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The Role of Environmental Uncertainty, Firm Size, and Enterprise Risk Management to Improve Firm Performance

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A B S T R A C T

Global warming and other environmental problems are a major concern because related to corporate sustainability issues, so research is needed regarding various factors that influence company performance. This quantitative research was conducted to determine and analyze the influence of environmental uncertainty, firm size, and enterprise risk management on firm performance. The population in this study is the energy sector listed on Bursa Malaysia during 2017-2021. The sample selection used the purposive sampling method. Hypothesis testing using panel data regression with the E-Views 12. The results of this study show that, (1) environmental uncertainty has no effect on firm performance, (2) firm size has a positive effect on firm performance, (3) enterprise risk management has a positive effect on firm performance

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INTRODUCTION

Global warming, extreme climate change, and various other environmental problems are currently a major concern for society and world governments, this is closely related to the issue of corporate sustainability (Wu et al., 2022). Based on information obtained from www.ourworldindata.org the energy sector occupies first position as the sector producing the highest carbon emissions (Ritchie & Roser, 2020).

The energy transition that has occurred since the beginning of the 21st century has slowly led to a decline in demand for fossil fuel-based energy, this is due to a shift in energy consumption to a more environmentally friendly (renewable energy) (Ratna Poerwantika et al., 2022). However, speculation that there will be a decrease in energy demand caused by the energy transition does not seem to be in accordance with the situation occurring in the Malaysian energy sector. Company performance as reflected in value added results shows that the Malaysian energy sector is fluctuating (Kresnawan, Muhammad & Beni, 2022). The existence of a situation that does not match the speculation of a decrease in energy consumption with the actual conditions that occur, especially in the Malaysian energy sector, is a very interesting discussion to research in relation to what contributes to the performance of Malaysian energy sector companies. The factor that is considered to influence company performance is environmental uncertainty (Chen et al., 2019). This is supported by Rikhardsson et al. (2020), Arieftiara & Mariana (2018), Erina Sudaryati (2020), and Yudhanto & Simamora (2023) who state that environmental uncertainty has a significant effect on company performance. However, Ruan & Liu (2021) and Semekto (2021) argue that environmental uncertainty does not have any influence.

Firm size is also a factor that can influence company value (Anggraeni & Susilo, 2022). This is supported by previous research conducted by Anggraeni & Susilo (2022), Goh et al. (2023), and Pangestuti et al. (2023) stated that firm size has a positive effect on company performance. However, Ali et al. (2019), Kashif Shad & Lai (2019), Ramdhonah et al. (2019), and Suzan & Kania (2023) actually argue that firm size has a negative effect on company performance. Another opinion was also expressed by Fadillah & Noormansyah (2023) who stated that there is no relationship between firm size and firm performance.

Maximum company performance can be achieved through maximum implementation of Enterprise Risk Management (ERM) (Malik et al., 2020). This statement is supported by the research results of Ali et al. (2019), Malik et al. (2020), Saeidi et al. (2021), Goman et al. (2021), and Pangestuti et al. (2023) which explains that there is a strong relationship between ERM and company performance. However, Otero González et al. (2020) explained that there is no real evidence that can show the influence of ERM.

From the discussion above, it can be stated that there are still differences between empirical events and existing theory. Apart from that, there is also a research gap from previous research which causes doubts to arise so that further research is needed. Therefore, this research was conducted to determine and prove the influence that environmental uncertainty, firm size and enterprise risk

management have on firm performance with a research focus on energy sector companies listed on Bursa Malaysia for the 2017-2021 period.

LITERATURE REVIEW

Signaling Theory

Signaling theory was first put forward by Michael Spense (1973) who explained that actors providing information try to provide an overview to investors as a signal that can help in the decision making process. Signal theory can help management to provide information regarding the company's future prospects (Gitman & Zutter, 2019 page. 586). The aim of implementing this activity is to provide information related to the quality of a company (Yudhanto & Simamora, 2023). Positive signals can be obtained by investors through good company performance, which projects that the company is considered capable and competent in running its business so that it can provide a more promising future to investors.

Agency Theory

Agency theory was first put forward by Jensen & Meckling (1976), where this theory explains the relationship between managers as agents and investors who act as principals. To be able to achieve increased company performance while increasing investor value, strong commitment and regulation is needed so that the agent and principal can produce a mutualistic symbiosis (Arieftiara & Mariana, 2018). Therefore, in order for the agent to be committed to the process of achieving this goal, the agent must given incentives for services rendered.

Legitimacy Theory

Legitimacy theory was first put forward by Dowling & Pfeffer (1975) which stated that there is a connection between companies and society. Companies must be able to emphasize positive values in the implementation of all activities in order to realize corporate responsibility economically and socially (Goman et al., 2021) (Yudhanto & Simamora, 2023) Good company performance can be achieved by continuing to consider all aspects which affects stakeholders, especially the environment and society.

Environmental Uncertainty to Firm Performance

Environmental uncertainty is caused by a lack of information resulting from minimal company access, resulting in the inability of management to be able to produce decisions based on the reality of the actual situation (Erina Sudaryati, 2020). There are two dimensions that describe environmental uncertainty, namely environmental dynamism and environmental complexity (Chen et al., 2019; Zhao et al., 2022; Zhang et al., 2020). Firm performance can be declared good if the company can manage risks from environmental uncertainty optimally (Semekto, 2021).

This is supported by Rikhardsson et al. (2020), Arieftiara & Mariana (2018), Erina Sudaryati (2020), and Yudhanto & Simamora (2023) who state that environmental uncertainty has a significant effect on company performance. However, Ruan & Liu (2021) and Semekto (2021) argue that environmental uncertainty does not have any influence.

Erina Sudaryati (2020) said that environmental uncertainty in companies is more accurately measured using a proxy for sales volatility. This is supported by Ratu & Siregar (2019), Dwi Laksono & Firmansyah (2020), and Arieftiara et al. (2020) so this research uses sales volatility to measure environmental uncertainty.

H_1 = Environmental Uncertainty affects Firm Performance

Firm Size to Firm Performance

Company size can be defined as a measure that categorizes companies into large, medium or small groups (Anggraeni & Susilo, 2022; Pernamasari & Mu'minin, 2019; Ramdhonah et al., 2019). The total of all assets owned by a company can show that the company is better able to maximize its performance. This is supported by previous research conducted by Anggraeni & Susilo (2022), Goh et al. (2023), and Pangestuti et al. (2023) stated that firm size has a positive effect on company performance.

However, Ali et al. (2019), Kashif Shad & Lai (2019), Ramdhonah et al. (2019), and Suzan & Kania (2023) actually argue that firm size has a negative effect on company performance. Another opinion was also expressed by Fadillah & Noormansyah (2023) who stated that there is no relationship between firm size and firm performance.

H2: Firm Size influences Firm Performance

Enterprise Risk Management to Firm Performance

Enterprise Risk Management (ERM) is information related to various company efforts to overcome various business risks through good governance (Cristofel & Kurniawati, 2021; Goman et al., 2021; Saeidi et al., 2021). Implementing appropriate ERM can increase a company's awareness of global risks so that later the company can create policies that lead to maximizing company value (Jannah et al., 2020).

This statement is supported by the research results of Ali et al. (2019), Malik et al. (2020), Saeidi et al. (2021), Goman et al. (2021), and Pangestuti et al. (2023) which explains that there is a strong relationship between ERM and company performance. However, Otero González et al. (2020) explained that there is no real evidence that can show the influence of ERM. ERM can be measured using a dummy variable with the condition 1 for companies that implement ERM and 0 for companies that do not implement ERM (Ali et al. 2019).

H3: Enterprise Risk Management influences Firm Performance

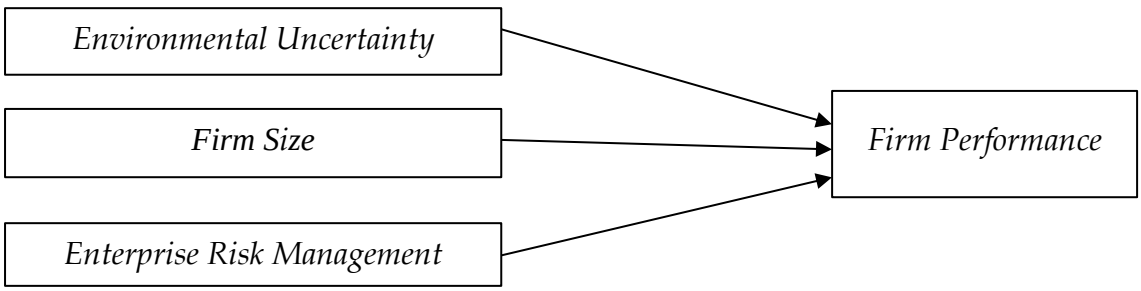

Figure 1. Conceptual Framework

METHODOLOGY

This research is quantitative research using secondary data sourced from the annual financial reports of energy sector companies which are available on the official Bursa Malaysia website and each company's official website for the 2017-2021 period.

The population used in this research is the energy sector which is listed on Bursa Malaysia and has an annual financial report that can be accessed by the public from 2017-2021. The sampling technique used was purposive sampling. In this research, the data analysis technique used is panel data regression using the E-views version 12 application and Microsoft Excel. The statistics used in this research are through descriptive analysis.

RESEARCH RESULT

Descriptive Statistical Analysis

Descriptive statistics is a method used to explain research data that has been collected and processed. This analysis aims to provide a description of the data in terms of minimum, maximum, mean and standard deviation values. The variables used are Economic Value Added (EVA), Environmental Uncertainty (EU), Firm Size (FS), and Enterprise Risk Management (ERM). The following are descriptive statistical results obtained from processing with the E-Views 12 application.

Table 1. Descriptive Statistics Results

Variabel	Minimum	Maximum	Mean	Standard Deviation
EVA	-5301.920	159.3100	-132.8873	580.1610
EU	99636.00	6.70E+09	6.38E+08	1.39E+09
FS	5.400000	10.53000	7.537100	1.260209
ERM	0.000000	1.000000	0.950000	0.219043

Source: Processed Data, 2023

Based on table 1, information on the firm performance variable can be obtained which has a mean of -132.8873 with a standard deviation of 580.1610. The average EVA value during the observation period is negative, which shows that several companies face challenges in generating added value. The highest EVA was 159.31 million RM and the lowest EVA was -5301.92 million RM.

Panel Data Regression Analysis

Chow Test

The Chow test is carried out to find out the correct model between the Common Effect Model (CEM) or the Fixed Effect Model (FEM). The results obtained are:

Table 2. Chow Test Results

Effects Test	Statistic	Prob.
Cross-section F	3.655778	0.0000
Cross-section Chi-square	64.29455	0.0000

Source: Processed Data, 2023

The chi-square cross section probability value is 0.0000 < 0.05 so that information can be obtained that H0 is rejected and H1 is accepted, so for now the best model to use in this research is the Fixed Effect Model.

Hausman Test

The Hausman test is a test carried out comparing the fixed effect model with the random effect model, of course this is done to find out which model is considered most suitable for use in research. The following is the formula for getting the Hausman test value:

Table 3. Hausman Test Results

Test Summary	Chi-Sq.Statistic	Chi-Sq.d.f.	Prob.
Cross-section random	4.472607	3	0.0214

Source: Processed Data, 2023

Prob value. Random cross section is 0.0214 < 0.05 so it can be concluded that H0 is rejected and H1 is accepted. Therefore, it can be concluded that the best model in this research is the Fixed Effect Model.

Panel Data Regression Model

After carrying out the tests above, the appropriate model is the Fixed Effect Model (FEM). The results of the FEM testing have been carried out to estimate the influence between the independent variable and the dependent variable.

Table 4. Fixed Effect Model

Variable	Coefficient	t-Statistic	Prob.
C	5.549796	0.662314	0.5097
Environmental Uncertainty	-0.375155	-1.170031	0.2456
Firm Size	3.898072	2.013618	0.0475
Enterprise Risk Management	2.589306	2.075310	0.0413
R-squared			0.564171
Adjusted R-squared			0.439649

Source: Processed Data, 2023

Based on the FEM model test results above, it can be seen that the panel data regression equation for this research is as follows:

EVA = 5,549796 – 0,375155 EU + 3,898072 FS + 2,589306 ERM…..…….(1)

1. The constant value is 5,549796 meaning that if the value of the independent variables Environmental Uncertainty (EU), Firm Size (FS), and Enterprise Risk Management (ERM) is equal to zero, then Firm Performance is 5,549796.
2. The Environmental Uncertainty (EU) coefficient value is -0.375155, which means that if the EU value increases by 1, then firm performance (EVA) will decrease by 0.375155. The coefficient is negative, namely explaining the relationship between environmental uncertainty variables and firm performance in a negative direction.

3. The Firm Size (FS) coefficient value is 3.898072, which means that if FS increases by 1, then firm performance (EVA) will increase by 3.898072. The coefficient is positive, that is, it describes the relationship between firm size and firm performance in a positive direction.
4. The Enterprise Risk Management coefficient value is 2.589306, that is, if ERM increases by 1, then firm performance will increase by 2.589306.

Hypothesis Testing

Partial Test (T Test)

The t test is used to determine the influence between the independent variable and the dependent variable. If the significance value is smaller than the probability value, then the independent variable has an effect on the dependent variable.

Table 5. Partial Test Results

Variable	Coefficient	t-Statistic	Prob.
C	5.549796	0.662314	0.5097
Environmental Uncertainty	-0.375155	-1.170031	0.2456
Firm Size	3.898072	2.013618	0.0475
Enterprise Risk Management	2.589306	2.075310	0.0413

Source: Processed Data, 2023

1. Environmental uncertainty has a coefficient of 0.375155 and a value of t count < t table, namely -1.170031 < 1.984467 and a significance value of 0.2456 > 0.05. This shows that EU is not significant to FP.
2. Firm size shows a coefficient of 3.898072 and a value of t count > t table, namely 2.013618 > 1.984467 and a significance value of 0.0475 <0.05. This shows that FS is significant to FP.
3. Enterprise Risk Management (ERM) shows a coefficient of 2.589306 and a t count > t table value of 2.075310 > 1.984467 and a significance value of 0.0413 < 0.05. This shows that ERM is significant to FP.

Coefficient of Determination Test

This test is used to determine how far a research model is able to explain the independent variable to the dependent variable.

Table 6. Coefficient of Determination Test Results

R-squared	0.564171	Mean dependent var	3.519900
Adjusted R-squared	0.439649	S.D. dependent var	1.76361
S.E. of regression	1.320178	Sum squared resid	134.201
F-statistic	4.530678	Durbin-Watson stat	2.31544
Prob(F-statistic)	0.000000		

Source: Processed Data, 2023

From the table above, it is known that the value of adjusted R-squared is 0.439649. This value can be interpreted as meaning that the dependent variable, namely firm performance, can be influenced by the three independent variables by 43.96%, while 56.04% is influenced by other factors outside the research

model, such as green innovation strategy and sustainability reports which is considered by many researchers to have an influence on firm performance in the energy sector.

DISCUSSION

The Effect of Environmental Uncertainty on Firm Performance

Environmental uncertainty is not significant to firm performance. This is not in accordance with signaling theory which explains that companies try to provide signals to investors so that they can help in the decision making process. This result is also not in accordance with legitimacy theory which states that there is a strong relationship between companies and society. The coefficient is negative, this is because high environmental uncertainty indicates that sales fluctuations are also high, which can be detrimental to the company because it can cause income instability which of course can cause pressure on the company's cash flow and liquidity.

Environmental uncertainty is not significant to firm performance, adaptive company performance with a high level of responsiveness makes the company able to manage the complexity of existing uncertainty, where this causes high or low environmental uncertainty to not have a significant impact on company performance.

The Malaysian state's commitment to continuing to reduce the intensity of emissions produced is through the Malaysian state's real plan contained in the National Energy Transition Roadmap (NATR), containing the steps that the government will take in the Malaysian energy sector in order to achieve a national energy transition, from energy that fossil-based materials into green energy with higher value (Mohd Chachuli et al., 2021). Apart from that, Malaysia is also known as a country that has the best energy transition index in the Southeast Asia region, which is a real indicator that Malaysian energy sector companies have implemented risk management optimally, which is one of the reasons causing environmental uncertainty not significant to firm performance.

The Influence of Firm Performance on Firm Performance

Firm size is significant to firm performance. This is in accordance with signaling theory where company size is an indicator of future company performance. The coefficient is positive, the large size of the company is a positive signal for investors, because the company is considered more promising with a large amount of assets, where the wealth of investors can be more guaranteed. The larger the company size shows that the company can more easily reach the market and is also considered easier to obtain funding flows, both from internal and external parties.

Company size can influence the performance of energy sector companies in Malaysia in several ways. The factors that can influence this relationship include economies of scale, larger companies are considered to be able to gain more benefits from economies of scale, company production costs can be lower with higher profit margins so that this will also have an impact on better financial performance. Furthermore, risk diversification through sharing risks across various markets or industries can help companies minimize potential losses resulting from environmental uncertainty and complexity.

Expanding access to resources is also a point of relationship between these two variables, larger companies generally have a wider range of resources to invest, for example to acquire technology and various new innovations, this will really help the company in generating operational efficiency so that it can improve competitive advantage of companies in the world energy sector (Fadillah & Noormansyah, 2023). Market forces can help energy sector companies have efficient supply chains because of their high ability to negotiate. Then, management expertise also underlies the company's ability to make better strategic decisions. More general companies can attract more experienced and skilled managers so that the policies created can be more accurate

The Influence of Enterprise Risk Management on Firm Performance

Enterprise risk management (ERM) has a significant influence on the performance of energy sector companies in Malaysia, where this is supported by research results which show that the implementation of ERM in the Malaysian energy sector has a real impact on operational excellence. The existence of ERM can help companies identify and manage the various risks they face, especially in the energy sector. This is very important because the challenges and risks faced in this sector are very unique in relation to business operations. Companies can improve their ability to predict various things that could potentially disrupt the implementation of their operational excellence programs through optimal implementation of ERM. Effective risk management practices can contribute greatly to improving overall performance, especially for companies with high environmental complexity.

There are several important factors that can influence the relationship between ERM and the performance of energy sector companies in Malaysia, namely the first is related to the nature of industrial operations, companies must be able to improve their ability to manage various risks related to market price fluctuations, the health and safety of employees, the impact to the environment, as well as high production costs (Goman et al., 2021). The results of this research are also in line with signaling theory which shows that the implementation of ERM in companies is a positive sign for investors because with ERM the company is considered to be able to better overcome various global risks so that later the company can make policies that lead to increased company performance. Furthermore, these results are also in line with agency theory, where the presence of ERM in a company shows that company managers who act as agents have high awareness in facing various risks that can harm investors as principals.

CONCLUSIONS AND RECOMMENDATIONS

Based on the research results and discussions that have been described, the conclusions that can be obtained are 1) Environmental uncertainty has no effect on the firm performance of the Malaysian energy sector for the 2017-2021 period. 2) Firm Size has a positive effect on the firm performance of the Malaysian energy sector for the 2017-2021 period. 3) Enterprise Risk Management influences the firm performance of the Malaysian energy sector for the 2017-2021 period.

From the conclusions that have been outlined, the author provides several suggestions that can be implemented, namely that it is hoped that future researchers can expand the research period so that the research results can be more accurate and stronger related to various things that influence the firm performance of a company. As for the company, it is hoped that through this research it can better consider the factors that can influence firm performance. This needs to be considered so that the company can become a profitable company.

FURTHER STUDY

The limitation of this research is that there are several Malaysian energy sector companies that do not publish complete annual financial reports, making it difficult to access the annual reports of Malaysian energy sector companies. In addition, the very complex and unique characteristics of the energy sector mean that research results cannot be directly applied to other sectors. Macroeconomic conditions and various external factors that are difficult to control are also obstacles that can impact firm performance. Therefore, it is hoped that future research can address the limitations of this research through expanding the use of variables.

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