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The Effect of CEOs' Financial Knowledge on Unsystematic Risk, Considering the Moderating Effect of Managerial Ability

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Abstract

With the emergence of economic globalization, expansion of business activities and more complex financial, administrative and operational structures, the need for firms to have CEOs with capable financial and managerial knowledge has multiplied more than in the past. Leading companies will require specialized human capital such as knowledge-based CEOs to bring maximum productivity, efficiency, and value creation to stakeholders through effective corporate governance, risk management, optimal organizational resources, and increased profitability. This study investigates the effect of CEO knowledge and management ability on non-systematic risk and the effect of management ability on the relationship between the CEO's financial knowledge and unsystematic risk. The statistical population of this study is the companies listed on the Tehran Stock Exchange and the statistical sample size includes 147 companies for the years 2011 to 2020, which have been selected by the systematic elimination method. Combined data and multivariate regression using the generalized least squares method have been used to test the research hypotheses. The results show that the financial knowledge of CEOs has a negative and significant effect on non-systematic risk. The effect of management ability on non-systematic risk is also negative and significant. Another result of the study indicates that management's ability as a moderating variable does not have a positive and significant effect on the relationship between the financial knowledge of CEOs and non-systematic risk.

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1. Introduction

The CEO's financial knowledge improves the relationship between the management and the CFO departments; the CEOs can thus get involved in policy-making and management accurately and effectively. They emphasise risk management and more conservative approaches in financial reporting to identify unrealistic and misleading financial reports that will adversely affect their reputation (Gounopoulos and Pham, 2018). Managerial ability improves disclosure, the quality of financial reporting, and the information environment and reduces information risk and asymmetry. Information risk negatively affects accurate stock pricing in the capital market (Francis, Nanda and Olsson, 2008). Companies with CEOs possessing financial knowledge save financial resources, reduce firm risk and create value for the business. Such managers also potentially increase the reliability of financial reporting (Kalelkar and Khan, 2016). The concept of risk plays a key role in the capital market, so it needs to be recognized and measured. According to Damodaran (2000), risk has two signs: the first one means danger and the second one means opportunity; along with recognizing the threats, the opportunities gained should also be used. Therefore, two perspectives could be presented to define risk: the first includes any possible fluctuations in economic return, and the second includes any negative fluctuations in economic returns (Raei and Saeedi, 2017). According to classical financial theory, there is a positive relationship between risk and the expected return. Investigating the volatility of securities risk-return has always been considered by managers' that is, it is not possible to pay attention to one without considering the other. Risk consists of two main components: systematic and unsystematic risks. Unsystematic risk refers to fluctuations that are not explained by total market risk. In terms of theoretical concepts, this risk is equal to the standard deviation of the amount of additional returns expected by shareholders in a certain period; and there is an inverse relationship between the unsystematic risk and the return (Gholipour Khanegah et al., 2017).

The CEOs' financial expertise may cause to reduce the risk of the company's poor performance, improve the quality of financial reporting, and reduce the company's unsystematic risk. There is also a negative and significant relationship between the CEOs' knowledge and the weakness in internal controls (Oradi, Asiaei and Rezaee 2020). CEOs with financial experience and knowledge have better efficiency than other managers; they reduce the risk of system errors, have more accuracy and less errors in forecasts, and ultimately promote the transparency and quality of the company's financial reporting (Matsunaga, Wang and Yeung, 2014). CEOs' high ability effectively reduces their risk-taking behavior and risk avoidance. They play an important role in preventing and reducing risk in the company. By reducing the risk, the company is expected to achieve maximum returns as well as shareholders' maximum confidence. This study empirically proves that CEO's ability has a negative and significant effect on the company's risk-taking behavior and unsystematic risk (Wati, Tjaraka and Sudaryati, 2020). Managers with higher ability adopt risky behavior in their strategies and positively impact the company's performance. They benefit from more knowledge, skills and information and, through risky behaviors, reduce the costs and improve the company's performance (Simamora, 2021). CEOs play an important role in making important decisions in the business. Financial managers with a good deal of expertise are expected to positively and significantly impact the financial management of the companies' portfolios. They can reduce the unsystematic risk of the portfolio and increase the return rate (Chen et al., 2020). Managers with financial knowledge are well aware that to reduce the unsystematic risk, they need to create operational diversity for the company. This is the main reason for the acquisition and merger of companies in Western countries.

Ambiguity about the effect of managerial factors such as financial knowledge on other accounting and auditing variables has led some researchers such as Gounopoulos, Loukopoulos and

Loukopoulos (2021), Wati, Tjaraka and Sudaryati (2020), Custódio and Metzger (2014), Matsunaga, Wang and Yeung (2014) and Taheri Abed, Alinezhad Sarokolaei and Faghani Makerani (2018) to study the influence of managerial factors including financial knowledge. Regarding the above research, whether the CEOs' financial knowledge and managerial ability have a negative and significant effect on the unsystematic risk of companies listed on the Tehran Stock Exchange or not? Therefore, there is a need to investigate the impact of the above variables on each other in the economic environment of Iran. The results of this study are expected to help the shareholders choose the optimal investment and reduce their unsystematic risk. This research also promotes the accounting literature on the impact of managerial factors and introduces a new dimension to future research. The following is a review of the literature and research background. Then the hypotheses, research method, findings, discussion and conclusion are stated.

2. Literature Review

Upper echelons theory in management reveals that the CEOs' personality traits such as work experience, age, social and economic characteristics, university education, and past performance can partly affect the interpreting, decision-making, and solving of organizational problems (Hambrick and Mason, 1984). According to stakeholders theory, CEOs play an important role in balancing stakeholders' profits in the business. The reason for the emergence of the stakeholders' theory has been to help solve complex business challenges in businesses. According to this theory, the managers' role in the company is to help solve the challenges of companies in the fields of business, ethics, and capitalism and increase the value of the enterprise (Parmar et al., 2010). The human capital theory also revealed that the managers' knowledge and abilities could be a key factor in improving organizational performance. Organizational results may reflect the CEOs' values and abilities (Amit and Shomaker, 1993). Companies must take risks if they are to survive and prosper. The risk management function's primary responsibility is to understand the portfolio of risks the company is currently taking and the risks it plans to take in the future. It must decide whether the risks are acceptable and what action should be taken if they are not acceptable (Hull, 2015).

Investment refers to the delay in consuming current resources to obtain a return rate that will be received in the future. Paramitasari (2014) maintains that investment is individuals' management of capital applied to assets expected to bring about results in the future. Once an investment is made, investors expect a return from their invested capital, commonly referred to as the expected return (Misfiyati, 2018). Investment decisions resulting from management policies in using existing funds are in assets expected to bring future benefits to the company (Novianggie and Asandimitra, 2019). When making investment decisions, investors need to behave rationally. An investor's behavior is usually considered rational when he can use various information available on the capital market to allocate his funds optimally to investment (Pramuki, Subroto and Subekti, 2016). Investors can diversify their investments by investing in several stocks that form an investment portfolio. Investors should notice that unsystematic risks can be eliminated by diversifying their portfolios. (Sukrianingrum et al., 2020).Managers' financial decisions play an important and decisive role in the firm success (Singh and Luthra, 2013). Among these decisions, those about capital expenditures and investments can be considered the foremost (Durnev, Morck and Yeung 2005), focusing on identifying projects to maximize shareholder value (Elgebeily, Guerm and Vendrame, 2021).

Managers holding a university degree in accounting, auditing, management, and economics can analyze financial information and are more familiar with accounting standards and policies. In financial reporting, they mostly follow the premise of caution, but in adopting working capital policies, they often follow a bold strategy. During difficult economic conditions, they can increase

external financing, are more accountable when distributing profits to shareholders, and, with their financial knowledge, are capable of seeking tax avoidance. They may affect financial information. Moreover, they pay more attention to accounting and internal auditing areas. They are more likely to realize the disclosure and reduction of information asymmetry (Matsunaga, Wang and Yeung, 2014).

The CEO's knowledge is positively related to the company's financial, investment, and profit-sharing policies and negatively related to cash holdings. They have a better understanding of the financial and capital markets and, in case of limited financial resources, can more quickly address the company's shortcomings in these markets. Besides, since they are more familiar with accounting theories and concepts, they improve the financial performance of mature firms (Custódio and Metzger, 2014). While making investment decisions, managers with financial knowledge are sensitive to political interferences. Such managers in private-sector companies spend more on research and development than their counterparts in state-owned companies. There is also a high correlation between expert financial executives and investing expenditures (Anderson, Liao and Yue, 2022). By implementing their favorable or unfavorable policies based on their skills or experience, managers specialising in finance can increase or decrease the value of a company in the capital market. In conditions of uncertainty, they reduce the company's information asymmetry and help improve the information content of financial reports in times of financial decision-making and investment (Gounopoulos, Loukopoulos and Loukopoulos, 2021). Holding companies run by managers with general skills face a higher risk of bankruptcy. During the initial public offering, employing CEOs with knowledge and experience in finance can be very valuable for the company. Their financial experience and knowledge may reduce both the risk of information asymmetry in initial public offerings and over-investment (Gounopoulos and Pham, 2018).

According to Kalelkar and Khan (2016), CEOs specialising in financial affairs reduce the company's risk by improving accounting policy, better disclosure, and increasing the quality of financial reporting. They help increase the reliability of financial reporting, reduce audit fees, save financial resources, and create value for the firm. Kim, Kim and Mattila (2016) also state that recognizing systematic and unsystematic risks has become very important for economic enterprises for such risks influence values, strategies and the shareholders' rights. It is important to pay attention to risk and return simultaneously, and, as stock returns are considered, the company's risks should also be carefully identified.

The goal of businesses is to maximize profits and control risks simultaneously. An important part of an organization's strategy emphasizes risk management. Among the stakeholders, ordinary shareholders are more at risk, and risk management benefits this group. By reducing the adverse effects of risk, risk management will benefit all stakeholders and create a suitable and safe environment for decision-making; it may also reduce probable losses of investment activities (Raei and Saedi, 2017). One of the major benefits of organizational risk management is diversifying the investment portfolio, reducing the detrimental effects of unsystematic risk, and managing a set of risks to protect all corporate resources (Gordon, Loeb and Tseng, 2009). Citing Deng et al. (2014), Masry and El Menshawy (2018) discuss the impact of unsystematic risks on investment decisions. They discovered that organizations prefer to turn to portfolio diversification projects to reduce investment risk. But in case of a significant reduction in managerial ownership, the relationship between unsystematic risks and portfolio diversification becomes positive.

Unlike return, the risk is a subjective and non-quantitative concept. Many economic and financial experts have focused on recognizing and measuring risk. According to the new portfolio theory, the risk is divided into systematic and unsystematic. Systematic risk is a deviation in the expected returns related to factors outside the company; it is not under the control of the company's

management, including inflation, prosperity, exchange and interest rates, political and other factors beyond the control of business executives measured by beta coefficient. Unsystematic risk, also known as company-specific risk, is a deviation in the expected return on financial assets related to factors under management control. In addition to the common factors in the whole economic system, the company's specific factors affect only the return of the same company. They include factors such as the strength and style of the company management, organizational structure, product type and price, and so on. Therefore, investors can reduce their portfolio by diversifying it (Soleimany Amiri and Gerveie., 2017).

In the accounting literature, Markowitz (1952) was the first person to quantify risk for which he introduced a mathematical model. After him, Sharp (1960) developed the Markowitz model and introduced the capital asset pricing model (Fallah pour, 2014). To a large extent, this model has a large economic basis and shows how assets, according to their risk, are priced (Zariffard and Ghaemi, 2001). From the perspective of Masry and El Menshawy (2018) about unsystematic risk fluctuations and expected stock returns, the results of the studies could be classified into three different scenarios. Scenario 1: Researchers such as Ang et al. (2006) found a negative relationship between unsystematic risk and stock returns, revealing that the remaining standard deviation of models such as the Fama and French three-factor models had been used to measure the estimation of unsystematic risk fluctuations. Scenario 2: studies by some researchers, such as Goyal and Santa Clara (2003), reveal a positive relationship between unsystematic risk and stock returns. In the third scenario, certain researchers, such as Bali and Cachici (2008), demonstrated no statistically significant relationship between unsystematic risk and stock returns. Yung and Chen (2018) have also commented on managers' impact on the firm's risk and profitability: There is evidence revealing that managers believe that risky behavior is a manager's requirement. Managers' willingness to take risks indicates the existence of profitable opportunities in the market and is a fundamental force and stimulus for the growth and performance of the firm. Risk management and firm profitability also have a positive and meaningful relationship.

In a competitive world, managers have very serious responsibilities in managing economic units and their success. Therefore, the role of a manager in managing economic activities is undeniable. As the shareholders' representative and agent, the manager are responsible for promoting economic enterprises' productivity and profitability and tasks such as overcoming economic crises. In this regard, the CEOs' personal characteristics, including financial knowledge and ability, can overshadow their organisation's behavior and type of decisions and, consequently, affect financial-reporting transparency (Taheri Abed, Alinezhad Sarokolaei and Faghani Makerani, 2018). Harrison et al. (2020) also concluded that, in fact, financial-economic theories generally consider the relationship between risk and return to be positive. The results showed that this relationship might be positive for one company and negative for another. CEOs' special personality traits may also change the relationship between stock risk and return. CEOs' personality traits affect their perception of the market; these traits also influence the way the CEOs turn this perception into value-creating for the company. CEOs are the most important actors within a firm for their ability in the company and the capital market can have positive or negative effects on investment risk or value creation for the business. Diversifying the stock portfolio can reduce the detrimental effects of unsystematic risk on the company (Lee, Hu and Foley, 2020). CEOs always intend to take measures to bring the company's risk in securities to an acceptable level. According to portfolio management theory, unsystematic risk can be minimized by selecting the appropriate set of investments in securities at a given rate of return. The higher the securities get, the less the systematic risk will become, and the closer the portfolio risk to systematic risk (Rahnamay Roodposhti and Salehi, 2011).

Demerjian et al. (2013) have described the ability to manage as follows: It is expected that managers with higher ability than others create a higher level of revenue and return for the company through higher productivity and minimal resources. Managerial abilities and talents can improve performance, operations, corporate governance, productivity rate, and investment decisions, bringing about important economic consequences for the company. Capable managers are expected to be more informed about current technology and company policy than others; they are also more able to anticipate product demand and invest in worthwhile projects. Baik et al. (2011) state that: Compared to companies with lower managerial ability, companies with high managerial ability have the advantage of accuracy in providing information, improving forecasting in profit management and increasing the level of information disclosure in financial reporting to make decisions. Managerial ability plays an important role in promoting the value of the firm. Managers with high ability or those with low ability have opposite effects on the company's strategies and value. Managers with high ability are usually more risk-taking, while managers with low ability are more risk-averse. Highly capable managers reduce capital costs, increase the company's market value, and spend more on research and development projects. In contrast, less capable managers reduce capital costs, company market value, and R&D costs. The managerial ability negatively correlates with the company's financial leverage (Yung and Chen, 2018). During the financial crisis period, companies with better managerial ability, through increasing investment, create more profitability for the enterprise. Managerial ability negatively correlates with information asymmetry, increasing firm performance, reducing over-investment, and improving corporate borrowing capacity (Andreou, Ehrlich and Louca, 2013).

The quality of financial reporting can influence information and unsystematic risks and capital costs; therefore, having or not having information affects the company's risk. Companies with lower information quality have a higher unsystematic risk, and this negative relationship is always stable (Zalaghi, Bayat and Daneshasgari, 2014). It is expected that the greater the managerial ability, the more accurate their future risk forecast and return on investment plans are. The CEO's ability can affect the efficiency of investment, current profit and forecast of future profits, as well as the company's cost and risk management. As the managers' ability increases, the reliability and credibility of financial reporting systems will increase the company's value and risk control, while its capital cost will decrease. As the quality of information increases, investors' expectations of risk and return are adjusted; in other words, the quality of information leads to a reduction in the investors' risk of incorrect selection, and consequently, the expected return is also adjusted (Rashidi, 2020).

2.1. The development of hypotheses

Gounopoulos, Loukopoulos and Loukopoulos (2021) showed the negative and significant relationship between CEOs' experience and knowledge with bankruptcy risk and financial fluctuations resulting from stock returns. They reduce the risk of both information asymmetry and information uncertainty at an initial public offering and, by reducing accruals, improve the profit quality.

Ashafoke, Dabor & Ilaboya (2021) concluded a negative and significant relationship between the CEO's financial knowledge and the quality of financial reporting. Also, the CEO's tenure shows a positive and significant relationship with quality, reporting and finance, and the relationship between the company's profitability and quality-financial reporting has been positive but not significant.

Ying and He (2020) showed that CEOs with a finance degree could play a professional role in decision-making and improving the financial sector's performance. The impact of the CEOs'

experiences and academic training in finance on the performance of large non-governmental corporations has been positive and meaningful.

Zarei et al. (2018) showed an inverse relationship between the CEO's decision-making power and the risk of falling stock prices. These findings emphasize that improving the CEO's decision-making power reduces the risk of falling stock prices in a developing country like Iran.

Yung and Chen (2018) concluded that managers with high ability reduce capital expenditures but tend more significantly to spend money on R&D projects. In contrast, managers with a low ability to reduce capital expenditures and R&D costs are negatively related to the company's leverage. As the managerial ability increases or decreases, the company's value increases or decreases.

Behmanesh et al. (2020) a negative and meaningful relationship between the CEOs' financial knowledge and profit payment policy. There is also a positive and meaningful relationship between the CEOs' knowledge and cash retention. Other research findings indicate a negative relationship between the CEO's financial knowledge and leverage, but this relationship is not meaningful. This result shows that the leverage in companies with financially expert CEOs is not significantly different from that of other companies.

Saedi and Rezaeian (2019) showed that the more the CEOs' knowledge and skills in their area of expertise, the more their confidence in their knowledge would get. Some economists' analyses are much more accurate than some ordinary people's. Rational managers try to get the maximum return by accepting the minimum risk.

Recent studies have focused on CEOs' financial knowledge of earnings management, transparency of financial reporting, and restatement of financial statements. No research has investigated the effect of a CEO's financial knowledge and managerial ability on unsystematic risk; this is considered one of the innovative aspects of this research.

2.2. Research hypotheses:

According to the materials presented in the introduction, theoretical framework and literature review, it is inferred that the CEOs' financial knowledge and managerial ability reduce unsystematic risk. Accordingly, the following three hypotheses have been proposed and tested:

Hypothesis 1: CEOs' financial knowledge has a meaningful and negative effect on unsystematic risk.

Hypothesis 2: CEOs' ability significantly negatively affects non-systematic risk.

Hypothesis 3: Managerial ability strengthens the negative relationship between the CEOs' financial knowledge and unsystematic risk.

3. Research Methodology

This research is descriptive-correlational in terms of applied purpose and data analysis method. The information required for the theoretical framework and literature review has been prepared through the library research method. The research data, including searching the financial information of listed companies, have been collected through document mining. This information has been collected from the board of directors' financial statements and activity reports and provided through the codal[1] system and Rahavard Novin 3 software. Research patterns have been estimated by using GAMS, Eviews and STATA software. The statistical population consists of companies listed on the Tehran Stock Exchange from 2011 to 2019, and the statistical sample includes 1323 year companies selected through systematic elimination. The companies having the following conditions were included in the research sample: their fiscal year should be the end of

[1] www.codal.ir

each *Esfand* [1] ; they should not have changed their fiscal year during the research period, and not unlisted on the Tehran Stock Exchange; they should not be among the investment, financial intermediaries, banks and insurance companies; and their information needed for this research should be available. Based on the sampling conditions, 147 companies have been selected as samples.

The required information about the financial knowledge of the CEOs has been obtained through the Codal website, annual general meeting, and report of the board of directors to the annual general meeting, company website, internet search and contact of the CEO's office. Information on other research variables such as financial statements, board of directors activity reports, auditor reports, and attached financial statement notes have been prepared on Tehran Stock Exchange and Rahavard Novin software.

The study's first hypothesis examines the CEOs' financial knowledge of unsystematic risk. To test this hypothesis, Equation (1), to measure the CEOs' financial knowledge, Gounopoulos and Pham model (2018), and to calculate unsystematic risk, the empirical capital asset pricing model (CAPM) has been employed:

$$\text{Unsystematic Risk}_{i,t} = \beta_{\circ} + \beta_1 \text{Financial exp CEO}_{i,t} + \beta_2 \text{Log(age)}_{i,t} + \beta_3 \text{Log(assets)}_{i,t} + \beta_4 \text{Audit Size}_{i,t} + \beta_5 \text{Leverage}_{i,t} + \beta_6 \text{ROA}_{i,t} + \varepsilon_{i,t}$$

Equation (1)

Unsystematic Risk: Unsystematic risk is a research-dependent variable calculated based on the Sharp empirical capital asset pricing model (1960) and Equation (2).

Financial exp CEO: It is a virtual variable that will be 1 if the CEO's degree is in accounting, auditing, finance, management or economics; otherwise, it will be zero. **Log (age):** The logarithm of the company's age since its inception. **Log (assets):** It is the logarithm of the book value of all company's assets. **Audit Size:** If the company has used the services of the auditing organization, 1, otherwise 0 zero has been assigned to it. **Leverage** is obtained by dividing the company's total debt by its total assets. **ROA:** This ratio is obtained by dividing the net profit by the total assets. To calculate the unsystematic risk, model (2) has been employed using the daily return information of each year of sample companies and the daily return of the stock exchange index. The remaining standard deviation of the model is considered an unsystematic risk.

$$R_{jt} = \propto + \beta_{jt} R_{mt} + \varepsilon_t$$

Equation (2)

R_j represents each company's daily return; R_{mt} indicates daily market return; Model error indicates unsystematic risk. Steps for calculating non-systematic risk using the CAPM experimental model. First, select the sample size of listed companies. Second, extracting the daily return (r) of each company. Third, calculate the daily changes in the company's stock returns. Fourth extraction of daily returns of Tehran Stock Exchange. Fifth calculation of daily changes in stock exchange returns. Sixth, Calculate the Slope function for line slope or beta coefficient. Seventh, calculate the Intercept function to calculate the alpha. Eighth, calculate the model error using the equation (3):

$$error = ri - [intercept + (slope * rm)]$$

Equation (3)

Ninth Calculation of standard deviation of errors obtained from the above equation for each day

[1] The twelfth and final month of the Solar Hijri calendar, beginning in February and ending in March of the Gregorian calendar

by years of research. Tenth, calculate the number of days the company's stock is traded on the stock exchange. Now the non-systematic risk of each company each year is calculated by the equation (4):

$$\text{the standard deviation of errors} * \sqrt{\text{Total number of trading days}}$$

Equation (4)

The second research hypothesis investigates the effect of managerial ability on unsystematic risk. To test this hypothesis, Equation (4), to measure the CEOs' financial knowledge, Gounopoulos and Pham model (2018), and for the managerial ability, Demerjian et al. model (2013) was used in the following way:

$$\text{Unsystematic Risk}_{i,t} = \alpha_{\circ} + \beta_1 \text{Managerial Ability}_i + +\beta_2 \text{Log(age)}_i + \beta_3 \text{Log(assets)}_i + \beta_4 \text{Auditor}_i + \beta_5 \text{Leverage}_{i+} + \beta_6 \text{ROA}_i + \varepsilon_i$$

Equation (6)

Managerial Ability: It has been calculated using the Demerjian et al. model (2013). The firm's performance has been measured to calculate the managerial ability, based on data envelopment analysis, and according to Equation (5). Then, according to the remaining fit of Equation (6), the company's effectiveness and managerial ability were calculated. Equation (5) was measured by GAMS software to calculate the company's performance. Data Envelopment Analysis (DEA) is a mathematical programming method for evaluating decision units, in which each decision unit or firm generates **s** output using **m** input. Every year the company needs to have at least one positive input and output.

$$\text{MAX } \theta = \frac{\text{Sales}}{v1_{\text{COGS}} + v2_{\text{SG\&A}} + v3_{\text{PPE}} + v4_{\text{INTAN}} + v5_{\text{GOODWILL}}}$$

Equation (7)

MAX θ: Indicates the measure of the company's productivity of organizational resources. Sales: Represents the company's total income as a variable or measure of output. COGS**:** Indicates the cost of goods sold. SG&A**:** Indicates general, administrative and sales costs. PPE**:** Expresses net tangible fixed assets. INTAN: Indicates net intangible fixed assets. GOODWILL**:** Represents the goodwill contained in the financial statements.

The company's output is the sale of goods and services, and its input includes the production factors, including the cost of goods sold, general, office and sales expenses, net tangible and intangible fixed assets, and goodwill. The above variables play a decisive role in generating revenue for the company. Managers have an important role in optimal organizational resources and productivity. The company's productivity is a number between 0 and 1. The closer the number is to one, the better the company's efficiency and effectiveness in using organizational resources. How to calculate a company's productivity using data envelopment analysis, known as the MAX θ variable, has been shown in Equation (5). As a company performance variable, the number obtained in Equation (6) has the role of a dependent variable to distinguish, by calculating the model error, the company's capabilities from the manager's innate and acquired ones.

The calculation of managerial ability has been done by Equation (6), the error of which will indicate the managerial ability. In order to control the company's intrinsic particular effect in the model, the company's performance has been divided into two separate parts, namely performance

based on the company's intrinsic characteristics and managerial ability. This is done by controlling the company's inherent characteristics (such as the company's size, market share, free cash flow, age of firm, foreign sales or exports). Each of the following five variables, as an inherent feature, can help management make better decisions or act in the opposite direction and limit the manager's abilities. For this reason, this feature is controlled in the following model.

$$\text{Firm Efficiency}_i = \alpha + \beta_1 \text{Ln(Total Assets)}_i + \beta_2 \text{Market Share}_i + \beta_3 \text{FCF Indicator}_i + \beta_4 \text{Ln(Age)}_i + +\beta_6 \text{Foreign Indicator}_i + \varepsilon_i$$

Equation (8)

Firm Efficiency**:** Indicates the company's efficiency. Ln (Total Assets): It is equal to the natural logarithm of the company's total assets. Market Share**:** The company's market share in the industry it operates. FCF Indicator**:** Indicates the free cash flow index calculated by Equation (7). Ln (Age): It is The natural logarithm of corporate life. Foreign Indicator: Indicates the company's foreign sales. ***ε***: Model error indicates the extent of managerial ability.

Calculating Free Cash Flow:

$$FCF_{i,t} = \frac{\left(OEBDA_{i,t} - Tax\ Payable_{i,t} - Intrest\ Expensive\ Payable_{i,t} - Dividen\ Profit\ Payable_{i,t}\right)}{Total\ Assets_{i,t}}$$

Equation (9)

FCF: Indicates the flow of free cash. **OEBDA:** Is the operating profit before subtracting depreciation. **Tax Payable:** Is the payable tax. **Intrest Expensive Payable:** Interest and dividends paid. **Dividend Profit Payable:** Is the divisible profit. **Total Assets:** Includes the sum of total assets.

The third hypothesis examines the effect of managerial ability on the relationship between CEOs' financial knowledge and unsystematic risk. To test this hypothesis, Equation (8) has been used as follows:

$$\text{Unsystematic Risk}_{i,t} = \alpha_\circ + \beta_1 \text{Financial exp CEO}_{i,t} + \beta_2 \text{Managerial Ability}_{i,t} + \beta_3 \left(\text{Financial exp CEO}_{i,t} * \text{Managerial Ability}_{i,t}\right)_{i,t} + \beta_4 \text{Log(age)}_{i,t} + \beta_5 \text{Log(assets)}_{i,t} + \beta_6 \text{Audit Size}_{i,t} + \beta_7 \text{Leverage}_{i+} + \beta_8 \text{ROA}_i + \varepsilon_{i,t}$$

Equation (10)

The above variables have been explained when describing Equation (1).

4. Research Findings

The results of descriptive statistics of research variables, including minimum, maximum,

average, standard deviation, kurtosis and skewness, are presented in Table 1.

Table 1. The Results of descriptive statistics of research variables

variables	symbol	minimum	maximum	average	standard deviation	skewness	kurtosis
Unsystematic risk	Unsystematic Risk	0.006	33.502	2.956	4.185	2.329	8.450
CEOs' Financial knowledge	Financial exp CEO	0.000	1.000	0.514	0.500	-0.055	1.003
Managerial ability	Managerial Ability	-0.755	0.517	-1.130	-0.270	0.187	3.317
Logarithm of age	Log(age)	0.602	1.839	1.569	0.169	-0.995	4.513
Asset logarithm	Log(assets)	4.415	8.766	6.192	0.644	0.831	4.367
Auditor size	Audit Size	0.000	1.000	0.017	0.128	7.560	58.153
Financial Leverage	Leverage	0.037	2.077	0.570	0.219	0.477	5.755
Return on assets	ROA	-0.404	0.631	0.122	0.142	0.482	4.316

Table 1 shows that the minimum, maximum, average and standard deviation of non-systematic risk were 0.006, 33.502, 2.956 and 4.816, respectively. Compared to other variables, the main reason for the increase in standard deviation was the increase in stock and market returns during 2019, which was, in turn, due to the increase in the overall stock index. The minimum, maximum, average and standard deviation of managers' financial knowledge variables were 0, 1, 0.514 and 0.5, respectively, and, on average, 51.4% of companies used CEOs with financial knowledge. Also, the managerial ability variable's minimum, maximum, average and standard deviation were -0.755, 0.517, -1.130 and -0.270, respectively. Although skewness and kurtosis indicate that the distribution of observations is not normal, they do not distort the research results due to editing outliers by Eviews or Winsorizing software and using a large volume of observations.

Before presenting the results related to the research model fit, and to ensure the regression assumptions, the Likelihood Ratio (LR) test to check the variance heterogeneity, the Variance Inflation Factor (VIF) test to check the alignment, and the Durbin-Watson test to ensure the lack of autocorrelation, were carried out. The results of the variance inflation test showed that there was no alignment between the research variables. Since the findings of the LR test showed a variance heterogeneity error, the research regression patterns were estimated using the Generalized Least Squares method to correct this error. Also, the correlation between research variables and F-Limer and Hausman test results for research hypotheses are shown in Tables 2 and 3, respectively.

Table 2. The correlation of research variables

correlation	Unsystematic risk	CEOs' Financial knowledge	Managerial ability	Logarithm of age	Asset logarithm	Auditor size	Financial Leverage	Return on assets
Unsystematic risk	1.000							
CEOs' Financial knowledge	0.030	1.000						
Managerial ability	0.029	-0.027	1.000					
Logarithm of age	-0.060	0.127	0.001	1.000				
Asset logarithm	-0.058	0.007	0.001	0.047	1.000			

Auditor size	0.072	0.020	-0.055	0.041	0.142	1.000		
Financial Leverage	0.057	-0.022	0.053	-0.055	0.046	-0.031	1.000	
Return on assets	-0.035	-0.015	0.101	0.023	0.180	0.068	-0.592	1.000

Table 3. The F-Limer and Hausman test for research hypotheses

Results	Significance level	Statistic	Test	Hypothesis
Unbound effects - Panel data	0.000	1.809	F-Limer	Hypothesis 1
Fixed effects	0.000	37.870	Hausman	Hypothesis 1
Unbound effects - Panel data	0.000	2.367	F-Limer	Hypothesis 2
Fixed effects	0.000	216.145	Hausman	Hypothesis 2
Unbound effects - Panel data	0.000	3.112	F-Limer	Hypothesis 3
Fixed effects	0.000	217.835	Hausman	Hypothesis 3

Hypothesis 1: CEOs' Financial knowledge has a negative and significant effect on unsystematic risk. In order to test the first research hypothesis, model (1) is fitted and its results are shown in Table 4.

Table 4. The Test results of the first hypothesis

$$\text{Unsystematic Risk}_{i,t} = \beta_{\circ} + \beta_1 \text{Financial exp CEO}_{i,t} + \beta_2 \text{Log(age)}_{i,t} + \beta_3 \text{Log(assets)}_{i,t} + \beta_4 \text{Audit Size}_{i,t} + \beta_5 \text{Leverage}_{i,t} + \beta_6 \text{ROA}_{i,t} + \varepsilon_{i,t}$$

variables	Symbol	Coefficients	t-statistic	probability	vif
CEOs' Financial knowledge	Financial exp CE(	-0.527	-2.729	0.006	1.018
Company's logarithm of age	Log(age)	-4.358	-4.469	0.000	1.022
Asset logarithm	Log(assets)	-1.700	-4.515	0.000	1.042
Auditor size	Audit Size	3.718	-4.627	0.000	1.556
Financial Leverage	Leverage	2.957	5.850	0.000	1.601
Return on assets	ROA	3.427	2.314	0.021	1.018
Intercept	C	17.840	-2.729	0.000	N/A
Adjusted R-2	0.216	Durbin-Watson	1.394		
F-statistic	2.117	probability of F-statistic	0.000		

According to the Table, the probability of the F-statistic was 0.000. The adjusted coefficient of determination was 0.216, indicating that explanatory variables explained 21.6% of the changes in the dependent variable. The coefficient of the independent variable of the CEOs' financial knowledge in the final estimate was negative and equal to -0.527, its probability was equal to 0.006, and the t-statistic of the mentioned variable was -2.729. This means that unsystematic risk decreases by increasing the CEOs' financial knowledge. As a result, the CEOs' financial knowledge negatively affects unsystematic risk by the theoretical framework, so the first research hypothesis is confirmed.

Test results show CEOs' knowledge's a negative and significant effect on unsystematic risk.

Hypothesis 2: The managerial ability negatively and significantly affects unsystematic risk. To test the second research hypothesis, model (4) is fitted with the results shown in Table 5.

According to the Table, the probability of the F statistic was 0.000. The adjusted coefficient of determination was 0.243, indicating that explanatory variables explained 24.3% of the changes in the dependent variable.

Table 5. The Test results of the second hypothesis

$$\text{Unsystematic Risk}_{i,t} = \alpha_{\circ} + \beta_1 \text{Managerial Ability}_i + +\beta_2 \text{Log(age)}_i + \beta_3 \text{Log(assets)}_i + \beta_4 \text{Auditor}_i + \beta_5 \text{Leverage}_{i+} + \beta_6 \text{ROA}_i + \varepsilon_i$$

variables	Symbol	Coefficients	t-statistic	probability	vif
managerial ability	$Managerial\ Abil$	-30.708	-5.526	0.000	1.036
Company's logarithm of age	$Log(age)$	-38.193	-7.437	0.000	1.007
Asset logarithm	$Log(assets)$	-3.440	-3.943	0.000	1.060
Auditor size	$Audit\ Size$	5.275	-5.093	0.000	1.021
Financial Leverage	$Leverage$	1.710	1.531	0.126	1.588
Return on assets	ROA	5.077	3.228	0.001	1.649
Intercept	C	82.486	13.428	0.000	-
The adjusted coefficient of determination	0.243	Durbin-Watson	1.682		
F-statistic	2.475	probability of F-statistic	0.000		

The coefficient of the managerial ability variable in the final estimate is negative and equal to -3.708; its probability is 0.000 and the t-statistic of the mentioned variable is -5.526. This means a negative and significant correlation between the independent and dependent variables; that is, as the managerial ability increases, the company's unsystematic risk decreases. As a result, the second hypothesis of the research concerning the negative and significant effect of managerial ability on unsystematic risk is accepted.

Hypothesis 3: Managerial ability strengthens the negative relationship between the CEO's knowledge and unsystematic risk. To test the third research hypothesis, model (5) is fitted with the results shown in Table 6.

Table 6. The Test results of the third hypothesis

$$\text{Unsystematic Risk}_{i,t} = \beta_{\circ} + \beta_1 \text{Financial exp CEO}_{i,t} + \beta_2 \text{Managerial Ability}_{i,t} + \beta_3 \left(\text{Financial exp CEO}_{i,t} * \text{Managerial Ability}\right)_{i,t} + \beta_4 \text{Log(age)}_{i,t} + \beta_5 \text{Log(assets)}_{i,t} + \beta_6 \text{Audit Size}_{i,t} + \beta_7 \text{Leverage}_{i+} + \beta_8 \text{ROA}_i + \varepsilon_{i,t}$$

variables	Symbol	Coefficients	t-statistic	probability	vif
CEOs' Financial knowledge	Financial exp CEO	0.272	1.431	0.153	1.019
managerial ability	Managerial Ability	-3.6993	-2.263	0.024	2.063
Company's logarithm of age	$Log(age)$	-36.717	-2.904	0.004	1.023
Asset logarithm	Log(assets)	-1.758	-0.961	0.336	1.061
Auditor size	Audit Size	5.071	4.811	0.000	1.028
Financial Leverage	Leverage	1.307	3.151	0.001	1.589
Return on assets	ROA	3.187	1.827	0.068	1.651
Intercept	C	70.078	2.294	0.022	-
The adjusted coefficient of determination	0.230	Durbin-Watson	1.586		
F-statistic	3.566	probability of F-statistic	0.000		

According to the Table, the probability of the F statistic was 0.000. The adjusted coefficient of

determination was 0.230, indicating that explanatory variables have explained 23% of the changes in the dependent variable. The coefficient of the interactive variable of the CEOs' financial knowledge and managerial ability in the final estimate was positive and equal to 0.797; its significance level was 0.018, and the t-statistic of the mentioned variable was 2.236. The results indicate that the model's moderating variable of managerial ability strengthens the negative relationship between CEOs' financial knowledge and unsystematic risk management, which is not in the theoretical framework and results of the first and second hypotheses. Therefore, the third hypothesis is rejected.

5. Conclusion

Enterprises face new and complex environmental, social and governance risks in the third millennium. Despite various risks, including the unsystematic risk, the increasing presence of enterprises in global markets indicates opportunities for growth and profitability in these competitive and unstable markets. Therefore, leading companies in unstable environments and uncertain conditions requires knowledge-based managers to direct, plan, and manage risk. Among the important characteristics of knowledge-based managers, one can mention CEOs with financial expertise and knowledge and the company managers' ability. This feature is expected to manage organizational risk, reduce unsystematic risk, optimize the use of organizational resources, increase productivity, manage costs, increase returns, and, ultimately, create value for business stakeholders.

The tests and statistical analysis results in the first hypothesis revealed a negative and significant relationship between the CEOs' knowledge and unsystematic risk and reduced that risk. The results concerning that CEOs reduced company risk were by the theoretical framework and studies of Oradi, Asiaei and Rezaee (2020), Kalelkar (2018), Francis, Nanda and Olsson (2008), Matsunaga, Wang and Yeung (2014) and Custódio and Metzger (2014). This process reflects the impact of financial knowledge and, ultimately, the reduction in unsystematic risk in companies listed on the Tehran Stock Exchange. Therefore, the first hypothesis was confirmed.

In the second hypothesis, the results showed a negative and meaningful relationship between management ability and unsystematic risk-reducing unsystematic risk. The results obtained in this part were consistent with the theoretical framework and research of Gounopoulos, Loukopoulos and Loukopoulos (2021), Wati, Tjaraka and Sudaryati (2020), Gounopoulos and Pham (2018), Harrison et al. (2018), Rashidi (2020) and Zalaghi, Bayat and Daneshasgari (2014). Therefore, the second hypothesis was confirmed.

In the third hypothesis, the managerial ability entered the model as a moderating variable to determine whether it strengthened the negative relationship between CEOs' financial knowledge and unsystematic risk. The results indicate that the relationship between CEOs' financial knowledge and unsystematic risk has been significant and positive. It also reveals that managerial ability does not strengthen the relationship between CEOs' financial knowledge and unsystematic risk. The simultaneous interference of CEOs with financial knowledge and managers' other ability probably can not increase the quality of financial reporting, reduce information risk and, ultimately, reduce unsystematic risk in the company. As a result, the third hypothesis was not confirmed.

According to the obtained results, it is suggested that investors at the Tehran Stock Exchange companies, while choosing the optimal portfolio and reducing investment risk, buy the stocks of companies with CEOs with financial knowledge and experience and with higher managerial ability. Researchers interested in testing the impact of management factors on other accounting and auditing variables in the future are also advised to assess the impact of CEOs' financial knowledge by considering their gender in organizational risk management (environmental, social and governance risks) and with their risk-taking or risk-aversion.

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