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Original Article

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 on 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*.

I. INTRODUCTION

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 and found that climate change exists and that human actions, particularly the production of harmful gases from the usage of petroleum and coal (coal, oil, and gas), are the primary 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. 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.

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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's 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.

II. LITERATURE REVIEW

A) Theoretical Framework and Hypothesis Development

a. Legitimacy Theory

Legitimacy is a form of support or recognition of the company. At present, companies are increasingly realizing that the survival of the company also depends on community relations and the corporate environment in which the company carries out its operations. To be able to maintain and sustain its sustainability, the company seeks legitimacy from the community, investors, creditors, as well as consumers, and the government.

Legitimacy theory explains that entities or companies can utilize annual reports to image environmental responsibility in their activities and performance so that society can accept them (Siregar et al., 2013). Companies, in their efforts to protect the environment also report on the efforts the company has made. From the report, the public can find out what efforts the company has made as well as show good efforts made by the company, which, of course, can create a good image for the company.

b. Stakeholder Theory

Stakeholder theory has the perspective that in addition to shareholders, several parties are interested in the behavior and decision-making of a company. Freeman in Theodoulidis et al. (2017) said that stakeholder theory not only sees value generation as the main driving force of the company but also recognizes that this value is owned by a group of stakeholders

who are not only shareholders and management but also all people who may be interested in the company's operations.

According to Rokhlinasari (2016), there are several reasons for companies to pay attention to stakeholder interests, namely:

1. The environmental problem involves the interests of all groups in society and can interfere with their quality of life.
2. In the globalization era, the products carried by trade are very respectful of the environment.
3. Investment investors prefer companies that have and formulate environmental policies and plans. This shows that the company is thinking about its sustainability by taking care of the environment around its operations.
4. NGOs (Non-Governmental Organizations) and environmentalists are open to criticizing companies that do not care about the environment.

c. Influence of Carbon Performance on Company Profitability

The disclosure of carbon emissions will become an obligation for every company towards the sustainability of the environment. In this study, carbon emission disclosure is measured by the carbon performance of a company. Carbon performance is a company's ability to reduce carbon emissions by reducing carbon emissions per output, replacing or minimizing carbon-intensive materials, and reducing energy use (Shaharudin and Fernando in Ladista et al., 2023). Another thing about carbon performance is also explained by Velte et al. (2020), which explains that carbon performance explains quantitative emissions of greenhouse gases that cause climate change as well as measures and processes for reducing emissions from the air. One of the contributors to these carbon emissions is the machinery and vehicles used by humans in everyday life. One of the company sectors that uses the most machines and vehicles in its operations is mining companies. With the disclosure of carbon emission reductions by companies in a transparent manner, the public can place their trust because the information is credible enough and can reflect the company's compliance with reporting regulations for companies. Therefore, disclosure of carbon emissions can also invite a good image for the company. However, not many companies in Indonesia include information about the disclosure of the amount of emissions produced by the company. Many companies do not attach their sustainability reports.

According to stakeholder theory, environmental stewardship relationships are a strategy to improve economic efficiency, such as achieving maximum profits because consumers care about environmentally sustainable products (Zahara in Safutri et al., 2023). This is in accordance with research conducted by (Ganda in Safutri et al., 2023), which found that the disclosure of carbon emissions positively affects ROA (return on assets), which means that the better the carbon performance of a company, the greater its contribution to the profit generated by a company. Therefore, the impact of carbon performance varies depending on the company's financial measures previously considered, as the behavior of specific company stakeholders impacts each measure.

H_1: Carbon performance has a positive effect on company profitability.

d. Influence of Company Size on Company Profitability

Company size is also an important factor as one of the information from the company's identity. Company size provides a meaning regarding the size of the size of a company as seen from the total assets owned, total sales achieved, and market capitalization. In this study, the use of parameters in calculating company size is by using LN (Natural Logarithm) of total assets (Ilham et al., 2021). Based on the theory of critical resources the larger the scale of the company, the profitability will also increase, but at a certain amount of company size will reduce company profits (Andreani and Liliani in Pangalila, 2020). This is because the larger the size of the company, the greater the operations carried out, and the higher the risk of inefficiency of a company's operations. This results in the company's profitability also decreasing. Research conducted by Dewi and Abundanti (2019), Ilham et al. (2021), and Wikardi and Wiyani (2017) shows that company size has a positive impact on profitability. Companies that have a large company size are certainly capable of generating large profits as well (Wikardi & Wiyani, 2017). This contradicts the results of research conducted by Pangalila (2020) that company size has no significant impact on profitability.

H_2: Company size has a negative effect on company profitability.

e. Woman Director as the Moderator on the Nexus between Carbon Performance and Company Profitability

Nowadays, many companies are opening opportunities for women to participate on the company's board of directors. Al-Najjar and Salama (2022) revealed that it is important to have women directors and executives because women are more sensitive to environmental issues. He et al. (2021) researched the impact of the role of women directors on the disclosure of carbon emissions. The study revealed that women directors have a positive and significant impact on the disclosure of carbon emissions. This is in line with the results of research conducted by Hariswan et al. (2022) and Saraswati et al. (2021). The high sensitivity of women directors to people and the environment makes them more concerned about environmental issues (Ladista et al., 2023).

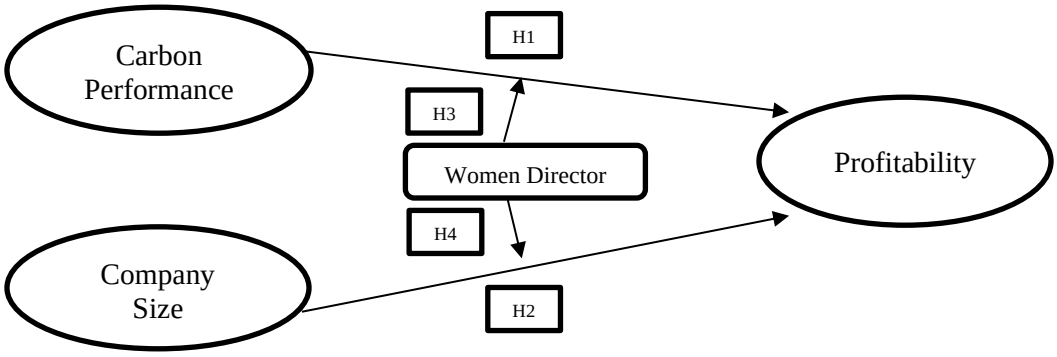
According to He et al. (2021), several things impact the decision-making of women directors, namely having interpersonal communication, being democratic, cooperative, and caring. Women directors are considered willing to help, get along well with their colleagues, are more sympathetic to the environment and surrounding circumstances, are quick to respond to the needs of others, and are not selfish in their character. This is what makes women directors believed to be able to present more information related to environmental issues. Referring back to Stakeholder theory, concern for the environment can increase the efficiency of the company's economy because consumers care about environmentally sustainable products (Zahara in Safutri et al., 2023).

H_3: Women directors has a positive effect in moderating carbon performance on company profitability.

f. Woman Director as the Moderator on the Nexus between Company Size and Company Profitability

Large-scale companies have more complex operations. Management will certainly consider various kinds of decisions so that the company's operations continue to run efficiently, in order to maximize the company's profitability. This decision in maximizing profitability is considered to be carried out by women directors in the company structure; this can refer to research conducted by Amin and Sunarjanto (2016), which found that the percentage of women directors has a positive impact on company performance as measured by ROA and PBV. According to He et al. (2021), several things impact the decision-making of women directors, namely having interpersonal communication, being democratic, cooperative, and caring. Women directors are considered willing to help, get along well with their coworkers, sympathize more with the environment and surrounding circumstances, respond quickly to the needs of others, and do not have a selfish nature. This kind of leadership trait is needed to make a decision in accordance with the conditions of the company size that will maximize profitability.

H_4: Women directors has a positive effect in moderating company size on company profitability.



Source: *Data processed by Author (2024)*

B) Research Methodology

This is quantitative research. The data used in this study is secondary data obtained from the Indonesia Stock Exchange website and the firm's official website in the form of financial statements as well as sustainability reports from every business sampled between 2021 and 2023. The population determined in this study were 81 oil, gas, and coal mining companies listed on the IDX. The research sample was selected using a purposive sampling technique with the following sample criteria:

Table (1). Criteria for Research Sample

Num.	Sample Criteria
1.	Oil, gas, and coal mining companies listed with stock instruments on the IDX
2.	Companies that provide data related to research in their annual and sustainability reports and present these 2 reports in full during the 2021-2023 period
3.	Companies that are denominated in US Dollars

Source: *Data processed by Author (2024)*

From these company sample criteria, a research sample of 17 companies was obtained with a reporting period of 2021-2023. Therefore, the data for this study is 51 data. This is because there are still many companies in the mining sector that have not published their 2023 annual reports and sustainability reports. Carbon performance is a company's ability to reduce carbon emissions generated by its company. In the board of directors of a company several women directors participate in the company's board of directors. In research conducted by Setiawan et al. (2018), measuring women directors will use the formula value 1 if there are women directors and 0 if there are men. Research conducted by Tanujaya & Teresa (2021) shows that women directors only occupy 27,5% of all companies listed on the Indonesia Stock Exchange. This also means that the presence of women directors in companies in Indonesia is still very small. There is Table 2 which informs the operational definitions of the independent variables, dependent variables, and moderating variables in the study, namely as follows:

Table (2). Operational Definition of Variables

Variable	Indicator	Reference
Carbon Performance	Carbon Performance: Carbon Generating Assets / Total Carbon Emission	Ladista et al. (2023)
Company Size	Ln (Total Assets)	
Women Director	If there is a woman director is given a value of 1, and 0 if a man.	Budiasih (2020), Tanujaya and Teresa (2021)
ROA	ROA: Profit for the year / Total Assets	

Source: *Data processed by Author (2024)*

The analysis method used in this study consists of several methods, namely descriptive statistical analysis, determining the best estimation model consisting of fixed impact model, common impact model, or random impact model, classical assumption test through multicollinearity test, coefficient of determination test, and individual significance test (t-test).
The research model can be written as follows:

$$ABE = \alpha + \beta_1 CRBN + \beta_2 SIZE \quad (1)$$

$$ABE = \alpha + \beta_1 CRBN + \beta_2 SIZE + \beta_3 KEY + \beta_4 CRBN*KEY + \beta_5 SIZE*KEY \quad (2)$$

Note:
ABE : Company profitability
α : Constant
CRBN : Carbon performance
SIZE : Company size
KEY : Women directors

III. RESULTS AND DISCUSSION

A) Preliminary Analysis

Table 3 presents information on the descriptive statistics of the research variables, namely company profitability, carbon performance, company size, and women directors, as follows:

Table (3). Variable Descriptive Statistics

	Minimum	Maximum	Mean	Std. Dev
ABE	-0,246192	0,616346	0,175224	0,182919
CRBN	17,66500	33592154	1439226	6135621,
SIZE	18,69969	23.10117	21,24544	1,155182
KEY	0,330000	0,670000	0,556667	0,161872

Source: *Data processed by Author (2024)*

The data is collected from the annual reports and sustainability reports of each oil, gas, and coal mining company listed on the Indonesia Stock Exchange, which reports from 2021-2023 and also information related to the research variables. The variables tested in this study are company profitability as a control variable, the independent variables are carbon performance and the company size, and women directors as moderating variables. Testing of the research data was carried out using Eviews 12.

Tabel (4). Chow Test

	Model 1			Model 2		
	Statistic	**d.f**	**Prob.**	**Statistic**	**d.f**	**Prob.**
Cross-section F	11,4518	(16,32)	0,0000	10,8711	(16,31)	0,0000
Cross-section Chi-Square	97,2046	16	0,0000	96,3249	16	0,0000

Source: *Data processed by Author (2024)*

Based on the results of the Chow Test conducted, it can be seen that the probability value is 0,0000. This value is below the significance value (<0,05). This Chow Test reveals that the Fixed Impact Model (FEM) method is the best model.

Table (5). Hausman Test

	Model 1			Model 2		
	Chi-sq Statistic	**Chi-sq d.f**	**Prob.**	**Chi-sq Statistic**	**Chi-sq d.f**	**Prob.**
Cross-section random	3,9069	2	0,1418	3,7247	3	0,2928

Source: *Data processed by Author (2024)*

Based on the results of the Hausman Test conducted it can be seen that the probability value of the three models is above 0,05 (> 0,05). This Hausman Test reveals that the Random Impact Model (REM) method is the best model to use because it does not find the same best model in the two tests that have been carried out. Then, the test proceeds to the Lagrange Multiplier Test.

Table (6). Lagrange Multiplier Test

	Model 1			Model 2		
	Cross-section	**Time**	**Both**	**Cross-section**	**Time**	**Both**
Breusch-Pagan	26,8020 (0,0000)	0,1591 (0,6900)	26,9611 (0,0000)	26,4982 (0,0000)	0,2469 (0,6192)	26,7452 (0,0000)

Source: *Data processed by Author (2024)*

Based on the results of the Lagrange Multiplier Test conducted, it can be seen that the probability value of the three models is below 0,05, namely 0,0000. From this Lagrange Multiplier Test, it reveals that the Random Impact Model (REM) method can be used as a regression model.

The next step is to test the classical assumptions. The classic assumption tests that must be met in panel data regression are the Heteroskadacity Test and the Multicollinearity Test. The multicollinearity test must be carried out on any model selected, while the heteroscedasticity test is only required for the Common Impact Model (CEM) and Fixed Impact Model (FEM). The Random Impact Model is not required to carry out Heteroskadacity testing (Septianingsih, 2022).

Table (7). Multicollinearity Test

	CRBN	**SIZE**	**KEY**
CRBN	1,0000	-0,2891	0,1664
SIZE	-0,2891	1,0000	-0,1844
KEY	0,1664	-0,1844	1,0000

Source: *Data processed by Author (2024)*

In Table 7, it can be seen that between each variable, the correlation coefficient value does not exceed 0,90. This means that the variables are free from multicollinearity.

B) Hypothesis Test

Table (8). Hypothesis Test Model 1

ABE = α + β₁CRBN + β₂SIZE				
Variable	**Hypothesis**	**Coefficient**	**Significant**	**Description**
C		-0,0954	0,8872	
CRBN	+	4,236	0,3414	**H_1 is rejected**
SIZE	-	0,0124	0,6935	**H_2 is accepted**

R^2		0,0194
Adjusted R^2		-0,0217
Prob (F Test)		0,6287
N		51

Source: *Data processed by Author (2024)*

Based on the hypothesis test conducted in model 1, it is miles observed that the coefficient of determination proven in 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. Therefore, H_1 of this study is rejected, or in other words, carbon performance has a negative impact on company profitability. The t statistical value of the independent variable SIZE is 0,6935, which is more than the significance value of 0,05. Therefore, H_2 is accepted. In other words, company size has a negative impact on company profitability. Therefore, the regression equation for model 1 is:

ABE = -0,0954 + 4,2305 CRBN + 0,0124 SIZE + *e* (1)

Table (9). Hypothesis Test Model 2

ABE = α + β1CRBN + β2SIZE + β3KEY + β4CRBN*KEY + β5SIZE*KEY				
Variable	**Hypothesis**	**Coefficient**	**Significant**	**Description**
C		-0,6233	0,8379	
CRBN	+	2,9437	0,9182	
SIZE	-	0,0346	0,8120	
KEY	+	0,7791	0,8694	
CRBN*KEY	+	-4,3362	0,9193	**H3 is rejected**
SIZE*KEY	+	-0,0319	0,8883	**H4 is rejected**
R^2				0,0271
Adjusted R^2				-0,0808
Prob (F test)				0,9368
N				51

Source: *Data processed by Author (2024)*

Based on the hypothesis test conducted on model 2, it is found that the coefficient of determination shown in the adjusted R2 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. Therefore, H3 and H4 of this study are rejected. Variable CRBN*KEY and variable SIZE*KEY are used to measure how much impact the moderating variable has in moderating each independent variable on the dependent variable. In other words, women directors are not able to provide an impact in moderating each independent variable, namely carbon performance and company size, on company profitability. Therefore, the regression equation for model 3 is:

ABE = -0,6233 + 2,9437 CRBN + 0,0346 SIZE + 0,7791 KEY - 4,3362 CRBN*KEY- 0,0319 SIZE*KEY + *e* (2)

C) Discussion

a. Carbon Performance and Company Profitability

Based on the results of hypothesis testing, the test shows that carbon performance has a negative impact on company profitability. This indicates that many other factors have a greater impact on increasing company profitability. Stakeholder theory not only sees value generation as the main driving force of the company but also recognizes that this value is owned by a group of stakeholders who are not only shareholders and management but also all the people who may be interested in the company's operations. Therefore, the company's carbon performance is not enough to attract stakeholders who are more interested in the company's overall operations. The results of this study indicate that carbon performance in the disclosure of a company's carbon emissions has a negative impact on company profitability, which is in line with research conducted by Safutri et al. (2023). Profitability has not been able to be realized by the clarity of carbon emission information; another thing that can affect it is the limitations of the research sample in which this study only examines mining companies in the oil, gas and coal sectors. In addition, information disclosure related to carbon emissions is also still voluntary in Indonesia. The findings of this study are inconsistent with stakeholder theory which explains that companies should benefit their stakeholders rather than just acting for personal gain (Safutri et al., 2023). However, the existence of carbon performance has not been

able also to improve the financial performance (profitability) of the company. This is because investors may have other factors to consider besides this. In addition, the availability of carbon information is still voluntary and not yet an obligation for companies.

b. Company Size and Company Profitability

Based on the results of the hypothesis test, it can be seen that company size has a negative impact on company profitability. The larger company size does not necessarily increase the profitability of a company. This result is in line with research conducted by Lorenza et al. (2020), Mboka and Cahyono (2020), Pangalila et al. (2020), Rahmadani and Amanah (2020), and Setiadewi and Purbawangsa (2014) which explain that company size has a negative impact on profitability. Large company size can affect the amount of costs incurred for company operations. Because of the large size of the company, the company obtains sources of funds such as loans from creditors because companies with large sizes have a greater chance of surviving in competing with other companies. Large companies also need larger capital for their operations so using foreign capital or a loan is not an impossible thing.

The findings of this result are consistent with the theory of critical resources shows that the larger the scale of the company, the profitability will also increase. However, a certain amount of company size will reduce company profits (Andreani and Liliani in Pangalila, 2020). This is because the larger the size of the company, the greater the operations carried out, and the higher the risk of inefficiency of a company's operations. Therefore, it is not a certainty if a large company size also gets a large profitability.

c. Women Director as the Moderating Variable between Carbon Performance and Company Profitability

Based on the research results, the role of women directors has a negative impact on moderate carbon performance on company profitability. In the oil, gas, and coal mining sectors, the presence of women directors is very rare. From the results of research observations, only 17 annual periods of women directors are served out of a total sample of 51 periods. This can also affect the data testing obtained. The results of this study are in line with Safutri et al. (2023) that carbon emissions have a negative impact on profitability; this is supported by Manurung et al. (2019), which shows that the proportion of women directors has a significant negative impact on the company's financial performance, which in this case is profitability. The results of the hypothesis testing suggest that women directors are unable to moderate carbon performance on profitability in oil, gas and coal mining companies for the 2021-2023 period. The nature of women who care about the environment (He et al., 2021) has not been able to increase company profitability. The difference in the results of this study may occur because previous studies used different company sectors and reports in different years.

d. Women Director as the Moderating Variable between Company Size and Company Profitability

Based on the research results, the role of women directors also has a negative impact on moderate company size on company profitability. In the oil, gas, and coal mining sectors, the presence of women directors is very rare. From the results of research observations, only 17 annual periods of women directors served out of a total sample of 51 periods. This can also affect the data testing obtained. This is different from previous research, which examined all companies on the IDX so that there were also many samples of companies that have women directors. This result of this study are in line with research conducted by Lorenza et al. (2020), Mboka and Cahyono (2020), Pangalila et al. (2020), Rahmadani and Amanah (2020), and Setiadewi and Purbawangsa (2014) which explain that company size has a negative impact on profitability, this is supported by Manurung et al. (2019) which shows that the proportion of women directors has a significant negative impact on the company's financial performance, which in this case is profitability.

The results of hypothesis testing show that women directors are unable to moderate company size on profitability in oil, gas and coal mining companies for the 2021-2023 period. The nature of women who are meticulous and careful when making decisions (Shrader et al., 1997) has not been able to increase company profitability. The difference in the results of this study may occur because previous studies used different company sectors and reports in different years.

IV. CONCLUSION (SIZE 10 &BOLD, CAPS)

A) 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 is carbon performance and company size on company profitability of oil, gas, and coal mining companies.

B) Recommendation

This study shows that companies and the economy as a whole can gain public attention from a focus on sustainability, firm size efficiency, and leadership diversity that can trigger a more inclusive, sustainable, and innovative economic growth cycle that supports long-term development.

The limitation of this research is that the sample of companies selected is only within the scope of the oil, gas, and coal mining sector. In addition, not all companies attach complete annual and sustainability reports, so not all companies present research data, and it all can affect the result. Therefore, this study provides suggestions for future researchers to expand the scope of the research sample, such as the types of the company from different sectors. Future research can also add another variable for the better result.

V. REFERENCES

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