividend payout ratio, the ratio of financial leverage, and the growth rate of the business have a significant impact on financial risk. From a practical perspective, this study suggests that organizations should pay attention to the characteristics of their CEOs when formulating financial risk management strategies. CEOs have a huge impact on firm performance. Characteristics of CEOs influence their behavior and decision making process in all the essential roles, whether in life or business. Thus, this study is important for corporations in particular and the economies in general.

Keywords: *CEO's characteristics, financial risk, listed firms.*

1. Introduction

In recent times, understanding the factors that contribute to financial risk in companies has become increasingly important. This study focuses on Vietnamese listed firms and seeks to explore how certain characteristics of Chief Executive Officers (CEOs) impact the financial risk of these organizations. One of the critical aspects we investigate is the influence of CEO characteristics, such as age, educational background, and professional experience, on the financial risk within these firms. The premise of our study is informed by the Upper Echelon Theory, which posits that the traits and experiences of top executives play a pivotal role in shaping an organization's strategic direction and risk profile. By examining these CEO characteristics, this research aims to provide a deeper understanding of how leadership can affect a company's approach to managing financial risk, an aspect that is crucial in the dynamic and ever-evolving business landscape.

In September 2020, the country had 98,954 newly established enterprises, down 3.2% over the same period last year (Nguyen, 2020). In addition, 78,3 thousand enterprises withdrew from the market, a 27.2% increase over the same period in 2019; 38,6 thousand enterprises registered to temporarily suspend operations, an 81.8% increase over the same period in 2019 (Nguyen, 2020). These figures indicate that enterprises in Vietnam are experiencing a financial crisis and are at a high risk of failing. This circumstance compels businesses and investors to focus more on the issue of financial management and predicting the risk of business failure.

Many studies have successfully developed models for predicting the financial hazards of businesses, such as the Z-score, O-score, and Alexei Bathory models. In general, the variables used to assess the financial risk of a business can be categorized into two groups: accounting data-based variables and market data-based variables. Group 1 accounting information is typically derived from audited financial statements of the business. As for group 2, data is gathered from market data, primarily based on the stock price, beta coefficient, and earnings from the stock exchange. In this study, the authors examine factors influencing financial risk from a unique perspective, determined by top management characteristics.

2. Objectives

This study aims to assess the impact of CEO characteristics on the financial distress risk of Vietnamese publicly traded companies. Data used in this study were collected from financial reports of enterprises listed on two main Vietnamese stock exchanges, the Hanoi Stock Exchange (HNX) and the Ho Chi Minh Stock Exchange, from 2018 to 2020 (Nguyen, 2020). The total number of sampled enterprises is 454, and the total number of observations is 1,362. A logistic regression model is used to determine the impact of CEO's characteristics on the financial distress in listed companies (Nguyen, 2020). Next part presents the research materials and methods. The results and discussion will be given in Section 4. In the final section, conclusions will be provided.

3. Materials and Methods

3.1. Research Background

Upper Echelon Theory, rooted in Hambrick and Mason's seminal work, suggests that top executives' traits significantly influence organizational outcomes. This theory is particularly relevant in examining the impact of CEO characteristics on financial risk in Vietnamese listed firms. It posits that CEOs' backgrounds, experiences, and perspectives shape strategic decisions, especially in dynamic markets like Vietnam. This paper utilizes this theory to explore the nexus between CEO attributes and financial risk, providing a foundational perspective for our analysis.

Identifying influencing factors and building financial crisis prediction models have been receiving the attention of researchers for decades. In particular, Beaver (1967) conducted empirical research on 79 companies confronting severe financial crises over ten years (1954-1964). Beaver discovered that inadequate liquidity, a lack of inventory, and excessive debt were the causes of these businesses' financial distress. In addition, Beaver emphasized that the ratio of cash to total liabilities is an essential predictor of financial crisis and corporate bankruptcy (Beaver, 1967). Although Beaver proposed a number of signs to identify the risk of financial crisis and bankruptcy that are quite simple, easy to apply, and save time, Alman disagreed with the above research results and said that Applying Beaver's financial risk assessment model may lead to incorrect conclusions (Alman, 1968). The Z Score is derived from five financial indicators combined with weights used to assess business risk, and these indicators can be readily extracted from an organization's financial statements. The Altman Z-score model is the result of experimental research conducted on 66 manufacturing companies between 1946 and 1965 and then retested with 25 other companies with a prediction probability of 96% (Alman, 1968). Recently, the Z-Score Model analysis is the core of the financial risk early warning system for IoT companies, revealing weak long-term solvency. As a result, IoT companies are advised to diversify investments and choose their projects carefully to reduce the likelihood of crises and promote healthy development. In addition, the O-Score model is an extensively used and well-known financial risk and bankruptcy prediction model. Ohlson (1983) used a logistic model to estimate the probability of a financial crisis occurring for 105 insolvent enterprises and 2,058 non-bankrupt enterprises in the United States from 1970 to 1976. Research demonstrates that the Ohlson model accurately predicts bankruptcy one year in advance with a 96.12% degree of precision.

In recent years, numerous studies have examined the veracity of financial risk prediction models in Vietnam's economic and social context. Duc et al. (2022), for instance, used the Z-score model to predict the bankruptcy risk of 293 companies listed on HOSE. The Z-score index predicts a company's financial distress with 91% accuracy one year in advance, according to the findings of a study. The accuracy rate of the Z-score index's forecasts indicates that this is a trustworthy index suitable for the Vietnamese market (Le, Cao, & Nguyen, 2012). Moreover, a number of studies in Vietnam have utilized the Z-score and O-score models to assess the financial risk capacity of businesses and identify the factors that influence financial risk. Specifically, research by Phung and Nguyen (2014) used the logit model to explore the impact of some financial and accounting factors on bankruptcy risk, and the results demonstrated that the leverage ratio Financial leverage, solvency, and profitability have a significant impact on a company's financial situation (Phung & Nguyen, 2014). This relationship is most evident in small capitalization firms with brief establishment periods and low profitability. Similarly, research by Le (2018) and Mai (2021) demonstrates that the combination of financial and accounting variables, macroeconomics, and market variables contributes to increased accuracy - the ability to anticipate the financial difficulties of a business accurately. In addition, Vo (2020) and Nguyen

(2019) have identified a number of other financial factors that influence the financial risk of businesses, such as the liquidity ratio, asset turnover, and receivables turnover.

In general, identifying factors that influence financial risk is no longer a novel topic for researchers in Vietnam. However, most previous research has primarily focused on financial factors such as accounting and market data. This study is intended to identify non-financial factors that influence the financial risk of a business. This study concentrates specifically on the impact of CEOs' characteristics on the financial risk of listed Vietnamese companies. Research results can be used to supplement scientific evidence regarding factors influencing financial risk and provide managers with a more scientific foundation upon which to devise solutions to mitigate risks, thereby enhancing operational efficiency and enterprise value.

3.2. Hypotheses Development

Applying the Upper Echelon Theory to this study, we hypothesize that the age, education, and experience of CEOs play a crucial role in determining how Vietnamese firms manage and perceive financial risk, which is particularly pertinent in today's dynamic business landscape.

Age of CEO: Previous studies often use the age of CEO to represent career concerns (Levin & Liu, 2012). According to Xiaoyang, Angie and Anil (2017), young CEOs are especially concerned about their career development prospects; they tend to open new businesses and are prepared to close businesses they believe are no longer market-appropriate. Similarly, research by Sabherwal (2016) demonstrates that young CEOs of U.S. businesses frequently diversify their business lines by acquiring a business outside their primary business, thereby mitigating the financial risks that businesses may face. This study, therefore, anticipates a negative correlation between youthful CEOs and financial risk at publicly traded companies.

Hypothesis 1: The older the CEO, the higher the financial risk.

Education of the CEO: One of the primary responsibilities of the Board of Directors is to appoint a qualified CEO. Nevertheless, determining and evaluating the capabilities of a CEO is not simple. Usually, education level is used as a proxy for the capabilities of the CEO. Jalbert (2002) explains this reference as follows: First, the CEO's education level increases his or her knowledge, allowing the CEO to comprehend the professional field in depth and perceive complex issues with clarity. In addition, a CEO's future career can benefit significantly from the social relationships formed in university and graduate school (Jalbert, 2002). The authors of Upper Echelon Theory, Hambrick and Mason (1984), concurred with the preceding statement, stating that senior managers' education level can influence the company's strategic decisions and, by extension, the company's financial position. Generally speaking, the educational level of managers is a significant factor that contributes to increased company performance (Bertrand. & Schoar, 2003; Carney, van Essen, Gedajlovic, & Heugens, 2015). The following research hypothesis is therefore proposed:

Hypothesis 2: The CEO's educational level is inversely proportional to the financial risk of the business.

Similar to the characteristics of the CEO's educational level, work experience plays a critical role in improving the labor productivity of the business while limiting the risks that the business encounters (Jalbert, 2002). Levin & Liu (2012) conducted an empirical study to investigate the relationship between a CEO's years of experience and found that executives with more years of experience have a deeper understanding of the business field and a greater capacity to monitor and allocate available resources. Consequently, their work experience can assist businesses in enhancing operational effectiveness and improve enterprises' sustainable development. This study, therefore proposes the following research hypothesis:

Hypothesis 3: The CEO's work experience is inversely proportional to the business's financial risk.

CEO and business founder: According to Daily and Dalton (1993), when the objectives of the company founder and the CEO differ, a conflict of interest may lead to an agency issue. In particular, if the CEO is not the company's founder, they tend to obstruct the board of directors' decisions to defend their interests. As a result, the company's performance may suffer and there may be financial risks. The following hypothesis is therefore proposed by this study

Hypothesis 4: If the CEO is also the founder of the company, financial risk will decrease.

The Upper Echelon Theory suggests that these personal attributes of CEOs could significantly influence their risk-taking behaviors, which, in turn, can shape the financial risk profiles of the organizations they lead. In addition, this research utilized some control variables, including profit margin, dividend payout ratio, financial leverage, and business growth rate, in this study. The research of Hall and Weiss (1997) establishes the relationship between financial factors and corporate profits that affect the enterprise's risk of insolvency. In addition, DeAngelo (1996) found empirical evidence that managers of large public companies swiftly reduce dividend payout policies when confronted with financial difficulties. According to Jensen and William (1996), when the debt-to-equity ratio is high, businesses are burdened with paying off debts and are consequently forced to reduce their investments. In addition, higher debt ratios force businesses to confront issues related to liquidity and solvency, thereby putting pressure on the business's ability to operate continuously. The research group derived the following hypotheses from previous studies:

Hypothesis 5: The larger the profit margin, the lower the financial risk

Hypothesis 6: The higher the dividend payout ratio, the lower the financial risk

Hypothesis 7: The higher the financial leverage ratio, the greater the financial risk.

Hypothesis 8: The higher the growth rate, the lower the financial risk

3.3. Research Methods

Sample selection: The information utilized in this study was extracted from the annual reports of publicly traded companies between 2018 and 2020. In addition, enterprises chosen for this study must satisfy the following criteria. First, businesses must be listed on the two largest stock exchanges in Vietnam, the Hanoi Stock Exchange (HNX) and the Ho Chi Minh Stock Exchange (HOSE); and second, the designated businesses are not in the financial sector, which includes insurance companies, banks, and credit institutions. After excluding businesses that do not meet the two requirements mentioned above and businesses that do not have comprehensive data, the number of businesses eligible to conduct research is 454, with a total of 1,362 observations.

Model of research: This study employs Logistic regression model to identify factors affecting financial risk in Vietnamese listed companies. In addition, the authors selected 8 observed variables from two groups of variables - financial and non-financial - to evaluate their ability to influence the bankruptcy risk of businesses. These variables include age of the CEO, education level, year experience, founder, profit margin ratio, dividend payout ratio, financial leverage, and growth rate. Based on the presented research hypothesis, the following research model is proposed for this study:

$$BRC = \beta 0 + \beta 1\ CEOAge + \beta 2\ CEOEdu + \beta 3\ CEOYear + \beta 4\ CEOFounder + \beta 5\ Profitmargin + \beta 6\ Payoutratio + \beta 7\ Leverage + \beta 8\ FirmGrowth + ui$$

The way to measure variables is described in detail in Table 1

Table 1 Description of observed variables

No.	Variable		Measurement	Expected sign
1	BRC	Fiancial Risk	O-Score	
2	CEOsAge	CEO age	Age of CEO	-
3	CEOsEdu	Education	The education of CEO	-
4	CEOsYear	Experience	Year experience of CEO	-
5	CEOsFounder	Founder	CEO is also the founder of the business.	-
6	Profitmargin	Profit margin ratio	((profit before tax, depreciation and interest) / Revenue) * 100	-
7	Payoutratio	Dividend payout ratio	The ratio of the total amount of dividends paid to shareholders to the company's net income.	-
8	Leverage	Financial leverage	Total debt / Total assets	+
9	FirmGrowth	Growth rate of the company	(Revenue in year t - Revenue in year(t-1)) / Revenue in year(t-1)	-

4. Research Results and Discussion

Descriptive statistics

The results of descriptive statistics are shown in Table 2.

Table 2 Descriptive statistics

Variables	Obs	Mean	Std. Dev.	Min	Max
BRC	1,362	0.6108664	0.4877328	0	1
CEOsAge	1,362	47.86637	11.34742	0	77
CEOsYear	1,362	11.90015	9.441822	0	49
Profitmargin	1,362	6.509954	14.17119	-21.71537	42.5697
Payoutratio	1,362	0.4142148	0.4578	0	1.577441
FirmGrowth	1,362	0.0347777	0.2772734	-0.5230162	0.5249614
Leverage	1,362	0.2154067	0.1753824	0	0.5521759

Source: Data extracted from Stata software by the authors

The statistical results describing the variables in the research model are presented in Table 3. The average age of CEO is approximately 48. In addition, the average number of years of experience for CEO is approximately 12 (11.9). Meanwhile, the average proportion of net income distributed as dividends to common shareholders is 41.42%. In addition, the average growth rate of enterprises is 3.48 percent and their average financial leverage is 21.54 percent. The profit margin reveals that the average business can generate a profit of 6.5 VND for every 10 VND in revenue. Table 3 displays the results of the correlation between variables in the research model.

Table 3 Correlation coefficients

	BKC	CEOAge	CEOEdu	CEOExp	CEOFound	ProfitMargin	PayoutRatio	Leverage	Growth
BKC	1								
CEOAge	-0.108***	1							
CEOEdu	-0.0658*	-0.00248	1						
CEOExp	-0.0219	0.385***	-0.00762	1					
CEOFound	-0.0269	0.0408	0.131***	0.0809**	1				
ProfitMargin	-0.213***	0.0671*	-0.0377	-0.00932	-0.0135	1			
PayoutRatio	-0.0982***	0.113***	-0.0245	0.137***	0.0119	0.0716**	1		
Leverage	0.496***	-0.00339	0.00448	-0.0105	-0.00168	-0.171***	-0.0845**	1	
Growth	-0.0253	-0.00673	0.0414	-0.0314	0.0635*	-0.00103	-0.0667*	0.0819**	1

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Source: Data extracted from Stata software by the authors

From table 4 we can see that the correlation coefficients are all low, the highest being 0.49 < 0.8. Besides, the authors checked the variance magnification factor VIF, the highest VIF coefficient was 8.48 < 10. Therefore, we can conclude that the research model does not suffer from multicollinearity defects. The research model will ensure that the estimated results are linear, unbiased and effective.

Table 4 Variance inflation factor VIF

Variable	VIF	1/VIF
CEOAge1	8.48	0.105484
CEOExp1	4.22	0.237142
ProfitMargin	2.83	0.353692
Leverage	2.46	0.406758
PayoutRatio	1.87	0.535571
CEOEdu	1.58	0.634384
CEOFound	1.04	0.961317
Growth	1.03	0.968175
Mean VIF	3.06	

Source: Data extracted from Stata software by the authors

Table 5 Result of Logistic regression model

Variable	Variable definitions	Financial Risk	
		β	S.E
CEOAge	CEO's Age	-0.435224***	0.0101411
CEOEdu	CEO's Education	0.4562387***	0.1442402
CEOExp	CEO's Experience	0.010503	0.0093963
CEOFound	CEO is the Founder	-0.2202084	0.6286372
ProfitMargin	Profit Margin	-2.60695***	0.4966925
PayoutRatio	Payout Ratio	-0.2832131*	0.1468007
Leverage	Leverage	6.709545***	0.4228022
Growth	Firm Growth	-0.6235658**	0.2445167
_cons	Constant	1.88499	0.4677154
	Observations	1,356	
	Number of Code	454	
	R-squared	0.2396	

Note: Robust standard errors in parentheses
****p < 0.01, **p < 0.05, *p < 0.1*

Source: Data extracted from Stata software by the authors

According to the findings of the research, there are a total of six out of eight variables that influence the financial risk of a business, including the age and level of education of the CEO, the profit margin, financial leverage, and the rate of business growth.

Hypothesis 1: Age of the general director (CEOAge). According to the study's findings, the CEO's age is directly correlated to the financial crisis risk of the business ($p<0.001$). In other words, the risk of a financial crisis increases as the age of the CEO increases.

Hypothesis 2: Education level of the General Director (CEOEdu). The CEO's education level has a negative correlation with the likelihood of a financial crisis (at a significant level, $p < 0.001$). The cause of the above phenomenon is that CEOs have high levels of education, have a deep understanding of their professional fields, and are well aware of complex issues. In addition, social relationships cultivated in the university and postgraduate environment can significantly benefit a CEO's career and boost their confidence to make sound business decisions (Jalbert, 2002). This results in the development of the business in a sustainable manner, substantially reducing the business's potential risks.

Hypothesis 3: General director's work experience (CEOsEdu): The estimated results of the model indicate that the experience of the CEO does not affect the financial crisis risk of publicly traded companies in the Vietnam stock market since this study result is not statistically significant.

Hypothesis 4: The CEO is the founder of the business (CEOsFounder). The estimated results of the model indicate that whether or not the general manager is the company's founder has no bearing on the financial crisis risk of businesses listed on the Vietnamese stock exchange, as this result is not statistically significant.

Hypothesis 5, 6, 7, 8: Research results show that profit margin has a negative relationship with a business's financial risk, with a significance level of $p<0.001$. Profit margin is essential for investors and managers to use to reflect indicators of a business's financial health, management skills, and growth potential. Besides, the dividend payout ratio is proven to have a negative correlation with financial risk at the significance level of $p<0.05$. The financial leverage ratio negatively correlates with financial risk at the significance level of $P<0.001$. Enterprises mobilize capital mainly based on loans, which increases the payment risk of the enterprise; in addition, high financial costs significantly affect the enterprise's profits. Business growth rate has a negative correlation with financial risk. The growth rate shows the future development prospects of the business. Obviously, a business with a reasonable growth rate usually does not have financial difficulties or face operational risks.

5. Conclusion

This study examines the impact of CEO characteristics on financial risk in Vietnamese listed firms, highlights several intriguing findings with implications for both theory and practice. The significant correlation between CEO age and financial risk underscores the influence of leadership maturity on risk management. Older CEOs, often perceived as more conservative, might approach financial decisions with greater caution, potentially increasing financial stability. In contrast, the inverse relationship between a CEO's education level and financial risk suggests that higher educational attainment equips CEOs with deeper insights and a broader perspective, enabling more informed and less risky financial decisions. However, the study's results indicating the non-significant impact of CEO's work experience and whether the CEO is also the founder on financial risk, present an opportunity for further research. These findings deviate from some established notions in the literature and signal a potentially unique dynamic in the Vietnamese context.

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