THE INFLUENCE OF CEO OVERCONFIDENCE, FEMALE DIRECTOR, AND CEO DUALITY ON THE FINANCIAL PERFORMANCE OF INDUSTRIAL SECTOR COMPANIES: A STRATEGIC OUTLOOK

Ang Swat Lin Lindawati *, Bambang Leo Handoko **, Tommy Andrian **, Harjunadi Geindra Wijaya **, Olifia Rombot ***

* *Corresponding author*, Accounting Department, School of Accounting, Bina Nusantara University, Jakarta, Indonesia
Contact details: Accounting Department, School of Accounting, Bina Nusantara University, 11480 Jakarta, Indonesia
** Accounting Department, School of Accounting, Bina Nusantara University, Jakarta, Indonesia
*** Primary Teacher Education Department, Faculty of Humanities, Bina Nusantara University, Jakarta, Indonesia

OPEN ACCESS

How to cite this paper: Lindawati, A. S. L., Handoko, B. L., Andrian, T., Wijaya, H. G., & Rombot, O. (2025). The influence of CEO overconfidence, female director, and CEO duality on the financial performance of industrial sector companies: A strategic outlook. *Corporate & Business Strategy Review, 6*(1), 64–74. https://doi.org/10.22495/cbsrv6i1art6

ISSN Online: 2708-4965
ISSN Print: 2708-9924

Received: 26.10.2023
Accepted: 06.01.2025

JEL Classification: G19, G20, G30
DOI: 10.22495/cbsrv6i1art6

Abstract

Financial performance is another requirement for companies to maintain their image, and good financial performance is the key to the company's standing. Financial performance is influenced by factors such as leadership from the director or chief executive officer (CEO). This study aims to obtain empirical evidence regarding the influence of CEO overconfidence, female directors, and CEO duality on financial performance. The companies studied are industrial companies listed on the Indonesia Stock Exchange (IDX) from 2015 to 2021. This research uses quantitative data collected from annual reports published by the companies. The sampling technique used is purposive sampling, based on criteria relevant to the research needs. The data analysis technique used is multiple linear regression. The results of the study explain that CEO overconfidence and female directors influence financial performance, while CEO duality has no effect on the company's financial performance. Gender issues have not yet been included in previous CEO antecedent-based research on financial performance. This is the new finding from our study. In our research model, we included antecedents for female directors.

Keywords: CEO Overconfidence, Female Director, CEO Duality, Financial Performance, Industrial Company

Authors' individual contribution: Conceptualization — A.S.L.L., T.A., and H.G.W.; Methodology — B.L.H.; Software — B.L.H.; Validation — T.A. and H.G.W.; Formal Analysis — A.S.L.L.; Investigation — O.R.; Writing — Original Draft — T.A. and H.G.W.; Writing — Review & Editing — A.S.L.L. and B.L.H.; Visualization — B.L.H. and T.A.; Supervision — A.S.L.L. and O.R.; Project Administration — A.S.L.L. and T.A.

Declaration of conflicting interests: The Authors declare that there is no conflict of interest.

1. INTRODUCTION

Financial performance is very important in a company because it is the key to the company's survival (Ali et al., 2022). Financial performance is a description of the company's financial condition, which is analysed using financial analysis tools so that deficiencies and achievements achieved by the company can be identified in a certain period (Waruwu et al., 2020). According to Kahreh et al. (2014), increasingly competitive competition means that companies must maximize the resources they have in order to achieve organizational goals. Generally, the company's goal is to obtain maximum profit. A company that is able to demonstrate its competitive advantage, obtain maximum profits, and capture a high market share will have a good impact on the company itself, especially from the company's financial side. The profits obtained will have a positive impact on a company's financial performance. In the current era of globalization, increasingly sharp and global business competition is becoming a challenge that requires companies to always develop and be dynamic. One of the main reasons for the globalization era to arrive more quickly is due to advances in information technology (Kuan & Chau, 2001).

Recently, there have been many death-knell signals in Indonesian manufacturing companies. This has been echoed because of the widespread termination of workers' contracts and termination of employment, and many companies are no longer able to survive and are closing their operations, aka closing factories (Memba & Job, 2013). Currently, many industries are threatened with bankruptcy, which is influenced by many factors, including the decline in demand for exports to several countries in Europe due to the economic slowdown in several export destination countries. The economic slowdown in export destination countries was influenced by geopolitics and the war in the Ukraine region, which triggered high inflationary pressures. In addition, the increase in the United States (US) interest rates is expected to be higher with a longer cycle. This causes consumers to prioritize spending on energy or food (Park & Li, 2021).

For a company, assessing its performance is important to provide information on whether the company is working as it should in a certain period. To measure company performance, a common tool is used, namely profitability ratios. Apart from that, company performance can be influenced by several things, one of which is the role of the chief executive officer (CEO) in the company, as used in this research, namely CEO overconfidence, female director, and CEO duality.

CEOs with overconfidence characteristics can influence company performance. This is supported by research from Burkhard et al. (2023), which states that CEO overconfidence has a positive impact on the company's financial performance. According to research by Leng et al. (2021), overconfident CEOs tend to be more committed. Apart from that, CEO overconfidence also tends to develop a vision that inspires everyone and makes ambitious goals, and when they are able to achieve them, it can increase the value of the company (Kasoga, 2021). CEO overconfidence tends to dare to make profitable investments, using internal funds (Leng et al., 2021). CEOs with overconfident characteristics can influence company performance. Research by Schumacher et al. (2020) states that CEO overconfidence has a positive impact on the company's financial performance. According to Burkhard et al. (2023), overconfident CEOs tend to be more committed. Moreover, such CEO overconfidence often develops a vision that inspires everyone and sets ambitious goals, and when these goals are achieved, it can increase the company's value (Sutrisno et al., 2023). CEO overconfidence also tends to lead to making profitable investments using internal funds (Nor Azhari et al., 2020). However, there is also research that suggests the opposite. CEO overconfidence is sometimes seen as an individual's tendency to overestimate their abilities and underestimate risks. Carrer and Slavov (2021) found that overconfidence CEOs often overestimate the likelihood of success and underestimate risk, negatively impacting financial performance. Studies on corporate investment decisions show that overconfidence can lead to overinvestment and inefficient investment (Ullah et al., 2020). Taking high risks in terms of investment does not always result in high returns or profits and can sometimes lead to significant losses for the company and its shareholders. Leng et al. (2021) found that managers who are overconfident increase the risk of bankruptcy.

Gender diversity can cause the quality of problem-solving to be better so that there are more diverse opinions to be taken into consideration, improving the decision-making process. Additionally, diversity may increase transparency at the board level. Apart from that, the woman also has a more participative communication style, making the decision-making system more objective. On the other hand, gender diversity does not have a significant relationship with financial performance. Research that proves this is Kyaw et al. (2022), which reveals that women will not benefit the company if the company environment does not empower them. Carter et al. (2020) also show similar results, namely that gender diversity has no influence on company performance. This is based on the small number of women joining the board of directors. According to Adusei et al. (2017), female directors do not have a significant influence on financial performance.

The leadership structure of CEO duality in a company can also influence financial performance, supported by research conducted by Al Daoud et al. (2015). This research states that CEO duality has a significant impact on financial performance. This research examines the direct influence of CEO duality on financial performance by using earnings management as an intervening variable, and the results are that it has a significant direct influence on financial performance and is indirectly influenced through the intervening variable of earnings management. Research from Krishna et al. (2016) shows that the existence of a family relationship on the board of commissioners and board of directors (family involvement) can have a positive influence on company performance because of family relationships. CEO duality is a term that refers to a person who has two positions simultaneously in a company, namely being on the board of directors (CEO) and the board of commissioners (chairman of the board) in a company (Momon et al., 2021). In terms of stewardship theory, CEO duality can provide benefits to the company because the person concerned has a better understanding and knowledge of operations and the company environment itself (Santoso & Fitriani, 2016). However, CEO duality also has a bad impact on the company, as seen from the perception of agency theory, because it can hinder the board of directors in managing management and the board of commissioners in assessing and supervising the performance of the board of directors (Shahwan, 2015). Research conducted by Caiffa et al. (2021) regarding the influence of Independent CEOs and duality CEOs on company performance using a sample of the NASDAQ-100 index shows that independent CEOs have a much more positive influence on financial performance, while duality CEOs have a negative influence on company performance. Moreover, management cannot be separated from the element of conflict of interest, which can influence decision-making for personal interests. The CEO has many roles in a company and several functions, one of which is the monitoring function. The monitoring function of the board of commissioners is also less effective because the person concerned must supervise the board of directors, which includes himself. In this supervision, there can be conflicts of interest and higher business operational risks.

In this research, based on the description above, researchers are motivated to conduct research on the influence of CEO overconfidence, female directors, and CEO duality on company financial performance. Previous research on financial performance that uses CEO antecedents has not yet incorporated gender issues, as found by Ahmed (2021) and Chung and Hribar (2021). This is what is novel in our research. We added female director antecedents in our research model. Moreover, currently, limited research integrates CEO overconfidence, female directors, and CEO duality in the context of financial performance analysis. Existing studies on CEO antecedents often overlook gender diversity issues, leaving a gap in understanding the comprehensive impact of leadership structures on financial performance. Gender diversity can improve problem-solving quality, leading to more diverse opinions and improving the decision-making process (Awad et al., 2023; Guedes & Casaca, 2021; Khalaf, 2022). Despite the significance of financial performance analysis, there is a lack of studies considering CEO overconfidence, female directors, and CEO duality simultaneously within the context of Indonesian manufacturing companies, especially amid economic challenges like those caused by geopolitical factors and global economic slowdowns.

The study draws on theories such as agency theory, stewardship theory, and previous empirical findings regarding CEO characteristics, gender diversity, and structures to construct a conceptual framework that explores the relationships between CEO overconfidence, female directors, CEO duality, and financial performance, symbolized by the profitability ratio.

The research employs quantitative methods, likely through regression analysis or structural equation modelling, to analyse secondary data from Indonesian manufacturing companies. Variables related to CEO overconfidence, female directors, CEO duality, and financial performance will be operationalized and tested for their relationships using appropriate statistical techniques.

The study's findings are expected to shed light on the individual and collective impacts of CEO overconfidence, female directors, and CEO duality on financial performance in Indonesian manufacturing firms. Additionally, it may provide insights into the nuanced relationship between gender diversity in leadership and financial outcomes, contributing to both theoretical development and practical implications for corporate governance and strategic management.

This research aims to investigate the influence of CEO overconfidence, female directors, and CEO duality on company financial performance:

RQ1: Does CEO overconfidence have a significant effect on financial performance?

RQ2: Does female directors have a significant effect on financial performance?

RQ3: Does CEO duality have a significant effect on financial performance?

The structure of this paper is as follows. Section 2 explores existing research on CEO overconfidence, female directors, CEO duality, and their respective impacts on financial performance, highlighting gaps in the literature that the current study seeks to address. Section 3 outlines the theoretical underpinnings guiding the study and constructs a conceptual model to analyse the relationships between the variables of interest. Section 4 describes the research design, data collection methods, and statistical techniques employed to test the hypotheses. Section 5 presents the findings of the analysis, followed by a discussion section that interprets the results in light of the research questions and theoretical framework. Section 6 summarizes the main findings, discusses their implications, and suggests avenues for future research in this area.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1. Agency theory

The main theory in this research is agency theory, which shows the attachment between the party who transfers power (shareholder) and the party given power (manager/agent) who is given an agreement by the shareholder so that they can work for the shareholder's needs (Jensen & Meckling, 1976). The relationship between someone who is called an agent and a principal, according to Jensen and Meckling (1976), is a relationship of agreement or contract made between one or more parties toward another party or an agent, who does some work on their behalf (principal), who then gives decision-making authority to the agent. The responsibility of the agents themselves is to manage and also develop the principal's company, which has been entrusted to the agent based on the principles of accountability and transparency. The responsibility of the principals is to supervise the work of their agents in managing their company, and, apart from that, also ensure the welfare of the agents so that the agents' performance is optimal and loyal to the company. The principals must also be accountable for what happens in the company to other stakeholders.

Women differ from men in terms of educational background, experience and expertise, and personality. All of these characteristics influence company decision-making (Wang et al., 2018). The role of female directors in a company provides a different perspective from the views of male directors. Apart from that, gender differences can increase transparency at the board level (Ma, 2022).

Judging from the perception of agency theory, the existence of CEO duality can have an impact on company performance, namely hindering the board of directors in managing management and the board of commissioners in assessing and supervising the performance of the board of directors. The function of the board of commissioners includes supervising the performance of the board of directors because the existence of CEO duality means that the board of commissioners supervises the board of directors, including himself. This can influence decision-making, which can trigger a conflict of interest because it allows CEO duality to take steps for personal interests.

2.2. Stewardship theory

Stewardship theory in corporate governance is a normative alternative to agency theory (Caiffa et al., 2021). Agency theory explains the conflicting interests between managers and owners or shareholders, which can be a problem for the company. In contrast, in stewardship theory, managers tend to try to provide maximum benefits to the organization rather than prioritizing their own goals (Donaldson & Davis, 1991). The CEO can intervene in the company's business through CEO decisions, which will have implications for the company's strategy and policies. Based on stewardship theory, CEO duality provides benefits for the company because the CEO has a better understanding and knowledge of the company, especially regarding the company's operations and environment (Carrer & Slavov, 2021).

Stewardship theory agrees that the existence of CEO duality in a company is beneficial because it provides a single leader, making decision-making efficient and effective (Rohma & Novitasari, 2023). An important assessment that underlies stewardship theory is that the manager's behaviour aligns with the principal's interests. Stewardship theory believes that when a manager works better to improve company performance, the manager is also in the process of improving his own career (Kyaw et al., 2022).

2.3. Hypotheses development

2.3.1. Effect of CEO overconfidence on financial performance

Based on the understanding of the agency theory, it can be concluded that agency theory is related to independent variables. Because the CEO is an agent responsible for the assets or capital provided by the principal. CEO overconfidence is considered an individual's tendency to think that he is better than he actually is in terms of ability and judgment (Aibar-Guzmán & Frías-Aceituno, 2021). Their research found that overconfident in the possibility of success and underestimates the risks. Overconfident CEOs generally invest too much and underestimate the risks, which can put the company in a state of financial difficulty. This has a negative impact on financial performance and will ultimately be detrimental to shareholders who have trusted the agent in carrying out company operations.

The null hypothesis adopted in this study is justified based on the understanding of agency theory and empirical evidence from relevant literature. According to agency theory, CEOs act as agents responsible for managing the assets or capital entrusted by principals, such as shareholders. CEO overconfidence, characterized by an individual's tendency to overestimate their abilities and underestimate risks, poses a significant concern within this framework. Aibar-Guzmán and Frías-Aceituno (2021) found that overconfident CEOs tend to overestimate the likelihood of success and underestimate risks, leading to excessive investments and potential financial difficulties for the company.

Research conducted by Chang and Lin (2022) shows that CEO overconfidence has a negative impact on financial performance because CEO overconfidence is too confident about uncertain profits and underestimates risks. Research by Bolton and Zhao (2022) examined the results that the board preferred to appoint a more rational CEO than a CEO who was too confident/negative. This shows that overconfident CEOs were rated worse than rational CEOs. Research by Zilja et al. (2023) shows that managers' overconfidence will make companies tend to over-invest and prefer debt financing, increasing the company's financial risk and causing financial difficulties. Overconfident CEOs tend to invest excessively, which in this study has a negative impact. Elkady et al. (2023) stated that overconfidence bias causes excessive risk-taking and a decrease in the level of cost efficiency. Tang et al. (2020) state that CEO overconfidence increases company risk.

H1: CEO overconfidence has a significant negative effect on financial performance.

2.3.2. Effect of female director on financial performance

Based on the main theory in this research, namely agency theory, a female director can be a trustworthy agent because of the cautious nature of the female director in managing the company and using company funds with full consideration, thinking more about the level of risk compared to male directors (Ramdani et al., 2023). Even though the decisions taken by female directors are considered less firm and involve more consideration due to their cautious attitude, female directors are proven to be less involved in fraud and detrimental activities to the company (Zhu et al., 2022). The presence of a female director on the board of directors can provide a different perspective, increasing objectivity in decisions-making. Besides that, the presence of a female director can reduce the ambition of male directors who are overconfident. Female directors also play a very positive role in increasing innovation in the company because they are generally more creative than male directors. Additionally, diversity may increase transparency at the board level (Ma, 2022). Gender diversity can broaden the board of directors' insight, resulting in various considerations when presenting information. Diversity can increase profitability and company value by adding unique characteristics, abilities, and talents to the board (Abdullah & Ismail, 2016). In many cases, women are very minimally involved in fraud, which can benefit the company. Female Directors can become agents for the principal because they cause less fraud at the director level.

Research conducted by Huang and Thiruvadi (2010) shows that female directors have a significant positive effect on company performance. This research highlights the importance of female directors' contributions in meetings to make decisions from a different perspective. Thiruvadi and Huang (2011) show that companies with female main directors have a higher chance of receiving an unmodified audit opinion, indicating higher quality financial reports. Research conducted by Zhu et al. (2022) examined the influence of female boards on company financial performance using agency theory. The results showed that the female board of directors had a significant positive effect on the company's financial performance because the cautious attitude of female directors in making decisions could suppress overconfident decisions by male directors. Research by Abdullah and Ismail (2016) shows that gender has a significant positive effect on company performance. The proportion of women on the board of directors has a positive relationship with financial performance. The more gender diversity on the board of directors, the better.

H2: Female directors have a significant positive influence on financial performance.

2.3.3. Effect of CEO duality on financial performance

CEO duality has the potential to commit fraud because the function of the board of commissioners includes supervising the performance of the board of directors. CEO duality means that the board of commissioners supervises the board of directors, including himself. This can influence decision-making, triggering a conflict of interest by allowing the CEO to take steps for personal interests. Research by Zhu et al. (2022) shows that dual leadership structures reduce judgment and make CEOs less accountable to their stakeholders. According to research conducted by Teh et al. (2016), CEO duality is more likely to cause fraud in financial reports. Manipulated financial reports have a negative impact on all stakeholders because financial reports are the main source of information on financial stability, economic activity, and the company's financial health. Given the importance of financial reports, it is not uncommon for management to manipulate or commit fraud in financial reports so that the company appears healthy to stakeholders. However, from the perspective of stewardship theory, CEO duality is likely to have a positive impact. CEO duality, which combines the roles of the board of commissioners and the board of directors, allows the CEO duality to better understand the condition of the company and simultaneously position himself in the role of the board of directors, maximising the supervision carried out by the board of commissioners (Caiffa et al., 2021).

H3: CEO duality has a significant negative influence on financial performance.

3. RESEARCH METHODOLOGY

3.1. Research object

This research uses research objects such as industrial sector companies listed on the Indonesia Stock Exchange (IDX) from 2015 to 2021 that have published annual financial reports. This research will test the influence of three independent variables: CEO overconfidence (*CO*), female director (*FD*), and CEO duality (*DC*), and financial performance (return on equity — *ROE*) as the dependent variable. The data used in this research is secondary data from industrial companies listed on the IDX from 2015 to 2021. The financial reports studied are financial reports for the period January 1 to December 31, 2015, to 2021, which have been audited.

3.2. Population and sample

According to Sekaran and Bougie (2016), the population is the entire group of people, events, or interesting things that researchers want to study. The population in this research is all industrial sector companies listed on the IDX from 2015 to 2021.

According to Sekaran and Bougie (2016), the sample is part of the population. The sample consists of several members selected from the population. Sekaran and Bougie (2016) also added that by studying samples, researchers can draw conclusions that can be generalized to the desired population. The criteria for sampled companies use the purposive sampling technique. Purposive sampling is a sample determination technique with certain considerations (Sugiyono, 2011). The reason for using this purposive sampling technique is because it is suitable for use in quantitative research, or research that does not carry out generalizations.

Criteria used in purposive sampling in this research are:

1) industrial sector companies that have a book closing date of December 31;
2) industrial sector companies that disclose complete information for CEO overconfidence, female directors, and CEO duality during the period from 2015 to 2021;
3) industrial sector companies with main share boards during the period from 2015 to 2021;
4) industrial sector companies that disclose annual reports for the period from 2015 to 2021;
5) industrial sector companies that were not delisted from 2015 to 2021.

3.3. Data analysis method

In this research, the data analysis method used is multiple linear regression analysis obtained through statistical tools, namely Stata version 17. Multiple linear regression is a regression model that involves more than one independent variable. Multiple linear regression analysis is carried out to determine the direction and the magnitude of the influence of the independent variable on the dependent variable.

The choice of Stata as a statistical analysis tool in research methodology is based on its strong ability to carry out multiple linear regression analysis, its solid reputation among researchers and professionals, its flexible ability in data manipulation, its support for academic research, and its ability in data visualization, making it an ideal choice for analysing the relationship between independent variables and dependent variables in such research.

3.4. Operation of variables

3.4.1. Dependent variable

The dependent variable of this research is financial performance. Measurements related to financial performance are measured using the *ROE* ratio following research by Teh et al. (2016). The equation for the *ROE* ratio is:

$$ROE = \left(\frac{Net\ Income \times 100\%}{Total\ equity}\right) \quad (1)$$

3.4.2. Independent variable

The independent variables used in this research are CEO overconfidence (*CO*), female directors (*FD*), and CEO duality (*DC*). The measurements for these three variables are as follows:

- *CO:* This research uses the assessment definition of overconfidence from Nor Azhari et al. (2020). Shares owned by the CEO and share ownership ratio, with a tenure of three years, are criteria for overconfidence. To get data on CEO overconfidence, if the CEO's term of office is three consecutive years, then it can be said to be CEO overconfidence and it is given a value of 1, and if the CEO has not served three consecutive years, then it is not considered CEO overconfidence and it is given a value of 0.
- *FD:* Measurements related to female directors are measured using a ratio scale by comparing the number of female members of the board of commissioners to the total number of members of the board of commissioners. This measurement follows research by Zhu et al. (2022). In order to acquire the value for the number of female directors, it can be calculated as follows:

$$FD = \left(\frac{Total\ number\ of\ female\ directors}{Total\ number\ of\ directors}\right) \quad (2)$$

- *DC:* In this study, the duality of the CEO is used as an independent variable to investigate the influence of CEO duality on financial performance, also expressed as a leadership pattern in business organizations. CEO duality is calculated using dummy values. Referring to research by Teh et al. (2016), to find out whether CEO duality is included or not, it is grouped into two types. The first is if the CEO has a dual function, namely as a board of commissioners and a board of directors at the same time, or has a kinship relationship between the board of directors and the board of commissioners, then it is given a value of 1. If the CEO does not have a kinship relationship between the board of commissioners and the board of directors or does not have a dual role, namely serving as a board of directors and a board of commissioners, then it is given a value of 0. In the context of Indonesia, CEO duality can be interpreted as using a kinship system in the assignment of positions between the board of directors and the board of commissioners, where there are still kinship relationships in the two seats (Nor Azhari et al., 2020).

4. RESULTS AND DISCUSSION

4.1. Descriptive statistic analysis

The first data analysis carried out in this research was descriptive statistical analysis. Descriptive statistical analysis in this study used Statistical Package for the Social Sciences (SPSS 25) and considered the minimum, maximum, mean, and standard deviation values.

Table 1. Descriptive statistic analysis

Variable	*Obs.*	*Mean*	*Std. dev.*	*Min*	*Max*
CO	189	0.67	0.473	0	1
FD	189	0.1027	0.14072	0	0.5
DC	189	0.402	0.491	0	1
ROE	189	0.41	0.33215	-1.84	1.94

The financial performance variable measured using *ROE* as a benchmark for the company's profit shows a minimum value of -1.84 and a maximum value of 1.94. This minimum value indicates financial performance at the lowest level among other industrial companies during the research period. The lower the financial performance value, the less profit the company gets in that period, and vice versa, if it shows a positive value, it means that in that period the company made quite good profits.

4.2. Classic assumption test

The next step in the analysis is multiple linear regression analysis. In multiple linear regression analysis, there is a classic assumption test to determine that the regression model used is not biased. The classical assumption test carried out in this research consists of four tests: the normality test, multicollinearity test, autocorrelation test, and heteroscedasticity test.

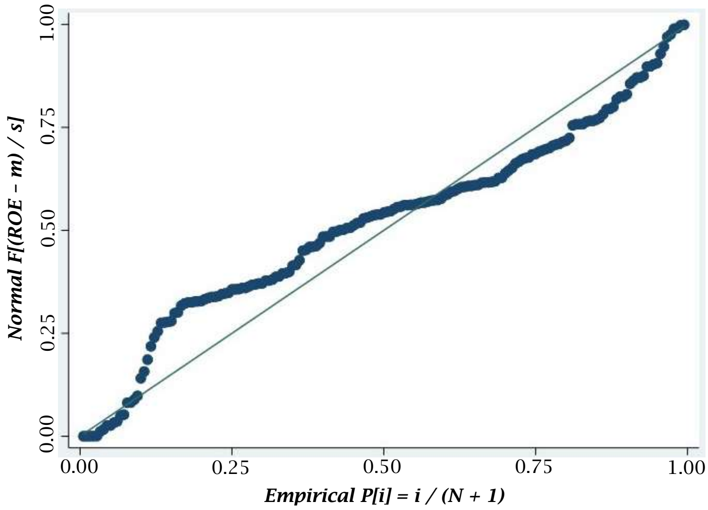
4.3. Normality test

The normality test in this study used the Shapiro-Wilk test and a normal probability plot from the Stata graph. A variable is said to meet the normality test if in the Shapiro-Wilk test the Prob > Z value is above 0.05 and in the normal probability plot the points are around the normal line. Shapiro-Wilk test is presented in Table 2, and the normal probability plot is presented in Figure 1.

Table 2. Shapiro-Wilk W test for normal data

Variable	*Obs.*	*W*	*V*	*Z*	*Prob > Z*
CO	189	0.66407	47.710	0.647	0.25886
FD	189	0.99452	0.778	-0.577	0.71796
DC	189	0.94840	7.328	0.628	0.73506
ROE	189	0.99688	0.443	-1.868	0.96911

Figure 1. Normal probability plot



Based on the data presented in Table 2, we can conclude that all variables have passed the normality test since the value of Prob > Z is more than 0.05, which is also supported by the normal probability plot result in Figure 1, where the plots are around the diagonal line.

4.4. Multicollinearity test

The next assumption test carried out was a multicollinearity test to explain the correlation between independent variables in the regression model. The criteria used are to pay attention to a variance inflation factor (VIF) for the independent variable value lower than 10. The multicollinearity test result is presented in Table 3.

Table 3. Multicollinearity test

Variable	*VIF*
CO	1.016
FD	1.020
DC	1.005

Based on Table 3, we can conclude that all independent variables in this research model have passed the multicollinearity test since the VIF value of each independent variable is less than 10.

4.5. Autocorrelation test

The next assumption test is autocorrelation, which aims to determine the relationship between data from different observations in the regression model. The criterion used is that it does not show any indication of autocorrelation in the regression model if the Durbin-Watson value shown is greater than the du value and lower than the 4 Durbin-Watson upper bond (4-DU) value. The number of samples for this research was 189, with the number of variables studied being four variables (three independent variables and one dependent variable). Therefore, the DU values shown in the Durbin-Watson table (3; 189) are DU = 1.79 and power bond (DL) = 1.73.

Based on the output, the Durbin-Watson D statistics test value is 2.127. This value is smaller than the 4-DU value of 4–1.79 and greater than the DL of 1.73. Therefore, it can be explained that the regression model does not indicate symptoms of autocorrelation.

4.6. Heteroscedasticity test

Our heteroscedasticity test uses the information matrix (IM) test, where from the information matrix test, we get Cameron and Trivedi's decomposition of the IM-test table, as presented in Table 5.

Table 5. Cameron and Trivedi's decomposition of the IM test

Source	*Chi²*	*Df*	*p*
Heteroskedasticity	6.78	7	0.4524
Skewness	0.39	3	0.9424
Kurtosis	4.64	1	0.0813
Total	11.80	11	0.3785

Based on Table 5, it can be seen that the heteroskedasticity value is greater than 0.05, which states that the model is free from heteroskedasticity.

4.7. Hypotheses testing

Hypotheses testing in this research was carried out to answer the research problem formulation. The hypotheses test carried out consists of the coefficient of determination test (Adjusted R^2), simultaneous test (F-test), and individual significance test (t-test).

4.8. Coefficient determination

The coefficient of determination shows the ability of the independent variable to explain the dependent variable in the regression model. The higher the coefficient of determination value, the better the ability. The coefficient determination test result is presented in Table 6.

Table 6. Coefficient determination

Variable	*R²*	*Adjusted R²*
ROE	0.228	0.191

The coefficient of determination can be seen from the Adjusted R^2 value of 0.191, meaning that the *CO, FD*, and *DC* variables only influence *ROE* by 19.1%, while the other 80.9% is influenced by other variables not examined in this research.

4.9. Simultaneous F-test

The F-test in this research aims to explain the influence of the independent variables together on the dependent variable. The F-test result is presented in Table 7.

Table 7. Simultaneous F-test

F (3,185)	*Prob > F*
6.187	0.0000

Based on the results in Table 7, it is known that the F value is 6.187 and the significance value is 0.0000, which is lower than 0.05. These results explain that the research model meets the regression feasibility model. The variables of *CO, FD*, and *DC* have a joint influence on financial performance.

4.10. Hypotheses t-test

The t-test in this research was carried out to explain the influence of each independent variable, consisting of *CO, FD*, and *DC*, on the dependent variable, namely financial performance. The t-test in this study used the one-tailed t-test because the research hypothesis explained in this study was well-directed. The result is presented in Table 8.

Table 8. Hypotheses t-test

ROE	*Coefficient*	*Std. error*	*t*	*p > |t|*	*Result*
CO	0.426	0.221	1.986	0.048	Significant
FD	4.013	1.010	3.973	0.000	Significant
DC	-0.100	0.221	-0.452	0.653	Insignificant
_cons	-1.217	0.526	-2.313	0.024	

The hypothesis is accepted if the arithmetic t value is greater than the t table and the p-value is smaller than 0.05. Apart from that, because in this model we use one tail, we also look at the direction of influence (positive/negative). We have two variables that have significant influences, which are *CO* and *FD*, while *DC* has no significant effect. The following is a discussion of the t-test results in Table 8.

Hypotheses test results show that *CO* influences financial performance. *CO* can influence company decisions, such as the amount of capital expenditure, research and development costs, and mergers and acquisitions (Nor Azhari et al., 2020). Overconfidence has been defined as a common and usual attitude in the CEO position and can certainly influence investment decisions and company financial reports, of course (Leng et al., 2021). A CEO who is too self-confident has a relatively high sensitivity to company investment. This is based on the CEO's assessment being too high regarding the company's future rate of return on investment. Most top managers are braver in facing possible risks and can handle these risks based on their abilities (Burkhard et al., 2023). Sutrisno et al. (2023) state that top management acts based on personal interpretation of the situations and choices they face. Companies that have an overconfident CEO have the possibility to invest at a fairly high level (Nor Azhari et al., 2020). Financing for a company investment can come from internal or external funds. Most companies prioritize the use of internal company funds to finance investments because they assess the high cost of external funding from the interest costs that must be paid (Leng et al., 2021).

The results of hypothesis testing show that *FD* influences financial performance because, in general, women are more careful than men, and influence company investment. Regarding the relationship between investment efficiency and gender diversity, Zhu et al. (2022) argue that *FD* do not allocate capital boldly because female directors tend to avoid higher risks than male CEOs. In line with research by Thiruvadi and Huang (2011), the presence of female directors can monitor issuers better. This means that women can see the effects of various aspects of business organizations and are more vigilant than men. Women tend to carry out more detailed research and will think twice before deciding. According to Ramdani et al. (2023), women contribute to more effective handling of sustainability practices and the needs of stakeholders because their decisions tend to be socially oriented.

A female director can be a trustworthy agent because the female director is careful in managing the company, uses company funds with full consideration, and thinks more about the level of risk compared to male directors (Bhuiyan et al., 2020). In addition, diversity may increase transparency at the board level (Bhuiyan et al., 2020). Gender diversity can cause the board of directors' insight to become broader so that there are various considerations in presenting information. Diversity can increase profitability and company value by adding unique characteristics, abilities, and talents to the board (Ma, 2022). In many cases, women are very minimally involved in fraud, which can benefit the company, and Female Directors can become agents who can be relied on by the principal because they cause less fraud at the director level (Huang & Thiruvadi, 2010).

Hypotheses test results show that *DC* has no effect on financial performance. Dual leadership structures reduce the objectivity of assessments and make CEOs less responsible to their stakeholders (Alonso-Almeida et al., 2017). This research examines gender diversity, financial expertise, and *DC* on company performance in Indonesia. The results of this research conclude that the *DC* variable has a negative effect on company performance because the *DC* assessment is less objective. Ma's (2022) research results show that there are many negative perceptions of investors regarding *DC*. In this study, researchers found that most investors viewed *DC* negatively. Using agency theory and stewardship theory, this research finds that *DC* has a statistically significant negative impact on company performance because it concludes that the CEO position should be an independent person in order to create good corporate governance. CEO duality has the potential to commit fraud because the function of the board of commissioners includes supervising the performance of the board of directors. The existence of CEO duality means that the board of commissioners supervises the board of directors, which includes himself. This can influence decision making which can trigger a conflict of interest because it allows the CEO duality to take steps for personal interests, which can be detrimental to the company, so that *DC* has a negative effect on financial performance.

5. CONCLUSION

The results of this research state that the variables *CO* and *FD* each have a significant effect on financial performance, while *DC* has no significant effect. The implications of this research can be described as follows: For industrial companies, the results of this research are expected to be used as a reference to further maximize the company's financial performance and gain the trust of investors to invest. For investors, the results of this research show that the variables *CO* and *FD* have an effect on financial performance, while *DC* has no effect on financial performance in industrial companies listed on the IDX for the 2015–2021 period. These variables can, thus, be used as indicators for consideration in decision-making investments.

This research has several limitations. The limitations referred to are: The Adjusted R^2 value shown in the research results is 19.1%, which explains the ability of *CO, FD*, and *DC* to explain financial performance is 19.1%, which is quite small. This research uses a period from 2015 to 2021, during which some industrial companies did not publish their complete financial reports, and not all industrial companies in this period had a book closing date of December 31. These companies include Sumi Indo Kabel Tbk, Ateliers Mecaniques Indonesia, and Hexindo Adiperkasa Tbk.

Based on the conclusions and limitations of the research, the following suggestions are made: Future researchers can extend the research period years because the existing period tends to show weak performance due to the impact of uncertain conditions in the capital market during the COVID-19 pandemic. Additionally, future researchers can add other company sub-sectors, such as the consumer goods industry sector, and the basic and chemical industries. It is hoped that with an increased number of companies in the research sample, the data used will be balanced, and data analysis can be carried out using panel data regression analysis, considering that the data used consists of time series data.

REFERENCES

Abdullah, S. N., & Ismail, K. N. I. K. (2016). Women directors, family ownership and earnings management in Malaysia. *Asian Review of Accounting, 24*(4), 525–550. https://doi.org/10.1108/ARA-07-2015-0067

Adusei, M., Akomea, S. Y., & Poku, K. (2017). Board and management gender diversity and financial performance of microfinance institutions. *Cogent Business & Management, 4*(1), Article 1360030. https://doi.org/10.1080/23311975.2017.1360030

Ahmed, A. D. (2021). Effect of CEO characteristics on financial performance of listed insurance companies in Nigeria. *Journal of Global Economics, Management and Business Research, 13*(4), 108–115. https://ikprress.org/index.php/JGEMBR/article/view/7261

Aibar-Guzmán, B., & Frías-Aceituno, J.-V. (2021). Is it necessary to centralize power in the CEO to ensure environmental innovation? *Administrative Sciences, 11*(1), Article 27. https://doi.org/10.3390/admsci11010027

Al Daoud, K. A., Ku Ismail, K. N. I., & Lode, N. A. (2015). The impact of internal corporate governance on the timeliness of financial reports of Jordanian firms: Evidence using audit and management report lags. *Mediterranean Journal of Social Sciences, 6*(1), 430–442. https://doi.org/10.5901/mjss.2015.v6n1p430

Ali, S., Naseem, M. A., Jiang, J., Rehman, R. U., Malik, F., & Ahmad, M. I. (2022). "How" and "when" CEO duality matter? Case of a developing economy. *Sage Open, 12*(3). https://doi.org/10.1177/21582440221116113

Alonso-Almeida, M. d. M., Perramon, J., & Bagur-Femenias, L. (2017). Leadership styles and corporate social responsibility management: Analysis from a gender perspective. *Business Ethics, the Environment & Responsibility, 26*(2), 147–161. https://doi.org/10.1111/beer.12139

Awad, A. B., Khalaf, B. A., & Afzal, A. (2023). The power of board size and gender diversity on the value of companies listed on emerging markets. *Corporate Law & Governance Review, 5*(2), 128–139. https://doi.org/10.22495/clgrv5i2p14

Bhuiyan, M. B. U., Rahman, A., & Sultana, N. (2020). Female tainted directors, financial reporting quality and audit fees. *Journal of Contemporary Accounting & Economics, 16*(2), Article 100189. https://doi.org/10.1016/j.jcae.2020.100189

Bolton, B., & Zhao, J. (2022). Busy boards, entrenched directors and corporate innovation. *International Journal of Financial Studies, 10*(4), Article 83. https://doi.org/10.3390/ijfs10040083

Burkhard, B., Sirén, C., van Essen, M., Grichnik, D., & Shepherd, D. A. (2023). Nothing ventured, nothing gained: A meta-analysis of CEO overconfidence, strategic risk taking, and performance. *Journal of Management, 49*(8), 2629–2666. https://doi.org/10.1177/01492063221110203

Caiffa, M., Farina, V., & Fattobene, L. (2021). CEO duality: Newspapers and stock market reactions. *Journal of Risk and Financial Management, 14*(1), Article 35. https://doi.org/10.3390/jrfm14010035

Carrer, G., & Slavov, T. (2021). Tax aggressiveness and CEO overconfidence in the stock market: Evidence from Brazil. *Investment Management and Financial Innovations, 18*(1), 165–176. https://doi.org/10.21511/imfi.18(1).2021.14

Carter, S. P., Cowan, T., Snow, A., Cerel, J., & Tucker, R. (2020). Health insurance and mental health care utilization among adults who identify as transgender and gender diverse. *Psychiatric Services, 71*(2), 151–157. https://doi.org/10.1176/appi.ps.201900289

Chang, L., & Lin, T. J. (2022). The association among CEO overconfidence, ownership structure and financial performance. *European Journal of Business and Management Research, 7*(2), 37–44. https://doi.org/10.24018/ejbmr.2022.7.2.1160

Chung, B. H., & Hribar, P. (2021). CEO overconfidence and the timeliness of goodwill impairments. *Accounting Review, 96*(3), 221–259. https://doi.org/10.2308/TAR-2016-0555

Donaldson, L., & Davis, J. H. (1991). Stewardship theory or agency theory: CEO governance and shareholder returns. *Australian Journal of Management, 16*(1), 49–64. https://doi.org/10.1177/031289629101600103

Elkady, M., Elbannan, M., & Sayed, E. (2023). The impact of CEO overconfidence on the bank's asset quality. *EKB Journal Management System, 14*(3), 882–918. https://doi.org/10.21608/jces.2023.324371

Guedes, M. J., & Casaca, S. F. (2021). The GBB index: A proposal to measure the gender balance on company boards [Special issue]. *Journal of Governance & Regulation, 10*(2), 249–257. https://doi.org/10.22495/jgrv10i2siart6

Huang, H.-W., & Thiruvadi, S. (2010). Audit committee characteristics and corporate fraud. *International Journal of Public Information Systems, 6*, 71–82. https://tinyurl.com/2vkjkwnu

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics, 3*(4), 305–360. https://doi.org/10.1016/0304-405X(76)90026-X

Kahreh, M. S., Babania, A., Tive, M., & Mirmehdi, S. M. (2014). An examination to effects of gender differences on the corporate social responsibility (CSR). *Procedia — Social and Behavioral Sciences, 109*, 664–668. https://doi.org/10.1016/j.sbspro.2013.12.525

Kasoga, P. S. (2021). Heuristic biases and investment decisions: Multiple mediation mechanisms of risk tolerance and financial literacy — A survey at the Tanzania Stock Market. *Journal of Money and Business, 1*(2), 102–116. https://doi.org/10.1108/jmb-10-2021-0037

Khalaf, B. A. (2022). The impact of board diversity on the performance of banks [Special issue]. *Corporate Governance and Organizational Behavior Review, 6*(4), 275–283. https://doi.org/10.22495/cgobrv6i4sip8

Krishna, P., Geeta, R., & Bharat, A. (2016). Family ownership, earnings informativeness, and role of audit committees: An empirical investigation in India. *Review of Economic & Finance*, 57–70. https://www.bapress.ca/ref/ref-article/1923-7529-2017-03-57-14.pdf

Kuan, K. K. Y., & Chau, P. Y. K. (2001). A perception-based model for EDI adoption in small businesses using a technology-organization-environment framework. *Information and Management, 38*(8), 507–521. https://doi.org/10.1016/S0378-7206(01)00073-8

Kyaw, K., Treepongkaruna, S., & Jiraporn, P. (2022). Board gender diversity and environmental emissions. *Business Strategy and the Environment, 31*(7), 2871–2881. https://doi.org/10.1002/bse.3052

Leng, J., Ozkan, A., Ozkan, N., & Trzeciakiewicz, A. (2021). CEO overconfidence and the probability of corporate failure: Evidence from the United Kingdom. *The European Journal of Finance, 27*(12), 1210–1234. https://doi.org/10.1080/1351847X.2021.1876131

Ma, M. (2022). Gendered performance evaluation in CEO turnover. *Journal of Corporate Finance, 77,* Article 102302. https://doi.org/10.1016/j.jcorpfin.2022.102302

Memba, F., & Job, A. N. (2013). Causes of financial distress: A survey of firms funded by industrial and commercial development corporation in Kenya. *Interdisciplinary Journal of Contemporary Research in Business, 4*, 1171–1185. https://tinyurl.com/2p9pmbxc

Michalos, A. C. (Ed.). (2014). International Standard Classification of Occupations (ISCO). In *Encyclopedia of Quality of Life and Well-Being Research*. Springer. https://doi.org/10.1007/978-94-007-0753-5_102084

Momon, Wati, L. N., & Sutar. (2021). The role of political connections and family ownership in increasing firm value. *ACRN Journal of Finance and Risk Perspectives, 10*, 40–53. https://doi.org/10.35944/jofrp.2021.10.1.003

Nor Azhari, N. A., Hasnan, S., & Sanusi, Z. M. (2020). The relationships between managerial overconfidence, audit committee, CEO duality and audit quality and accounting misstatements. *International Journal of Financial Research, 11*(3), 18–30. https://doi.org/10.5430/ijfr.v11n3p18

Park, A., & Li, H. (2021). The effect of blockchain technology on supply chain sustainability performances. *Sustainability, 13*(4), Article 1726. https://doi.org/10.3390/su13041726

Ramdani, R., Mai, M. U., & Muflih, M. (2023). The effect characteristics board of directors on the financial performance of Sharia commercial banks in Indonesia. *Indonesian Journal of Economics and Management, 3*(2), 418–438. https://doi.org/10.35313/ijem.v3i2.4873

Rohma, F. F., & Novitasari, I. (2023). The moderating effect of loyalty on incentive schemes and budgetary slack relationship: An experimental investigation. *The Indonesian Journal of Accounting Research, 26*(2), 209–228. https://doi.org/10.33312/ijar.690

Santoso, I., & Fitriani, R. (2016). Green packaging, green product, green advertising, persepsi, dan minat beli konsumen [Green packaging, green product, green advertising, consumers perception, and purchasing intention]. *Jurnal Ilmu Keluarga Dan Konsumen, 9*(2), 147–158. https://doi.org/10.24156/jikk.2016.9.2.147

Schumacher, C., Keck, S., & Tang, W. (2020). Biased interpretation of performance feedback: The role of CEO overconfidence. *Strategic Management Journal, 41*(6), 1139–1165. https://doi.org/10.1002/smj.3138

Sekaran, U., & Bougie, R. (2016). *Research methods for business: A skill building approach* (7th ed.). Wiley.

Shahwan, T. M. (2015). The effects of corporate governance on financial performance and financial distress: Evidence from Egypt. *Corporate Governance, 15*(5), 641–662. https://doi.org/10.1108/CG-11-2014-0140

Sugiyono. (2011). *Education research method: Quantitative, qualitative, and R&D approaches.* Alfa Beta.

Sutrisno, P., Utama, S., Hermawan, A. A., & Fatima, E. (2023). Do founder CEOs and overconfidence affect firm risk? *Accounting Research Journal, 36*(4–5), 434–452. https://doi.org/10.1108/ARJ-09-2022-0234

Tang, C.-H., Lee, Y. H., Lee, M.-C., & Huang, Y.-L. (2020). CEO characteristics enhancing the impact of CEO overconfidence on firm value after mergers and acquisitions — A case study in China. *Review of Pacific Basin Financial Markets and Policies, 23*(1), Article 2050003. https://doi.org/10.1142/S0219091520500034

Teh, B. H., Ong, T. S., Samuel, A. B., & Ng, S. H. (2016). An empirical study of auditors switching, corporate governance and financial performances of Malaysian public listed companies (PLCs). *Jurnal Pengurusan, 67*, 43–53. https://doi.org/10.17576/pengurusan-2016-47-04

Thiruvadi, S., & Huang, H. W. (2011). Audit committee gender differences and earnings management. *Gender in Management, 26*(7), 483–498. https://doi.org/10.1108/17542411111175469

Ullah, I., Majeed, M. A., Fang, H. X., & Khan, M. A. (2020). Female CEOs and investment efficiency: Evidence from an emerging economy. *Pacific Accounting Review, 32*(4), 443–474. https://doi.org/10.1108/PAR-08-2019-0099

Wang, G., Holmes, R. M., Jr., Devine, R. A., & Bishoff, J. (2018). CEO gender differences in careers and the moderating role of country culture: A meta-analytic investigation. *Organizational Behavior and Human Decision Processes, 148*, 30–53. https://doi.org/10.1016/j.obhdp.2018.04.002

Waruwu, L. R., Rajagukguk, R. H., Stephanie, S., & Purba, M. I. (2020). Pengaruh profitabiltas, investment decisions, financial performance, dan devidend policy terhadap nilai perusahaan pada perusahaan manufaktur yang terdaftar di Busra Efek Indonesia periode 2012–2016 [The effect of profitability, investment decisions, financial performance, and dividend policy on firm value in manufacturing companies listed on the Indonesia Stock Exchange for the period 2012–2016]. *Owner: Riset Dan Jurnal Akuntansi, 4*(1), 148–163. https://doi.org/10.33395/owner.v4i1.192

Zhu, C., Husnain, M., Ullah, S., Khan, M. T., & Ali, W. (2022). Gender diversity and firms' sustainable performance: Moderating role of CEO duality in emerging equity market. *Sustainability, 14*(12), Article 7177. https://doi.org/10.3390/su14127177

Zilja, F., Benito, G. R. G., Boustanifar, H., & Zhang, D. (2023). CEO wealth and cross-border acquisitions by SMEs. *International Business Review, 32*(6), Article 102192. https://doi.org/10.1016/j.ibusrev.2023.102192