

**DOES CARBON PERFORMANCE AND COMPANY
SIZE AFFECT PROFITABILITY? EXPLORING THE
MODERATING ROLE OF WOMEN DIRECTORS IN
MINING COMPANIES**

THESIS



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2024

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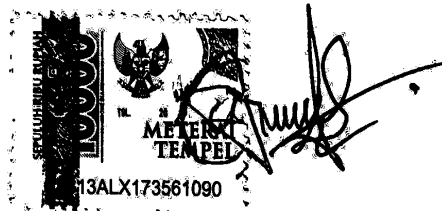
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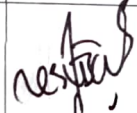
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Pontianak, 6 December 2024



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**DOES CARBON PERFORMANCE AND COMPANY SIZE AFFECT
PROFITABILITY? EXPLORING THE MODERATING ROLE OF
WOMEN DIRECTORS IN MINING COMPANIES**

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ABSTRACT

This research aims to determine the effect of carbon performance and company size on company profitability and examine the role of women directors in moderating the effect of carbon performance and company size on company profitability. The population used in this study are companies in the mining sector which are included in the category of oil, gas, and coal mining companies listed on the Indonesia Stock Exchange. The samples used in this study were 17 companies with an observation period of three years (2021-2023). The data used is secondary data obtained from the company's official website and the Indonesia Stock Exchange. The method used in this research is a quantitative method using a panel data multiple regression analysis model processed with the Eviews 12 program. The independent variables used are carbon performance and company size, the dependent variable used is company profitability proxied by Return on Assets (ROA), while the moderating variable used in this study is women directors. The findings from this study indicate that carbon performance has a negative impact on financial performance, i.e. company profitability. In addition, the study revealed that women directors have a negative impact in moderating carbon performance on profitability and company size on company profitability. However, the study successfully showed that company size has a negative impact on profitability which is consistent with the theory of critical resources where the larger the size of the company, the more likely it is to face operational inefficiencies.

Keywords: Carbon Performance, Company Profitability, Company Size, Women Directors

**APAKAH KINERJA KARBON DAN UKURAN PERUSAHAAN
MEMPENGARUHI PROFITABILITAS? MENGEKSPLORASI PERAN
MODERASI DIREKTUR WANITA DI PERUSAHAAN
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ABSTRAK

Penelitian ini bertujuan untuk mengetahui pengaruh kinerja karbon dan ukuran perusahaan terhadap profitabilitas perusahaan serta menguji peran direktur wanita dalam memoderasi pengaruh kinerja karbon dan ukuran perusahaan terhadap profitabilitas perusahaan. Populasi yang digunakan dalam penelitian ini adalah perusahaan-perusahaan di sektor pertambangan yang termasuk dalam kategori perusahaan pertambangan minyak, gas, dan batu bara yang terdaftar di Bursa Efek Indonesia. Sampel yang digunakan dalam penelitian ini sebanyak 17 perusahaan dengan periode pengamatan selama tiga tahun (2021-2023). Data yang digunakan adalah data sekunder yang diperoleh dari website resmi perusahaan dan Bursa Efek Indonesia. Metode yang digunakan dalam penelitian ini adalah metode kuantitatif dengan menggunakan model analisis regresi berganda data panel yang diolah dengan program Eviews 12. Variabel independen yang digunakan adalah kinerja karbon dan ukuran perusahaan, variabel dependen yang digunakan adalah profitabilitas perusahaan yang diproksikan dengan Return on Assets (ROA), sedangkan variabel pemoderasi yang digunakan dalam penelitian ini adalah direksi wanita. Temuan dari penelitian ini menunjukkan bahwa kinerja karbon memiliki

dampak negatif terhadap kinerja keuangan, yaitu profitabilitas perusahaan. Selain itu, penelitian tersebut mengungkapkan bahwa direktur wanita memiliki dampak negatif dalam memoderasi kinerja karbon terhadap profitabilitas dan ukuran perusahaan terhadap profitabilitas perusahaan. Namun, penelitian tersebut berhasil menunjukkan bahwa ukuran perusahaan memiliki dampak negatif terhadap profitabilitas yang konsisten dengan teori sumber daya kritis dimana semakin besar ukuran perusahaan, maka semakin besar pula kemungkinan untuk menghadapi ketidakefisienan operasional.

Kata Kunci: Kinerja Karbon, Profitabilitas Perusahaan, Ukuran Perusahaan, Direktur Wanita

DOES CARBON PERFORMANCE AND COMPANY SIZE AFFECT PROFITABILITY? EXPLORING THE MODERATING ROLE OF WOMEN DIRECTORS IN MINING COMPANIES

SUMMARY

3.1 Background and Research Purpose

It is undeniable that the world has entered the era of globalization. The era of globalization makes all kinds of human activities change. This is because human activities are facilitated by technology and supporting tools. As time goes by, human work is also made easier by the existence of robots, machines, and vehicles that help the work. However, with the presence of these machines, the world is covered with pollution as one of the residual substances resulting from the operation of the machines used. One of the pollutions created is air pollution which usually contains carbon in its pollution. Excessive concentrations of carbon emissions in the air can lead to global warming and the melting of polar ice caps which will cause sea levels to rise and drastic climate change (Pratama and Kunci, 2019).

In 2022, the Global Carbon Project reported a 0.9% increase in the world's carbon emissions (The Atlas, 2022). Indonesia, which is often dubbed the "lungs of the world", also contributes to the production of carbon emissions in the world. This can be seen from Indonesia being the 6th country that produces the most carbon emissions in the world with 729 million tons of the total carbon emissions in the world of 37,150 million tons throughout 2022 (The Atlas, 2022). From the graph above, it can be seen that China is the largest contributor to carbon emissions with 11,397 million tons of carbon, followed by the United States and India.

To reduce carbon emissions, Indonesia has a target of reducing emissions. Disclosure of carbon emissions is a manifestation of the company's commitment to monitor, manage, control, measure, and report its environmental performance in the context of organizing environmental management (Asmaranti et al., 2018). This proves that companies also take part in reducing carbon emissions for the sake of

the earth and the sustainability of their companies. In addition, the role of women on the board of directors is believed to increase efforts to disclose carbon emissions. This is because women with their feminine values are generally seen as more empathetic and sensitive so the presence of a women board of directors is felt to encourage more response and evaluation of environmental issues (He et al., 2021).

Therefore, this study aims to bridge those contradictory findings by analyzing additional moderating variables, such as cultural context, industry type, or firm size, which may impact the relationship between women directors and carbon emissions disclosure but have not been extensively explored in previous studies. This study seeks to provide a new perspective and contribute to the literature on gender diversity in company boards and its impact on environmental responsibility. The novelty of this research is to examine mining companies in the oil, gas, and coal sectors listed on the IDX with reports used in 2021-2023, while the prior studies examined all companies listed on the IDX with the 2019-2021 reporting year. This study seeks to provide empirical evidence to examine the impact of carbon performance and company size on profitability with women directors as moderation. Therefore, this study aims to determine the impact of carbon performance and company size on company profitability and examine the role of women directors in moderating the impact of carbon performance and company size on company profitability.

2. Research Method

This research uses a quantitative research method. The data used in this research are secondary data obtained from the websites of each companies and the website of Indonesia Stock Exchange in the form of financial reports and sustainability reports from each companies that were used as research samples during 2021-2023. The population of this study is all mining companies in the oil, gas, and coal sectors that have been listed in the IDX. The sample selection method is purposive sampling. The samples selected in this study are 17 mining companies with a reporting period of 2021-2023. This study also have independent, dependent, and moderation variables. The independent variables in this research are Carbon Performance and Company Size, for the dependent variables in this research is

Profitability and the Women Directors as the moderation variable. The testing of the research data was carried out using Eviews 12 program.

3. Research Result

The results of this research reveal that the best estimation model to use for this research is Random Effect Model. Based on the hypothesis test conducted in model 1, the adjusted R^2 value is -0,0217, which means that the dependent variable, namely profitability, may be defined by the independent variable, namely carbon performance, and company size by -2% (does not explain profitability). The F value in the test is 0,6287 which is more than the significance level used which is 0,05. The t-statistic value of the independent variable CRBN is 0,3414 which is greater than the significance value of 0,05 and the t-statistical value of the independent variable SIZE is 0,6935 which is more than the significance value of 0,05. In other words, carbon performance and company size have negative impacts on company profitability.

In hypothesis test model 2, it is found that the coefficient of determination shown in the adjusted R^2 value is -0,0808, which means that the dependent variable, namely profitability, can be explained by the independent variable, namely carbon performance, and company size moderated by women directors by -8% (does not explain profitability). The F value in the test is 0,9368 which is more than the significance level used which is 0,05. The t-statistical values of the CRBN*KEY and SIZE*KEY variables are 0,9193 and 0,8883 which are more than the significance value of 0,05. In other words, women directors are not able to provide impact in moderating each independent variable, namely carbon performance and company size on company profitability.

4. Conclusion

This research aims to determine the impact of carbon performance and company size on company profitability and to determine the impact of women directors in moderating the impact between carbon performance and company size on the profitability of oil, gas, and coal mining companies in Indonesia

Based on the discussion of the research that has been described, the conclusions obtained are (1) Carbon performance has a negative effect on company

profitability, (2) Company size has a negative effect on company profitability, and (3) Women directors are not able to provide impact in moderating each independent variable, which are carbon performance and company size on company profitability of oil, gas, and coal mining companies.

**APAKAH KINERJA KARBON DAN UKURAN PERUSAHAAN
MEMPENGARUHI PROFITABILITAS? MENGEKSPLORASI PERAN
MODERASI DIREKTUR PEREMPUAN DI PERUSAHAAN
PERTAMBANGAN**

RINGKASAN PENELITIAN

1. Latar Belakang dan Tujuan Penelitian

Tidak dapat dipungkiri bahwa dunia telah memasuki era globalisasi. Era globalisasi membuat segala macam aktivitas manusia berubah. Hal ini dikarenakan aktivitas manusia dipermudah dengan adanya teknologi dan alat-alat pendukung. Seiring berjalannya waktu, pekerjaan manusia juga semakin dipermudah dengan adanya robot, mesin, dan kendaraan yang membantu pekerjaan tersebut. Namun, dengan adanya mesin-mesin tersebut, dunia diselimuti oleh polusi sebagai salah satu zat sisa yang dihasilkan dari pengoperasian mesin-mesin yang digunakan. Salah satu polusi yang ditimbulkan adalah polusi udara yang biasanya mengandung karbon di dalam polusinya. Konsentrasi emisi karbon yang berlebihan di udara dapat menyebabkan pemanasan global dan mencairnya lapisan es di kutub yang akan menyebabkan naiknya permukaan air laut dan perubahan iklim secara drastis (Pratama dan Kunci, 2019).

Pada tahun 2022, Global Carbon Project melaporkan adanya peningkatan emisi karbon dunia sebesar 0,9% (The Atlas, 2022). Indonesia yang sering dijuluki sebagai “paru-paru dunia” juga turut menyumbang produksi emisi karbon di dunia. Hal ini dapat dilihat dari Indonesia menjadi negara ke-6 yang menghasilkan emisi karbon terbanyak di dunia dengan 729 juta ton dari total emisi karbon di dunia sebesar 37.150 juta ton sepanjang tahun 2022 (The Atlas, 2022). Dari grafik di atas, dapat dilihat bahwa China merupakan penyumbang emisi karbon terbesar dengan 11.397 juta ton karbon, diikuti oleh Amerika Serikat dan India.

Untuk mengurangi emisi karbon, Indonesia memiliki target penurunan emisi. Pengungkapan emisi karbon merupakan perwujudan dari komitmen perusahaan untuk memantau, mengelola, mengendalikan, mengukur, dan

melaporkan kinerja lingkungannya dalam rangka penyelenggaraan pengelolaan lingkungan hidup (Asmaranti et al., 2018). Hal ini membuktikan bahwa perusahaan juga turut andil dalam mengurangi emisi karbon demi bumi dan keberlangsungan perusahaannya. Selain itu, peran perempuan dalam dewan direksi diyakini dapat meningkatkan upaya pengungkapan emisi karbon. Hal ini dikarenakan perempuan dengan nilai-nilai femininnya umumnya dipandang lebih berempati dan sensitif sehingga kehadiran dewan direksi perempuan dirasa dapat mendorong lebih banyak respon dan evaluasi terhadap isu-isu lingkungan (He et al., 2021).

Oleh karena itu, penelitian ini bertujuan untuk menjembatani temuan-temuan kontradiktif tersebut dengan menganalisis variabel moderator tambahan, seperti konteks budaya, jenis industri, atau ukuran perusahaan, yang mungkin berdampak pada hubungan antara direktur wanita dan pengungkapan emisi karbon tetapi belum dieksplorasi secara ekstensif dalam penelitian sebelumnya. Penelitian ini berusaha untuk memberikan perspektif baru dan berkontribusi pada literatur tentang keragaman gender dalam dewan perusahaan dan dampaknya terhadap tanggung jawab lingkungan. Kebaruan dari penelitian ini adalah meneliti perusahaan pertambangan sektor minyak, gas, dan batu bara yang terdaftar di BEI dengan laporan yang digunakan pada tahun 2021-2023, sedangkan penelitian-penelitian sebelumnya meneliti seluruh perusahaan yang terdaftar di BEI dengan tahun pelaporan 2019-2021. Penelitian ini berusaha memberikan bukti empiris untuk menguji dampak kinerja karbon dan ukuran perusahaan terhadap profitabilitas dengan direksi wanita sebagai pemoderasi. Oleh karena itu, penelitian ini bertujuan untuk mengetahui dampak kinerja karbon dan ukuran perusahaan terhadap profitabilitas perusahaan serta menguji peran direktur wanita dalam memoderasi dampak kinerja karbon dan ukuran perusahaan terhadap profitabilitas perusahaan.

2. Metode Penelitian

Penelitian ini menggunakan metode penelitian kuantitatif. Data yang digunakan dalam penelitian ini adalah data sekunder yang diperoleh dari website masing-masing perusahaan dan website Bursa Efek Indonesia berupa laporan keuangan dan laporan keberlanjutan dari masing-masing perusahaan yang

digunakan sebagai sampel penelitian selama tahun 2021-2023. Populasi dari penelitian ini adalah seluruh perusahaan pertambangan sektor minyak, gas, dan batubara yang telah terdaftar di BEI. Metode pemilihan sampel yang digunakan adalah purposive sampling. Sampel yang dipilih dalam penelitian ini sebanyak 17 perusahaan pertambangan dengan periode pelaporan tahun 2021-2023. Penelitian ini juga memiliki variabel independen, dependen, dan moderasi. Variabel independen dalam penelitian ini adalah Kinerja Karbon dan Ukuran Perusahaan, sedangkan variabel dependen dalam penelitian ini adalah Profitabilitas dan Direksi Wanita sebagai variabel moderasi. Pengujian data penelitian dilakukan dengan menggunakan program Eviews 12.

3. Hasil Penelitian

Hasil dari penelitian ini menunjukkan bahwa model estimasi yang paling baik untuk digunakan dalam penelitian ini adalah Random Effect Model. Berdasarkan uji hipotesis yang dilakukan pada model 1, nilai adjusted R^2 sebesar -0,0217 yang berarti variabel dependen yaitu profitabilitas dapat dijelaskan oleh variabel independen yaitu kinerja karbon dan ukuran perusahaan sebesar -2% (tidak menjelaskan profitabilitas). Nilai F pada pengujian tersebut adalah 0,6287 yang lebih besar dari tingkat signifikansi yang digunakan yaitu 0,05. Nilai t-statistik dari variabel independen CRBN sebesar 0,3414 yang lebih besar dari nilai signifikansi 0,05 dan nilai t-statistik dari variabel independen SIZE sebesar 0,6935 yang lebih dari nilai signifikansi 0,05. Dengan kata lain, kinerja karbon dan ukuran perusahaan berpengaruh negatif terhadap profitabilitas perusahaan.

Pada uji hipotesis model 2 didapatkan nilai koefisien determinasi yang ditunjukkan pada nilai adjusted R^2 sebesar -0,0808 yang berarti variabel dependen yaitu profitabilitas dapat dijelaskan oleh variabel independen yaitu karbon kinerja dan ukuran perusahaan yang dimoderasi oleh dewan direksi wanita sebesar -8% (tidak menjelaskan profitabilitas).

4. Kesimpulan

Penelitian ini bertujuan untuk mengetahui dampak kinerja karbon dan ukuran perusahaan terhadap profitabilitas perusahaan dan untuk mengetahui dampak direktur wanita dalam memoderasi dampak antara kinerja karbon dan

ukuran perusahaan terhadap profitabilitas perusahaan pertambangan minyak, gas, dan batu bara di Indonesia.

Berdasarkan pembahasan penelitian yang telah diuraikan, maka kesimpulan yang diperoleh adalah (1) Kinerja karbon berpengaruh negatif terhadap profitabilitas perusahaan, (2) Ukuran perusahaan berpengaruh negatif terhadap profitabilitas perusahaan, dan (3) Direktur wanita tidak mampu memberikan dampak dalam memoderasi masing-masing variabel independen, yaitu kinerja karbon dan ukuran perusahaan terhadap profitabilitas perusahaan pada perusahaan pertambangan migas dan batubara.

TABLE OF CONTENTS

PERNYATAAN BEBAS DARI PLAGIAT	ii
PERTANGGUNGJAWABAN SKRIPSI	iii
LEMBAR YURIDIS	iv
ACKNOWLEDGEMENT	v
ABSTRACT	vii
SUMMARY	x
TABLE OF CONTENTS	xviii
LIST OF TABLES	xx
LIST OF FIGURES.....	xxi
CHAPTER I	1
INTRODUCTION.....	1
1.1 Background	1
1.2 Research Question.....	4
1.3 Research Purposes.....	4
1.4 Research Contributions	4
1.4.1 Theoretical:.....	4
1.4.2 Practical	5
1.5 Systematics of Writing	5
CHAPTER II	6
LITERATURE REVIEW.....	6
2.1 Theories.....	6
2.1.1 Legitimacy Theory	6
2.1.2 Stakeholder Theory.....	6
2.1.3 Influence of Carbon Performance on Company Profitability	7
2.1.4 Influence of Company Size on Company Profitability	8
2.1.5 Woman Directors as the Moderator on the Nexus between Carbon Performance and Company Profitability	8
2.1.6 Women Directors as the Moderator on the Nexus between Company Size and Company Profitability.....	9
2.2 Conceptual Framework and Research Hypothesis.....	10
2.2.1 Conceptual Framework.....	10
2.2.2 Research Hypothesis.....	10
CHAPTER III.....	11
RESEARCH METHODS.....	11
3.1 Research Design	11
3.1.1 Nature of Research	11

3.1.2	Research Sites.....	11
3.2	Data.....	11
3.2.1	Data Types.....	11
3.2.2	Data Sources	11
3.2.3	Method of Collecting Data	11
3.3	Population and Research Sample	12
3.3.1	Population.....	12
3.3.2	Sample	12
3.4	Research Variables	13
3.5	Data Analysis.....	14
3.5.1	Data Processing Techniques.....	14
3.5.2	Data Analysis Tool	14
CHAPTER IV		15
RESULTS AND DISCUSSION		15
4.1	Research Result	15
4.1.1	Preliminary Analysis	15
4.1.2	Hypothesis Test	17
4.2	Research Discussion.....	19
4.2.1	Carbon Performance and Company Profitability	19
4.2.2	Company Size and Company Profitability	20
4.2.3	Women Director as the Moderating Variable between Carbon Performance and Company Profitability	20
4.2.4	Women Director as the Moderating Variable between Company Size and Company Profitability	21
CHAPTER V		22
CLOSING.....		22
5.1	Conclusion.....	22
5.2	Suggestions	22
REFERENCES.....		23
APPENDIX		27

LIST OF TABLES

Table 3. 1 Criteria for Research Sample	12
Table 3. 2 Operational Definition of Variables.....	13
Table 4. 1 Variable Descriptive Statistics	15
Table 4. 2 Chow Test	15
Table 4. 3 Hausman Test.....	16
Table 4. 4 Lagrange Multiplier Test	16
Table 4. 5 Multicollinearity Test.....	17
Table 4. 6 Hypothesis Test Model 1	17
Table 4. 7 Hypothesis Test Model 2	18

LIST OF FIGURES

Figure 2. 1 Conceptual Framework.....	10
---------------------------------------	----

CHAPTER I

INTRODUCTION

1.1 Background

It is undeniable that the world has entered the era of globalization. The era of globalization makes all kinds of human activities change. This is because human activities are facilitated by technology and supporting tools. As time goes by, human work is also made easier by the existence of robots, machines, and vehicles that help the work. However, with the presence of these machines, the world is covered with pollution as one of the residual substances resulting from the operation of the machines used. One of the pollutions created is air pollution which usually contains carbon in its pollution. Excessive concentrations of carbon emissions in the air can lead to global warming and the melting of polar ice caps which will cause sea levels to rise and drastic climate change (Pratama and Kunci, 2019).

In 2022, the Global Carbon Project reported a 0.9% increase in the world's carbon emissions (The Atlas, 2022). Indonesia, which is often dubbed the "lungs of the world", also contributes to the production of carbon emissions in the world. This can be seen from Indonesia being the 6th country that produces the most carbon emissions in the world with 729 million tons of the total carbon emissions in the world of 37,150 million tons throughout 2022 (The Atlas, 2022). From the graph above, it can be seen that China is the largest contributor to carbon emissions with 11,397 million tons of carbon, followed by the United States and India.

Quoted from the official website of the United Nations Environment Programme, the Intergovernmental Panel on Climate Change (IPCC) issued a global peer review report on the role of human activities in climate change which concluded that climate change is real and human activities, mostly the release of polluting gases from burning fossil fuels (coal, oil and gas) are the main cause. Not only that, quoted from the Climate Corner page (2021) that on the fifth anniversary of the 2015 Paris Agreement Climate Ambition Summit which was held on December 12, 2020, UN Secretary-General Antonio Guterres urged all countries to declare a 'climate emergency' status to accelerate the reduction of carbon emissions

in the world and there are at least 38 countries that have declared the climate emergency. This shows that all countries in the world are aggressively making efforts to reduce carbon emissions with various government programs and often working with companies operating in the country.

To reduce carbon emissions, Indonesia has a target of reducing emissions. In the latest Nationally Determined Contribution (NDC) document, Indonesia increased the emission reduction target to 31.89% in 2030 with an international support target of 43.20% discussed by the Coordinating Minister for Economic Affairs Airlangga Hartarto in the Net Zero Emissions Acceleration Press Release (2022). Disclosure of carbon emissions is a manifestation of the company's commitment to monitor, manage, control, measure, and report its environmental performance in the context of organizing environmental management (Asmaranti et al., 2018). This proves that companies also take part in reducing carbon emissions for the sake of the earth and the sustainability of their companies.

Carbon emission reduction is one of the information presented by the company in its sustainability report. It cannot be denied that the main goal of an investor is to benefit from the capital they invest in the company. At this time there has been a change in trends in stakeholders or investors from the initial profit-oriented to sustainable oriented where companies are increasingly trying to think about environmental aspects for sustainability. A study by Loh, Thomas, and Wang (2017) proved that there is a positive link between the relationship between sustainability reports and stock value. Disclosure of carbon emissions conveys a positive signal that the company is taking part in mitigating climate change which will be an attraction for consumers and investors so it is expected to improve the company's financial performance (Bahriansyah and Ginting in Ladista et al., 2023). However, currently, there are still many companies in Indonesia that have not been able to present complete information about their sustainability reports, and not a few investors who still have not moved from profit-oriented because the public or investors are not too familiar with the term sustainability of the company.

Company size is also one of the benchmarks in calculating company profitability. Companies that have a large enough company size can be said to generate big profits because they can manage the resources in the company (Wikardi and Wiyani, 2017), but otherwise, the direction of company size is negative after research by Lorenza et al. (2020) and Setiadewi and Purbawangsa (2014). In addition, the role of women on the board of directors is believed to increase efforts to disclose carbon emissions. This is because women with their feminine values are generally seen as more empathetic and sensitive so the presence of a women board of directors is felt to encourage more response and evaluation of environmental issues (He et al., 2021). Based on prior studies, there are mixed results regarding the impact of women directors on carbon emissions disclosure. Kılıç and Kuzey (2019) and Wirawan and Setijaningsih (2022) found that the presence of women directors does not affect carbon emissions disclosure, while He et al., (2021), and Ladista et al., (2023) showed that women directors have an impact.

Therefore, this study aims to bridge those contradictory findings by analyzing additional moderating variables, such as cultural context, industry type, or firm size, which may impact the relationship between women directors and carbon emissions disclosure but have not been extensively explored in previous studies. This study seeks to provide a new perspective and contribute to the literature on gender diversity in company boards and its impact on environmental responsibility.

The inconsistencies in the findings of previous studies motivated the authors to conduct this research. The novelty of this research is to examine mining companies in the oil, gas, and coal sectors listed on the IDX with reports used in 2023, while the prior studies examined all companies listed on the IDX with the 2019-2021 reporting year. This study seeks to provide empirical evidence to examine the impact of carbon performance and company size on profitability with women directors as moderation. Therefore, this study aims to determine the impact of carbon performance and company size on company profitability and examine the

role of women directors in moderating the impact of carbon performance and company size on company profitability.

1.2 Research Question

Based on the foregoing, the author formulated the following research questions:

- a. Does carbon performance have a positive effect on company profitability?
- b. Does company size have a negative effect on company profitability?
- c. Does the role of women directors have a positive effect to be able to moderate carbon performance on corporate profitability?
- d. Does the role of women directors have a positive effect to be able to moderate the size of the company on the profitability of the company?

1.3 Research Purposes

This study's objective is to measure and analyze the impact of Carbon Performance and Company Size towards Company Profitability from 2021 to 2023 using a Multiple Regression Analysis processed with the Eviews 12 program.

1.4 Research Contributions

By conducting this study, it is expected to provide both theoretical and practical benefits and contributions, i.e:

1.4.1 Theoretical:

- a. To supplement the previous measurement for the effect carbon performances and company size to company profitability in mining companies Indonesia.
- b. As an additional reference for future researchers who want to examine similar problems.
- c. As the development of relevant theories, to become a new reference that will strengthen these theories.

1.4.2 Practical

- a. To provide the mining companies with more information so they can make decision what should they to earn the more profit.
- b. Could increase public awareness of permitted matters as well as strong stakeholder support, which is an important factor in the development of the mining sectors in Indonesia including oil, gas, and coal mining company.

1.5 Systematics of Writing

This research will be arranged into five chapters with stages as follows:

CHAPTER I INTRODUCTION

This chapter will outline the background of writing, the problem formulation, purposes, contribution, and systematics of writing in this research.

CHAPTER II LITERATURE REVIEW

This chapter begins with further explanations about relevant and supporting theories that are related to the hypothesis, followed by previous research which has a specific contribution as the major reference and background to conduct this research, conceptual framework, and hypothesis.

CHAPTER III RESEARCH METHODOLOGY

Describe the research methods used in research which include research variables and their explanation, determining population and samples, types and sources of data, methods of data collection, and methods of analysis.

CHAPTER IV RESULTS AND DISCUSSION

This chapter begins with an explanation or description of the research object, followed by data analysis and a discussion of the results of the data analysis.

CHAPTER V CLOSING

It is a closing chapter that briefly presents what has been obtained from the results of the research which has been carried out in the conclusion section. This chapter closes with limitations and suggestions that can be considered in the results of this study as the development of future research in conducting similar problems.