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GREEN ENERGY DIVERSIFICATION AND FINANCIAL PERFORMANCE OF INDONESIAN COAL MINING COMPANIES

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Abstrak

Saat ini batubara merupakan salah satu bahan bakar pembangkit listrik yang paling banyak digunakan di Indonesia. Namun, dengan keinginan pemerintah Indonesia untuk mencapai emisi nol bersih pada tahun 2060, perusahaan batubara ditantang untuk mempertahankan bisnisnya pada saat tersebut. Beberapa perusahaan pertambangan batu bara sudah mulai mendiversifikasi usahanya dengan berinvestasi di sektor energi hijau. Penelitian ini bertujuan untuk mengetahui hubungan diversifikasi usaha perusahaan pertambangan batubara ke sektor energi hijau dan kaitannya dengan kinerja keuangan perusahaan pertambangan batubara dengan menggunakan indikator ROA (Return on Assets), Tobin's Q, dan ROIC (Return on Invested Capital). Penelitian tersebut mengkaji seluruh emiten pertambangan batu bara yang melakukan diversifikasi bisnis ke energi hijau pada tahun 2018 hingga 2022. Hasil regresi data panel menunjukkan bahwa diversifikasi bisnis ke energi hijau berpengaruh positif dan signifikan terhadap peningkatan kinerja keuangan perusahaan pertambangan batu bara ditinjau dari ROA, Tobin's Q, dan ROIC.

Kata Kunci: Perusahaan pertambangan batubara; Diversifikasi energi ramah lingkungan; ROA (Pengembalian aset); Tobin Q; ROIC (Pengembalian Modal yang Diinvestasikan)

Abstract

Currently, coal is one of the most widely used fuels in power generation in Indonesia. However, with the Indonesian government's desire to achieve net zero emissions by 2060, coal companies are challenged to maintain their businesses by that time. Some coal mining companies have started diversifying their businesses by investing in the green energy sector. This study aims to investigate the relationship between business diversification of coal mining companies into the green energy sector and the relation with the financial performance of coal mining companies using the indicators ROA (Return on assets), Tobin's Q, and ROIC (Return on Invested Capital). The study examines all listed coal mining companies that have diversified into green energy businesses from 2018 to 2022. The panel data regression results show that business diversification into green energy has a positive and significant effect on improving the financial performance of coal mining companies in terms of ROA, Tobin's Q, and ROIC.

Keywords: Coal mining company; Green energy diversification; ROA (Return on assets); Tobin's Q; ROIC (Return on Invested Capital)

INTRODUCTION

A. Background

Coal is one of the cheapest fuels in the world. There are two types of coal used in the world, which are thermal coal and metallurgical coal (Suárez-Ruiz et al., 2019). Thermal coal is widely used as a fuel source in power plants, while metallurgical coal is used in smelting ore in the steel industry. In its report, the International Energy Agency (IEA) wrote that global coal generation use reached an all-time high (Coal 2021 Analysis and Forecast to 2024, 2021). Despite pressure from many countries and the private sector to reduce coal use, coal contributed for more than one third of the world's total electricity generation. This trend contrary to the Net Zero Emission (NZE) goals of 2050, which call for a 9% annual average reduction between 2022 and 2030 and a complete phase-out by 2040. According to Statista.com in July 2023, three countries with the largest number of power plants in the world are China, India and the United States.

As fuel is derived from fossils hundreds of millions of years ago, the use of coal in

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power plant will leave a large amount of carbon residue. In several rich countries in the world, the use of coal as a fuel has begun to be abandoned and replaced by alternative energy that is more environmentally friendly, such as water, wind and solar heat. In the 2015 Paris agreement, it was agreed that by 2050 both developed and industrialized countries must have achieved the net zero emissions.

In 2022 Nationally Determined Contribution (NDC) document, Indonesia increased its emission reduction target to 31.89% in 2030 with an international support target of 43.20%. The document also states that in the energy sector, in 2030 Indonesia will increase renewable energy capacity to reach 35,000 megawatts or more. So that gradually, it is planned that by 2060, Indonesia will achieve net zero emissions.

In the draft document for the general national electricity plan for 2023-2060, Indonesia plans to no longer use coal-fired power plants as a source of electrical energy. This is a challenge for coal mining companies, especially those that have been listed on the Indonesian capital market such as ADRO,ABMM,BUMI, BYAN,HRUM,INDY,PTBA and et cetera. Several of these companies have started implementing business diversification strategies into the renewable energy sector before 2060 arrives. A study on the impact of diversifying coal mining companies into the green energy sector on the financial performance of coal mining companies is necessary. There is no literature yet that has analysis relationship between green energy diversification and coal mining company financial performance . It is hoped that this study will become an additional literature reference for coal mining companies in making decisions when facing the challenge of net zero emissions in 2060.

This study was carried out by taking financial report data and annual reports from parent coal mining companies listed on the Indonesian stock exchange from 2017-2022. From the results of the analysis, it was found that 10 coal mining companies had made efforts to diversify their green energy business.

Data analysis carried out in this study uses panel data which combines cross section and time series data. From the results of panel data analysis, a relationship will be obtained between green energy diversification and the financial performance of coal mining companies. If the relationship is positive then coal mining companies are advised to diversify in the green energy sector, but if the relationship is negative then it is recommended that coal mining companies diversify in other fields.

This article is generally divided into fourth parts. The first part is an introduction, in this section will discuss the challenges faced by coal mining companies in the future. The second part is methodological research, in this section we will discuss the analysis methods and types of data needed in this study. In this study, the analysis method used is panel data. The third section is the results and discussion, in this section we will discuss the results of the data analysis and their implications. The final section is the conclusion, in this section conclusions will be drawn regarding the relationship between business diversification in the green energy sector and the performance of coal mining companies.

B. Diversification and Financial performance

Several studies investigate the correlation between diversification and performance, but they do not come to a consistent conclusion Some of this literature are: Palepu, 1985; Jose et al., 1986; Berger & Ofek, 1995; Graham et al., 2002; Chakrabarti et al., 2007; Iqbal et al., 2012; C. M. Li et al., 2019; . Oladimeji & Itohowo, 2019; and Mehmood et al., 2019. When a company diversifies by acquiring other companies, the company is usually acquired at a discount. This makes the influence of company diversification on company performance invisible Graham et al., (2002) and Iqbal et al., (2012) in their research on diversification, did not find a positive relationship between diversification and firm's performance. Coal mining companies in China that are diversifying have varying performance relationships between one company and another because the

performance of coal companies is determined by integrated internal and external factors outside of diversification (C. M. Li et al., 2019).

However, company diversification may affect the company's financial performance positively or increase the company value. Palepu, (1985) in his research shows that companies with related diversification produce better profits than companies with unrelated diversification. Jose et al., (1986), found that diversification in manufacturing companies has a positive and significant influence on company value using the Tobin's Q. Chakrabarti et al., (2007) find that business diversification by manufacturing companies in developing countries such as Indonesia will have a positive influence on the company's ROA, whereas business diversification by manufacturing companies in developed countries such as Japan and Korea will have a negative influence on the company's ROA. However, the profits from diversification will decrease after expansion between or after passing the optimal range which is expressed in the form of a U-interval. (Oladimeji & Itohowo, 2019) reveal that related diversified organizations outperform unrelated and hybrid diversified organizations in terms of ROA and ROI through use of their capabilities and assets to attain a competitive advantage. Mehmood et al., (2019) in their research in South Asian countries found that product diversification and geographic diversification significantly influence financial performance.

Most of the existing literature discusses the relationship between diversification carried out in coal mining companies and the financial performance of coal mining companies. However, no study has specifically examined the relationship between green energy diversification carried out by coal mining companies and the financial performance of coal mining companies. Therefore, we expect

H1: There is a positive relationship between coal mining company's green energy diversification and financial performance

RESEARCH METHODS

The data are obtained from financial reports and annual reports of coal mining companies listed in the Indonesian stock exchange from 2018 to 2022. This research also uses secondary data provided by tradingview.com. The collected data was then processed and analyzed using the panel data method using Stata software.

The hypothesis will be tested using the following model (Fan,et al., 2020): Financial Performance = c + b1 x Green Energy Diversification + b2 x Controls + error

Investments in the green energy sector will be examined to see whether they have an influence/relationship on the financial performance of coal companies through ROA, Tobin's Q and ROIC (Chakrabarti et al., 2007; Mehmood et al., 2019). ROA measures how well company is utilizing its assets to generate sales. It is also known as efficiency ratio of the company. It is calculated as Net Income of the company divided by Total Assets (Net Income/Total Assets) (Iqbal et al., 2012). Tobin's Q is the ratio between the market value of the firm's assets and the replacement value of those assets. Chung & Pruitt (1994) describes Tobin's Q as the sum of market value plus preferred stocks and debt divided by total assets. ROIC in a business attempts to measure the return earned on capital investment. In practice, it is usually defined as operating income divided by book value of invested capital (Damodaran, 2007).

The independent variable Green Energy Diversification is calculated using the company's investment value in the field of green energy diversification (Amendolagine et al., 2021). The control variables are leverage, independent commissioner, growth, majority shareholder of state-owned enterprises, and Covid-19. Leverage is calculated using Total debt divided by year-end total assets. Independent commissioner is the number of independent commissioners compared to the total number of commissioners. Growth is calculated using the Increase in current operating income divided by the total operating income in the previous period. Shareholder is the

percentage of the number of controlling shareholders. BUMN uses a dummy variable that is equal to 1 if the firm is a state-owned enterprise and 0 otherwise. Covid uses a dummy variable that is equal to 1 if the year is in Covid-19 pandemic and 0 otherwise. A summary of the explanation of each variable can be seen in Table 1.

Table 1. Definition of Variables

Variable	Definition
ROA	Net Income of the company divided by Total Assets
Tobin Q	The sum of market value plus preferred stocks and debt divided by total assets
ROIC	Operating income divided by book value of invested capital
Green energy diversificatuon	Investment value in the field of green energy diversification
Leverage	Total debt divide year-end total assets
Independent commissioner	Number of independent commissioners compared to the total number of commissioners
Growth	Increase in current operating income divided by the total operating income in the previous period
Shareholder	Percentage of the number of controlling shareholders
BUMN	State owned company
Covid	The first year of the emergence of Covid in Indonesia

Source: by Author

RESULT AND DISCUSSION

A. Result

As shown in Table 2, there are 50 observations from 10 coal mining companies that have invested in renewable energy from 2018 – 2022. The average values of ROA and ROIC are still 0.18 indicating that coal companies investing in renewable energy still have room for improvement. The company has not been very effective in managing company profits. However, the average Tobin's Q value is above 1, indicating that coal companies that diversify their business in the green energy sector are highly valued. This performance supports the net zero emission target to be achieved by 2060.

The average value of green energy diversification is 17.8 (point) indicating that investment in the field of green energy diversification is an expensive investment. The average leverage value of 0.17 indicates that coal companies take low debt to finance their investment activities. The average number of independent commissioners of 0.44 indicates that the coal companies studied have already complied with the provisions of BAPEPAM No. I-A regarding general provisions for recording equity SECURITIES for the sake of the implementation of good corporate governance. On average, the companies have a high growth of operating income as the sample also covers the coal price peak period in 2022. The average controlling shareholder value is more than 50%. Because there is only one state-owned company in this study, the average value of BUMN is very low, only 0.1. The majority of coal mining companies in Indonesia are owned and operated by private parties. The standard deviation shown for the ROA and ROIC variables is higher than the mean value, this shows that the ROA and ROIC values of coal mining companies are more heterogeneous. The lower standard deviation of the mean values for the Tobin Q and Green energy diversification variables indicates that the green energy diversification variable is more homogeneous in coal mining companies.

Table 2. Descriptive Statistic

Variable	Obs (Points)	Mean (Points)	Std. dev. (Points)	Min (Points)	Max (Points)
ROA	50	0.13	0.15	-0.07	0.63
Tobin Q	50	1.15	0.37	0.66	2.49
ROIC	50	0.18	0.20	-0.08	0.79
Green energy diversification	50	17.80	10.36	0.00	28.53
Leverage	50	0.17	0.17	0.00	0.51
Independent commissioner	50	0.44	0.13	0.25	0.80
Growth Operating income	50	0.36	0.61	-0.40	2.21
Shareholder	50	0.56	0.14	0.28	0.80
State Owned Company	50	0.10	0.30	0.00	1.00
Covid 19	50	0.20	0.40	0.00	1.00

Source: by Author

Next, we show the panel data regressions results to test our hypothesis in Table 3. It is found that green energy diversification has a positive and significant effect on the company's financial performance at 5% supporting hypothesis H1.

Table 3. Green Energy Diversification and Financial Performance

	ROA	Tobin Q	ROIC
Green energy diversification	0.00313**	0.0127***	0.00387**
	-2.43	-3.16	-2.24
Leverage	-0.309***	-0.324	-0.389**
	(-3.66)	(-1.39)	(-3.56)
Independent commissioner	-0.287***	-0.882**	-0.389**
	(-2.80)	(-2.37)	(-3.10)
Growth Operating income	0.0573**	0.0118	0.0926**
	-2.16	-0.15	-2.98
Shareholder	0.204	0.709*	0.308*
	-1.63	-1.7	-1.98
BUMN	-0.0451	0.0843	-0.0287
	(-0.91)	-0.4	(-0.44)
Covid 19	-0.0651**	0.00669	-0.0742*
	(-2.22)	-0.08	(-2.00)
Constant	0.136*	0.955***	0.159*
	-1.95	-4.65	-1.85
Observations	50	50	50
R-squared	0.543	0.417	0.554
F	10.55	5.499	10.89
p	0.0000001	0.0001550	0.0000001
df_m	7	7	7
df_r	42	42	42

t statistics in parentheses
* p<0.10, **p<0.05, *** p<0.01

Source: by Author

Table 3 shows that every 1% increase in green energy diversification investment will increase the company's ROA by 0.313%. Coal mining companies that are starting to diversify their business in the renewable energy sector will increase the ROA value of the company in the long term. This is influenced by the incentives received by coal companies when carrying out down streaming related to green energy diversification, where the assets owned will be maximized to get royalty discounts from downstream incentives towards green energy diversification.

On Tobin's Q, every 1% increase in green energy diversification investment will increase the company's Tobin Q by 1.27%. Coal mining companies that diversify towards green energy diversification will receive attention from the public who are interested in the sustainability of the company's business. So that the public will buy company shares on the stock exchange and increase the company's.

On ROIC, every 1% increase in investment in green energy diversification will increase the company's ROIC by 0.387%. Coal mining companies that invest in green energy diversification will benefit from investment in these projects. Moreover, the incentives provided by the government will increase the lifespan of coal mining projects.

B. Discussion

The results of this study are similar to the results of research conducted by Iqbal et al., (2012). This research examines the relationship between corporate diversification and its impact on the performance of 40 companies on the Pakistan Stock Exchange from 2005 to 2009. The results obtained are quite varied, where for the ROE and market return variables it shows that there is no positive relationship between diversification and company performance, but the opposite is true. for the ROA variable, it shows a positive relationship between diversification and company performance.

A study conducted by Iqbal et al., (2012) suggested that such type of study should be carried out in other countries as well. It gives basic ideas to investors and management as well as to see whether to diversify the firm's business or to focus on single business, whether to diversify core related products market or unrelated product market category.

Another study conducted by M. Li & Wong (2003) on around one hundred and six public companies in China also found a positive and significant relationship between diversification and the company's ROA and ROIC. The positive sign can be interpreted

as reflecting the performance impact of the match between broad and narrow scopes of diversification

CONCLUSION

From the discussion above we can conclude that renewable energy investment will influence company performance through the relationship with ROA, Tobin's Q and ROIC of the company. Investment in the renewable energy sector through company diversification affects the company's financial performance positively. This is in accordance with research conducted by Chakrabarti et al., (2002), Miller (2006), and Oladimeji & Itohowo (2019) that companies that diversify their business will have a positive effect to the firm value.

When businesses believe they have discovered a profitable opportunity by diversifying, the market responds positively. The market also reacts positively when conglomerates reduce losses by selling off company segments that are better off as standalone companies. In other words, the answer to the question of whether businesses should diversify is "yes, but only when the economics make sense" (Besanko et al., 2013).

In line with the target of achieving Net Zero Emissions by 2060 by the Indonesian government, coal as a contributor to emissions must no longer be used as PLTU fuel by 2060. Therefore, coal mining companies' efforts to start diversifying their business into the renewable energy sector can be considered as an effort to continue the company's financial sustainability. With this strategy, the company can use the resources it has to enter new businesses. Coal companies can downstream to enter new businesses while still using the resources they have.

The first strategy that can be carried out by coal mining companies is related to the company's business itself. Companies can start exploring business diversification by down streaming coal products towards ammonia, DME and so on. If this strategy is successful, the coal produced can be directly processed into ammonia or DME which is chemically more environmentally friendly than coal which is directly used as fuel for power plants. Coal companies can emulate the downstream strategy carried out by the Adaro group. Adaro group is currently building an aluminum smelter in North Kalimantan. This aluminum smelter will use coal from Adaro's Coking Coal mine in Central Kalimantan in the aluminum smelting process. The electricity source from this smelter will use hydroelectric power from the river near the smelter. The aluminum produced will be used as components for electric vehicles. Apart from that, the Company is also actively involved in contracts for the construction of water or wind-based power plants.

The second strategy is to reduce or even eliminate the use of fossil energy in the coal mining process. This can be done by using B35 or B40 fuel in the operation of the mining equipment used. It is possible that in the future the mining equipment used will be replaced with electricity-based mining equipment. For energy sources in coal mining companies that currently use diesel engines, they can be replaced by making power plants powered by wind, water or solar panels. If these two strategies can be implemented, it will affect the financial performance of coal companies in Indonesia.

Despite its contributions, this research has several limitations. First, it is limited to coal mining companies that have mining concession areas (not mining contractors) from 2018 to 2022. Second, it is limited to coal mining companies that have started to diversify their business in the renewable energy sector. Third, this research only focuses on the company's financial performance for ROA, Tobin's Q and ROIC. Therefore, we have several suggestions for future research. First, we recommend observing mining contractor companies or non-coal energy companies as samples. Second, the coal

companies used as samples could be further specialized between coal mining companies that are diversifying their products into the green energy sector or coal mining companies whose operations rely on green energy. Thirdly, we recommend to investigate the green energy diversification in the longer term period to see the achievement of net zero emission.

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