

RESEARCH ARTICLE

Does SDG Performance Lead to Higher Financial Performance: The Case of the Dow Jones Islamic Market World Index of the Heavy Industry Sector

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ABSTRACT

The global society has been facing many issues and challenges that require urgent attention. One innovative global solution is the introduction of the Sustainable Development Goals (SDGs). The private sector is a key stakeholder that uses resources from the society to satisfy corporate interests, and it is the sector's responsibility to ensure and protect the well-being of the society in return, by playing an active role in accelerating the implementation and execution process of the SDGs to be achieved by 2030. Therefore,

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there is a high expectation from private firms to contribute to the SDG agenda. The aim of this study is to analyze the impact of the environmental scores of the SDGs on the financial performance of firms. It examines a total of 25 industrial firms listed from the constituents of the Dow Jones Islamic Market World Index. The findings of the study show that a higher score of the environmental performance of the SDGs leads to a higher return on asset (ROA) and return on equity (ROE) in the sampled firms. The study recommends that firms can achieve higher financial performance by improving their resource use, increasing corporate innovation, and reducing CO2 emissions. This study has policy implications for both companies and regulators.

Keywords: financial performance, environmental performance, Islamic finance, social finance, Sustainable Development Goals

INTRODUCTION

It cannot be denied that our world today is facing many global challenges than in the last decades. One of them is climate change, which may cause potential disasters. Having said that, human activities such as pollution, waste, and resource destruction have contributed to this challenge. We have now come to the stage where half of the world's population has difficulty accessing water at least one month in a year. Overall, 3 out of 10 people have been found to lack access to safe drinking water services. More than 80% of wastewater is released into rivers or sea without any treatment, contributing to further pollution. In sub-Saharan Africa, about 573 million people do not have access to electricity. In fact, this lack of accessibility has blocked 3 billion people from using clean cooking fuels, which has further resulted in nearly 4 million premature deaths annually. The global population is estimated to reach 9.6 billion by 2050. This growth will require the resources of almost three planets to sustain current lifestyles, implying that the consumption and production patterns will have a negative impact on the environment. In addition, greenhouse gas levels are seen to continue to rise, increasing climate change at much higher rates than expected. These changes will have an impact on severe weather and will increase sea levels.¹

Currently, we are witnessing this impact that is affecting people and their properties around the world, especially in developed and developing countries. Further investigation on the ecosystem of marine and coastal biodiversity has revealed that more than 3 billion people still depend on this ecosystem to sustain their lives and livelihood. Sadly, such an ecosystem is found to be grievously disrupted due to the rising levels of debris in the oceans. In addition, more than 1.6 billion people also rely on forests for their livelihood. Due to land degradation, about 75% of the global poor population is directly affected, putting their lives at greater risk to severe hunger. From the abovementioned facts, we are in the state of danger where everything is vulnerable to destruction and damage, especially the global environment and nature.

1 The United Nations, *SDGs*, Sustainable Development Goals Knowledge Platform, accessed December 1, 2019, <https://sustainabledevelopment.un.org/sdgs>.

In 2000, the Millennium Development Goals (MDGs) were already present at the early stage to respond to certain aspects of society. Previously, global leaders only gave attention to poverty reduction, hunger elimination, disease-free society, illiteracy improvement, environmental protection, and mitigation of discrimination against women. In order to realize these objectives, about eight MDGs were designed to achieve them by 2015. The eight specific goals were inclusive of reducing poverty and hunger, providing primary education, promoting gender equality, reducing child death, improving health, developing global partnerships, promoting a sustainable environment, and curing diseases.² By promising the year 2015, many targets were not fully achieved and many sections of society need far more to achieve. This story was reflected for many reasons. Among the targets, the MDGs allowed certain parties to engage in problem-solving; especially government authorities were a key focus party to implement the actions of the MDGs. The less problems that are solved, the slower the progress of achievement will be. Due to severe global conditions and crises, these eight goals were not sufficient to sustain a better life. Therefore, the newly developed Sustainable Development Goals (SDGs) were agreed to be put in place in 2015 to ensure that the global community achieves sustainability and prosperity.

The MDGs were developed to allow certain sections of society and areas of life to participate in building a sustainable world. Unlike MDGs, the SDGs are designed to involve various and more sections of society in fulfilling the vision of leaving no one behind. The SDGs cover larger areas of issues for global stakeholders around the world in order to get involved in combatting the challenges. Both public and private sectors are fully encouraged to participate in the implementation of the SDGs. The SDGs also come with a wider set of indicators so that more issues and challenges are well addressed with proposed mechanisms. The SDGs specifically enable the private sector, including companies and households, to respond to the goals better than in the case of the MDGs. This fact becomes one of the reasons why the SDGs are taken into account for this particular study. The SDGs are anchored in the betterment of our future world by means of achieving the state of sustainability. This would mean that meeting our needs in the present without conceding and surrendering the needs of the future generations. The intended design objective for the SDGs is to appreciate the critical importance of the sustainability side of economic development. However, this objective can only be achieved by attaining the environmental components, including energy sources and energy utilization. Introduced in 2015, the global mission of the SDGs comes into place for combating such issues. The SDGs comprise the universal agenda adapted by the United Nations, containing 17 broad goals, with 169 corresponding targets and 231 indicators, in order to ensure the progress made to meet the targets by 2030. The goals can be briefly understood as shown in Figure 1.³



Figure 1. The seventeen goals of the SDG agenda

Based on these 17 goals, the study attempts to focus on a certain dimension, which is the environmental pillar. This specification helps us to narrow down the scope of the study, and enables the study to specifically address the global concern through analyzing the goals according to their relevancy of different dimensions. This study categorizes the entire goals into 5Ps for a better understanding, as shown in Figure 2.



Figure 2. The five categories of the SDG agenda (5Ps)

This categorization has been made possible based on the result analysis by the 2015 United Nations Thailand.⁴ The analysis accounts for various dimensions, comprising social, economic, environmental, management, dignity, people, planet, prosperity, justice, and partnership. The social dimension covers goals that affect the changes socially from well-being to the betterment of society. The economic dimension accounts for goals that aim to create economic values and influences. The goals addressing the environmental crisis and promoting environmental protection fall under the category of environment, while the management aspect associates with goals that require the managerial process, including mechanisms and systems to activate the goals.

Based on Figure 2, the categories present the challenges that our planet is facing around the world. This study will focus on the environmental aspect of the SDGs due to its importance in preserving the planet, and our future depends on transforming our approaches to responding to this environmental crisis. Furthermore, all the nations are responsible to fulfill the objectives drafted in the Paris Agreement 2015. This agreement was the first initiative to bring national states to tackle the issue of climate change and embrace its impact. The ultimate goal of this effort is to reinforce global action towards the risks of climate change.⁵ In fact, our environment has also deteriorated due to climate change and global attention to environmental preservation is currently needed. Therefore, the environmental aspect of the SDGs becomes a key focus of this research. Although the SDGs were agreed upon by all the member states in the UN, they still require all entities, particularly the private sectors, to participate in taking actions to respond to the global needs. In response to this, this study emphasizes the said specific SDGs aimed at protecting the environment and natural resources, and maintaining a green climate for future generations. These are represented by SDGs 6, 7, 12, 13, 14, and 15. In each goal, there are different indicators that can be achieved at the national, institutional, and individual levels. The study focuses on the institutional level for the sake of accessibility and affordability of the institutions themselves. This institutional level only refers to the involvement of the private sector, especially business entities and profit-based companies, while the engagement of the public sector is exceptional. The issue of the environment has recently emerged due to economic and social development. In return, such a development gradually contributes to the current global climate. Many countries have made industrial development and global expansion possible. However, there is no doubt that the ongoing impact of such development and growth is leading to a crisis of global environmental change.

In order to strengthen the environmental performance of the SDGs while encouraging actions from companies, countries must ensure that major transformations of the SDGs take place in different dimensions. These changes can range from human well-being to human rights, land use to marine life, and energy systems to cooperative partnerships.

4 The 2015 United Nations Thailand, *The Goals from MDGs to SDGs*, The Global Goals for Sustainable Development, accessed January 10, 2020, <https://www.un.or.th/globalgoals/the-goals/>.

5 The UNFCCC Secretariat, *The Paris Agreement*, United Nations Climate Change, accessed February 11, 2020, <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>.

This process requires long-term changes that need the participation of every stakeholder. However, governments play the most significant role in leading this complicated journey from mobilizing stakeholders to policy implementation. In addition to government and other public sectors, the private sector is seen as a vital player in the development of society. The SDGs encourage all stakeholders, including large companies, to support the UN in responding to this call with whatever capacity they have and whatever state they are in. Thus, the private sector, especially large companies, is believed to have a significant impact on helping the UN achieve the goals by 2030.

Previously, companies were voluntarily attached to the concept of corporate social responsibility (CSR), and there was no serious incentivization to keep investing in these efforts. Later, the concept was greatly developed into an environmental, social, and governance (ESG) initiative. The ESG concept has been positively making the private sector become responsible to most stakeholders. However, due to the advancement of technology and global crises in terms of climate change, wars, and greenhouse gases, the world is facing more challenges, taking many lives, and leaving many people in hardship. By analyzing the ESG and CSR concepts, their developmental aspect is not yet realized, which is currently in need by most countries in mitigating global risks and challenges imposed by the said factors.

As the author of this research, I have observed a number of claims made by current researchers and SDG advocates about what possible effects can the SDGs have on businesses operating globally, particularly Shariah firms listed on the Dow Jones Islamic Market World Index (DJIMWI). Although a large body of the thesis has focused on investigating the relationship between the environmental scores and financial performance of the SDGs in terms of return on asset (ROA) and return on equity (ROE), published research and studies devoted to the DJIMWI market and the assessment of the environmental performance of the SDGs are still scanty.

In today's competitive marketplace coupled with the global initiative for large global companies in the heavy industry sector, in order to implement the environmental activities of the SDGs, it is necessary to investigate the impact of the environmental performance of the SDGs on the financial performance among global companies. If the relationship is expected to be positive, companies should be encouraged to expand their investments in the environmental activities of the SDGs. Conversely, if the relationship tends to be negative, then companies need to reconsider the current corporate strategy in reducing the impact while being responsible for making the world a better place and supporting the achievement of the SDGs by 2030.

Therefore, this study aims to analyze the relationship between the performance of the SDGs in terms of the environmental score provided by Refinitiv and the financial performance of firms represented by their ROA and ROE. This study also expects to reveal the impact of the environmental scores of the SDGs on the financial performance of the selected Shariah-screened firms in terms of their ROA and ROE. The study has selected firms listed on the DJIMWI and examines their performance over 10 years during 2009 to 2018. The firm selections are based on the rationale that they are Shariah-compliant firms,

and they are highly expected to do better than other non-Shariah-compliant firms due to their obligation and responsibility as Islamic entities adhering to Islamic values and principles. In Islam, environment is also among the core concerns that every Muslim must preserve. In fact, preserving and protecting the environment is one of the important pillars in Islam as what has been interpreted under the principle of *khalifa* (stewardship). According to the Quran (6:165), “It is He who has appointed you vicegerent on the earth.” With this verse, it obliges all Muslims, including Islamic business entities, to be caretakers of the earth, its animals, the environment, and all creation. Therefore, Shariah-compliant firms are expected to observe the environmental ethics endorsed by Islam in addition to the five basic rulings, and act differently towards preserving the environment.⁶

LITERATURE REVIEW

By viewing the global fact that of the USD 23 trillion funds in US accounting, about 25% of new investments were used in ESG funds for the protection of the environment, among other reasons.⁷ This proportion of investment addresses the urgent concern of the government in the preservation of the environment. At the same time, this effort encourages the private sector to contribute more or equally to maintain the environment, reflecting the required attention of the private sector to play an active role in supporting and sustaining the global resources. Therefore, this study rightly presents the concern of private sector involvement in protecting the environment. In this section, it attempts to highlight the existing studies and relevant literature with regard to the impact of ESG practices towards the private sector in terms of their financial performance. Several streamline studies have attempted to find the result of good performance through the ESG concept. With the announcement of the SDG concept by the United Nations, the findings of these studies, however, remain untapped on the performance of firms with an adaptation of the ESG concept.

In early studies, Calderón et al. apply structural equation models (SEMs) to observe the impact of environmental performance (EP) on economic and financial performance of 122 companies listed in the Dow Jones Sustainability Europe Index. Their study reveals that firms with high environmental scores (performance) have significantly improved their economic and financial performance.⁸ Wassmer, Cueto, and Switzer analyze the top 500 public and private firms, in order to investigate the impact of Corporate Environmental Initiatives (CEI) on firm value. They find that CEI creates potential value for the firms.⁹

6 M. Y. Gada, “Environmental Ethics in Islam: Principles and Perspectives,” *World Journal of Islamic History and Civilization* 4, no. 4 (2014): 130–138.

7 J. Hill, *Environmental, Social, and Governance (ESG) Investing: A Balanced Analysis of the Theory and Practice of a Sustainable Portfolio* (Massachusetts: Academic Press, 2020).

8 E. P. Calderón, P. M. Montero, M. L. M. Santamaría, and J. M. Jiménez, “Eco-Efficiency: Effects on Economic and Financial Performance: Evidences from Dow Jones Sustainability Europe Index,” *Environmental Engineering and Management Journal* 10, no. 12 (2011): 1801–1808.

9 U. Wassmer, D. C. Cueto, and L. N. Switzer, “The Effect of Corporate Environmental Initiatives on Firm Value: Evidence from Fortune 500 Firms,” *Management* 17, no. 1 (2014): 1–19.

Similarly, Vasanth et al. analyze the profitability and EP of 191 Indian companies listed on the S&P BSE 500 index by using a Granger causality analysis. Their study illustrates a positive impact of the EP on three profitability variables represented by return on sale (ROS), ROE, and ROA.¹⁰ Prawirasasra investigates the link between the environmental performance and the firm value by deploying multiple linear regression and Tobin's Q ratio with 41 banks listed on the Indonesia Stock Exchange (BEI). The study finds positive relationship between these factors.¹¹ Ong et al. further explore the relationship between environmental innovation, EP, and financial performance through the application of SEMs with a sample of 124 managers of manufacturers in Malaysia. Based on their study, environmental innovation and environmental performance are proved to be key factors in creating economic values for the firms, including financial performance.¹² Manrique and Martí-Ballester attempt to analyze the result of corporate EP on corporate financial performance during a global financial crisis using Petersen's approach. As per their analysis, the adoption of environmental practices produces a significant and positive outcome on the corporate financial performance, especially in developing countries where the outcomes are stronger than in developed ones.¹³

In contrast, there is a direct impact on the firm value if the strategy stands alone. In Latin America, Husted and Sousa-Filho investigate the impact of the board structure on ESG disclosure. Their analysis shows a positive impact of the character of board size and independence of directors on ESG reporting; many ESG prospects were disclosed upon having several executive members in the board. In addition, having women board members and CEO duality were found to have a negative impact on ESG reporting. This is partially understood by a culture of masculinity. This culture tends to explain that countries, like some in Latin America, reflect greater economic orientation than the social environment. Therefore, women were found to have less impact on ESG disclosure than men.¹⁴

Based on the above discussion, it can be observed that those companies with committed ESG efforts are responsible companies, and their financial performance is positively improved. This improvement reflects the better perception of the companies in the eyes of the market, increasing the sale of companies, leading to the rise of company profits. This responsibility has motivated the study to investigate further on the notion of being more

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- 10 V. Vasanth, M. Selvam, K. Lingaraja, and R. R. Ramkumar, "Nexus between Profitability and Environmental Performance of Indian Firms: An Analysis with Granger Causality," *International Journal of Energy Economics and Policy* 5, no. 2 (2015): 433–439.
 - 11 K. P. Prawirasasra, "Analysis of Relationship of Environmental Performance," *First International Conference on Economics and Banking (ICEB-15)* (2015): 207–211.
 - 12 T. S. Ong, A. S. Lee, B. H. Teh, and H. B. Magsi, "Environmental Innovation, Environmental Performance and Financial Performance: Evidence from Malaysian Environmental Proactive Firms," *Sustainability* 11 (2019): 3494.
 - 13 S. Manrique and C. P. Martí-Ballester, "Analyzing the Effect of Corporate Environmental Performance on Corporate Financial Performance in Developed and Developing Countries," *Sustainability* 9 (2017): 1957.
 - 14 B. W. Husted and J. M. Sousa-Filho, "Board Structure and Environmental, Social, and Governance Disclosure in Latin America," *Journal of Business Research* 102, no. C (2019): 220–227.

socially responsible through the involvement of the SDGs. Therefore, the SDGs are believed to make a greater positive impact on the financial performance of firms. Another dimension worth considering is that the current global market has a wide investor base. Currently, the number of responsible investors are expected to increase as people become more morally committed. This trend can be well reflected by the emergence of green financing, socially responsible investing, and the circular economy concept. Greater expectation of investors towards responsible actions and efforts of their companies are highly perceived. Therefore, it is necessary to understand the relationship between the SDGs and financial performance. In addition, responsible companies are expected to better attract a wider range of investors, creating greater value for companies.

METHODOLOGY

This study is structured as quantitative research. It constructs a statistical equation through quantitative analysis using secondary data collected from 2009 to 2018 that were extracted from the Refinitiv database. The initial sample was the top 500 firms listed in the DJIMWI based on their market capitalization. This study focuses only on the heavy industry, including four sub-industries under the energy sector. The heavy industry has the potential for deteriorating the environment, which is a direct indicator of the environment under the SDGs. The industry refers to a type of business that deals with high capital cost, high barriers to entry, and low transportability. This business produces heavy products such as oil, iron, coal, and ships. However, in the context of the study, the term has been broadened to cover industries that disrupt and cause an impact on the environment, be it pollution, emissions, greenhouse gas release, deforestation, or climate change.¹⁵ Based on the above definition, heavy industrial firms are firms that potentially consume high levels of energy and power resources and greatly contribute to environmental pollution.

The needs of environmental protection under the SDGs are well-addressed through the direct focus of the target, which in this case are heavy industrial firms. The largest 500 firms with the highest market capitalization from the DJIMWI were initially selected as the sample of this study. However, not all of them fall under the focus group of this study. After screening the firms based on their industrial sector, only 25 firms were qualified for the study category. Therefore, these firms have been specifically selected for this study.

The sample consists of a total number of 250 observations. The study uses historical data spanning 10 years for analysis. As this study is quantitative research, the data is analyzed via an advanced statistical tool using the software Econometric Views (EViews 7.1). The study also uses multiple regression to support the construction of the statistical equation. It tests the presence of heteroskedasticity, multicollinearity, and autocorrelation, and ensures that they are eliminated by performing the robustness check of the equation using various theories. In addition to this analysis, the report observes the documentary research approach from academic journals, theories, and relevant studies. The conceptual

15 W. Kenton, "Heavy Industry Defined," Investopedia, accessed January 14, 2020, https://www.investopedia.com/terms/h/heavy_industry.asp.

framework of this study is specified to practically illustrate the research process, which is briefly explained below.

First, data was collected for analysis, comprising both dependent and independent variable indicators. The dependent variable was the financial performance (FP) with two different units, namely ROA and ROE. The independent variables were the environmental scores of the SDGs (SDG), firm size (FS), board size (BS), and ownership structure (OS; in this case, institutional ownership or IO is specifically used). Second, multiple regression was constructed with the impact analysis between the two types of variables using the ordinary least square (OLS) method. Third, robustness was tested by detecting autocorrelation and heteroskedasticity using the serial correlation long-term model test and white heteroskedasticity (cross-term), respectively. Fourth, the study checked the BLUE (Best Linear Unbiased Estimator) feature of the model by conducting the normality test. Then, the obtained results were analyzed using the EViews software. Finally, the hypotheses were tested using the above result. The outcomes of the testing are discussed and the study concludes based on the analyzed result.

Variables

To analyze the relationship between FP and other testing and control variables, this study conducted an initial examination of the relationship between the independent and dependent variables. The dependent variable, the FP, was indicated by two financial ratios, namely return on asset (ROA) and return on equity (ROE), and ascertains the value of the company. As the name suggests, the return is the best indicator representing value for money. ROA is a measure to determine how well a company uses its assets, while ROE is another measure to determine how efficiently a company uses its equity to generate after-tax profits. However, ROA and ROE are considered to be similar without taking financial leverage into account.¹⁶ This study assumes that all testing companies use debts as part of their investment. This is the reason why both indicators were used differently here.

The independent variables comprise four main testing variables, namely the environmental scores of the SDGs (SDG), firm size (FS), board size (BS), and institutional ownership (IO). This particular institutional ownership is proxied by institutional investors. The environmental scores of the SDGs are used to represent the performance of the SDGs by focusing on their environmental aspect. The environmental pillar is the most affected pillar due to climate change, which requires an urgent response from the world. Companies need to tackle this problem and reduce its effect to maintain it for the benefit and experience of the next generation. While firm size does matter here when assessing the capacity, a larger company is believed to provide better capacity to undertake investments in fulfilling its needs and objectives. This means that in the current situation, such as the global pandemic of the coronavirus 2019 (COVID-19), the larger company with greater asset size is considered to have greater responsibility due to its high capacity in battling this

16 R. Fuhrmann, "Return on Equity (ROE) vs. Return on Assets (ROA)," Investopedia, accessed November 22, 2019, <https://www.investopedia.com/ask/answers/070914/what-are-main-differences-between-return-equity-roe-and-return-assets-roe.asp>.

outbreak. In terms of board size, it is important to know how many qualified executive members manage a company. The reason is simply that all of them have an authority in directing the company. If they are committed to certain missions, they are the only ones that can drive the company's resources towards these missions. Finally, with respect to the ownership structure, it is necessary to know who are the strategic owners, i.e. those who have full authority and access to a company. Having an institutional investor implies holding a greater power as they have a strong pool of financial assets and capacity compared with individual investors.

To measure the environmental scores of the SDGs, this study took into account only the environmental scores, consisting of the resource use score, the emissions score, and the innovation score (Figure 3). According to the definition given by Refinitiv, the resource use score reflects the performance and capacity of a firm in reducing material use, energy, or water. It further accounts for an effort of eco-efficient solutions that the firm adopts through supply chain management. By contrast, the emissions score accounts for and assesses the commitment and effectiveness of a firm in reducing environmental emissions during production and operational processes. Finally, the environmental innovation score accounts for the capacity and effort of a firm in reducing the environmental cost and burden on behalf of its customers, as well as using new environmental technologies and processes or eco-designed products.¹⁷

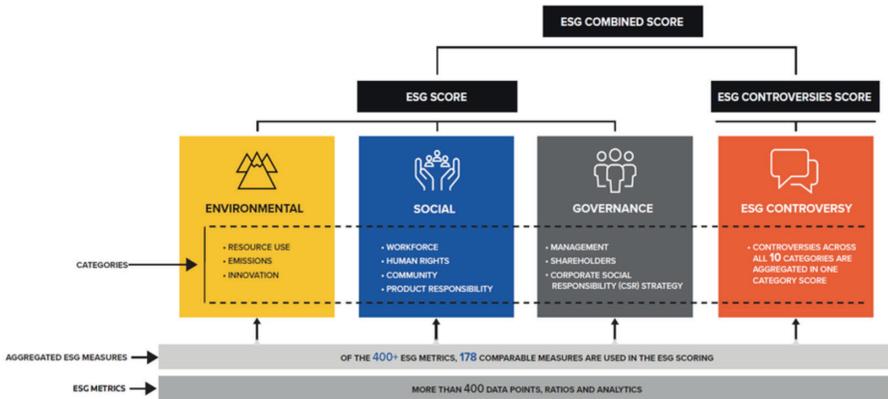


Figure 3. ESG Refinitiv score components

RESULTS

Descriptive Results between Return on Asset (ROA) and Other Independent Variables

This section focuses on estimating the relationship between FP in terms of ROA and four independent variables (i.e. SDG, FS, BS, and IO). The result of this relationship analysis can be found in Table 1, which is obtained from the EViews software.

Based on the analysis results, this study expresses its output in the form of the following equation:

$$\ln(\text{ROA}) = -18.09 + 17.56 \ln(\text{SDG}) + 15.32 \ln(\text{FS}) - 3.46 \ln(\text{BS}) - 1.52 \ln(\text{IO})$$

(-0.23)	(5.85*)	(5.66**)	(-11.47**)	(-9.93**)	t-test
80.26	3.00	2.71	0.30	0.15	S.E.E.

where * and ** represent the level of significance at 0.05 and 0.01 respectively.

Table 1. The analysis result of the relationship between ROA and other independent variables. Source: Eviews 7.1

Variable	Coefficient	Std error	t-Statistic	Probability
ROA	-18.09425	80.26143	-0.22544	0.5402
SDG	17.55603	3.00293	5.84628	0.0305
FS	15.32151	2.70635	5.66131	0.0000
BS	-3.456314	0.30125	-11.4732	0.0000
IO	-1.521452	0.15322	-9.92978	0.0000
R-squared	0.793039	Mean dependent variable		1.633048
Adjusted R-squared	0.780054	SD dependent variable		0.677222
SE of regression	0.521004	Akaike information criterion		1.942314
Sum squared residual	1.502338	Schwarz criterion		2.093607
Log likelihood	-4.711572	Hannan–Quinn criteria		1.776347
F-statistic	39.354641	Durbin–Watson statistic		2.002112
Prob(F-statistic)		0.0000000		

Table 1 presents the analysis of the relationship between the FP represented by ROA and the environmental scores of the SDGs (SDG). The results explain that when the SDG changed by 1%, ROA would change by 17.56% in the positive direction with a significance level at 0.05 ($\alpha=0.05$), indicating an impactful relationship between the variables. When comparing FS with ROA, it was found that ROA changed by 15.32% when FS changed by 1% in the positive direction at a significance level of 0.05 ($\alpha=0.05$). Moreover, when assessing the relationship between ROA and BS, ROA would change by -3.46% when BS made a 1% change in the opposite direction at a significance level of 0.05 ($\alpha=0.05$). When comparing ROA with IO, ROA would change by -1.52% when IO changed by 1% in the opposite direction at the same significance level.

The above equation also gives some other relevant statistical values for discussion. The R-squared was estimated to be 0.7930, which indicates that the independent variable has an impact on the estimated dependent variable up to 79.30%. The F-statistic was estimated to be 39.36, which indicates that all the independent variables in the model have an impact on the change in the dependent variable up to 39.36 at a significance level of 0.01 ($\alpha=0.01$). The Durbin-Watson statistic was used as a testing tool to examine statistical issues in the model. Based on the analysis, the Durbin-Watson statistic was estimated to be 2.00, which indicates that there is no autocorrelation present in the model. In addition, this study also attempts to investigate the presence of heteroskedasticity, as explained later.

This study uses the concept of the Breusch-Godfrey serial correlation LM test for checking autocorrelation. According to the test result, the Obs*R-squared or chi-square test was estimated to be 2.74, whose *p*-value is 0.24. This value indicates non-significance, thereby concluding the absence of autocorrelation in the model. There are many testing tools used by academicians in this field for performing such testing. However, the use of such a tool is optimized in this study due to its ability to generate the accuracy of an analysis as well as its general acceptance by many academic scholars. The result of such a test is incorporated with the Breusch-Pagan-Godfrey heteroskedasticity test. The Obs*R-squared or chi-square test gave a value of 2.97, whose *p*-value was 0.57. This value indicates non-significance, thereby concluding the absence of heteroskedasticity. However, the study further examines the problem of multicollinearity using the same software, and did not find it in any of the models.

From the above discussion, the study confirms the absence of autocorrelation, multicollinearity, and heteroskedasticity in the structured model. This finding further highlights the fact that the model does not become spurious, and this conclusion is supported by the following hypothesis.

Testing Variables

While assessing the relationship between FP in terms of ROA and SDG, a positive relationship was found with the magnitude of 17.56% at the significance level of 0.05. In addition, this study uses some statistical values for testing the hypothesis, such as the t-test and the *p*-value. The t-test was estimated to be 5.85, whose *p*-value was 0.03. These values

tend to reject or accept (hypothesis of return on asset; HROA) the stipulated hypothesis. This finding is in line with the study by Bodhanwala and Bodhanwala.¹⁸

Control Variables

While examining the relationship between FP in terms of ROA and FS, a positive relationship was found with the magnitude of 15.32% at the significance level of 0.05. Using the same statistical testing measures, the study found the t-test value to be 5.66 with the *p*-value of 0.00. This finding is in line with the study of Vinasithamby¹⁹ and Pervan and Visic.²⁰ While evaluating the relationship between FP in terms of ROA and BS, an opposite direction of the relationship was found with the size of relationship of -3.46% at the significance level of 0.05. The study also found that the t-test value is -11.47 with the *p*-value of 0.00. This finding is in line with the study by Jenter, Schmid, and Urban,²¹ however, Guest indicates that such a relationship is observed only for large firms.²²

While examining the relationship between FP in terms of ROA and IO, an opposite direction of the relationship was found with the relationship size of -1.52% at the significance level of 0.05. In addition, the study further determined other statistical values of the t-test at -9.93 with the *p*-value of 0.00. The same finding is also revealed in the study of Abdullah et al. in the context of Pakistani firms,²³ while the Indian context is confirmed by Suman, Basit, and Hamza.²⁴

Descriptive Results between Return on Equity (ROE) and Other Independent Variables

With respect to the second dependent variable, the relationship between FP in terms of ROE and the other four independent variables, namely the SDG, FS, BS, and IO, was estimated using the same software. The result of this relationship analysis can be found in Table 2 with further explanation.

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- 18 S. Bodhanwala and R. Bodhanwala, "Does Corporate Sustainability Impact Firm Profitability? Evidence from India," *Management Decision* 56, no. 8 (2018): 1734–1747.
 - 19 S. Vinasithamby, "Does Firm Size Influence on Firm's Profitability? Evidence from Listed Firms of Sri Lankan Hotels and Travels Sector," *Research Journal of Finance and Accounting* 6, no. 6 (2015): 201–207.
 - 20 M. Pervan and J. Visic, "Influence of Firm Size on its Business Success," *Croatian Operational Research Review (CRORR)* 3, 213–223.
 - 21 D. Jenter, T. Schmid, and D. Urban, *Does Board Size Matter?*, accessed February 3, 2020, https://www.academia.edu/1546979/Does_Board_Size_Matter_New_Evidence_from_a_Two-Tier_Board_System.
 - 22 M. P. Guest, "The Impact of Board Size on Firm Performance: Evidence from the UK," *The European Journal of Finance* 15, no. 4 (2009): 385–404.
 - 23 M. I. Abdullah, M. Sarfraz, W. Qun, and M. Chaudhary, "Ownership Concentration Impact on Firm Financial Performance," *Scientific Journal of Logistics* 15, no. 1 (2019): 107–118.
 - 24 S. Suman, A. Basit, and M. S. Hamza, "The Impacts of Ownership Structure on Firm Performance," *International Journal of Accounting & Business Management* 4, no. 2 (2016): 262–271.

Based on the analysis result, the study expresses its output in the form of the following equation:

$$\ln(\text{ROE}) = -15.01 + 12.22 \ln(\text{SDG}) + 11.65 \ln(\text{FS}) - 4.55 \ln(\text{BS}) - 3.66 \ln(\text{IO})$$

(-0.25)	(34.27**)	(20.95**)	(-22.26**)	(-32.63**)	t-test
60.44	0.36	0.56	0.21	0.11	S.E.E.

where ** represents the level of significance at 0.01.

Table 2. The result of the relationship between ROE and other independent variables.
Source: Eviews 7.1

Variable	Coefficient	Std error	t-Statistic	Probability
ROE	-15.01321	60.44321	-0.24838	0.7210
SDG	12.21532	0.35641	34.27312	0.0000
FS	11.65211	0.55611	20.95288	0.0001
BS	-4.55331	0.20451	-22.2635	0.0000
IO	-3.66001	0.11215	-32.63349	0.0000
R-squared	0.792767	Mean dependent variable	2.234416	
Adjusted R-squared	0.786641	SD dependent variable	0.652873	
S.E. of regression	0.48512	Akaike information criterion	1.747291	
Sum squared residual	1.22624	Schwarz criterion	1.808529	
Log likelihood	-3.736454	Hannan–Quinn criteria	1.451321	
F-statistic	39.541921	Durbin–Watson statistic	2.056316	
Prob(F-statistic)		0.000000		

As shown in Table 2, when the relationship between the FP in terms of ROE and SDG is analyzed, the change in ROE was 12.22% when SDG changed by 1% in the opposite direction with a significance level of 0.05 ($\alpha=0.05$), which shows the significance of this relationship. When comparing FS with ROE, the latter changed by 11.65% while the former changed by 1% in the same direction with a significance level at 0.05 ($\alpha=0.05$). Moreover, ROE changed by -4.55% when BS changed by 1% with an impact in the opposite direction at a significance level of 0.05 ($\alpha=0.05$). When the IO changed by 1%, ROE was expected to change by -3.66% with an impact in the opposite direction.

The above equation also gave some other relevant statistical values, which can be taken for discussion. The R-squared value was estimated to be 0.7927, indicating the impact of the independent variable over the estimated dependent variable up to 79.27%. However, the F-statistic value was found to be 39.54, indicating the impact of all the independent variables over the dependent variable in the model up to 39.54 with a

significance level of 0.01 ($\alpha=0.01$). The value of the Durbin-Watson statistic was found to be 2.06, which confirms the fact that the model is free from autocorrelation.

Autocorrelation and heteroskedasticity were evaluated and tested using the Breusch-Godfrey serial correlation LM test. This test gave the Obs*R-squared or chi-square test of 2.378341 with the p -value of 0.30. Statistically, these values indicate non-significance, thus concluding the absence of autocorrelation in the model. Furthermore, the study tested the presence of heteroskedasticity using the Breusch-Pagan-Godfrey heteroskedasticity test. In statistics, several tools are available to test the above issue. However, this study again chose to apply the above testing method as it is generally acceptable by academicians in the field, along with its ability to test the subject matter accurately and without bias.

The result of the Breusch-Pagan-Godfrey heteroskedasticity test showed the value of the Obs*R-squared or chi-square test to be 3.52 with the p -value of 0.60. Again, these values indicate non-significance, hence indicating the absence of heteroskedasticity. Similarly, the study examined the problem of multicollinearity using the same software, which also did not find it in any of the models.

From the above discussion, the study indicates the absence of autocorrelation, multicollinearity, and heteroskedasticity. This further indicates the fact that the structured model is not spurious, which is confirmed by the conclusion of the study's hypotheses.

Testing Variables

While evaluating the relationship between FP in terms of ROE and SDG, it was found that the SDG had an impact on ROE, showing a negative relationship with the magnitude of 12.26% at a significance level of 0.05. In addition to this finding, the study tested the hypothesis using the t-test and the p -value. The t-test was estimated to be 34.27 with the p -value of 0.00, indicating the rejection or acceptance (HROE) of the stipulated hypothesis. This finding is also supported by Vasanth et al.,²⁵ and Lassala, Apetrei, and Sapena.²⁶

Control Variables

The relationship between FP in terms of ROE and FS was found to be positive with the magnitude of 11.65% at the significance level of 0.05. This hypothesis was tested using the t-test and the p -value, which showed the t-test value to be 20.95 with the p -value of 0.00. This finding is also in line with the study by Hirdinis²⁷ and Olwale, Ilo, and Lawal.²⁸ With regard to the relationship between FP in terms of ROE and BS, the result showed a negative relationship with the size of -4.55% at a significance level of 0.05. The study

25 Vasanth, Selvam, Lingaraja, and Ramkumar, "Nexus between Profitability and Environmental Performance," 433.

26 C. Lassala, A. Apetrei, and J. Sapena, "Sustainability Matter and Financial Performance of Companies," *Sustainability* 9 (2017): 1498.

27 M. Hirdinis, "Capital Structure and Firm Size on Firm Value Moderated by Profitability," *International Journal of Economics and Business Administration* VII, no. 1 (2019): 174–191.

28 S. L. Olwale, M. B. Ilo, and K. F. Lawal, "The Effect of Firm Size on Performance of Firms in Nigeria. Aestimatio," *The IEB International Journal of Finance* 15 (2016), 2–21.

tested this hypothesis with the t-test and the p -value, which showed the t-test value to be -22.26 with the p -value of 0.00. This finding is also in line with the study by Dogan and Yildiz²⁹ and Lin and Jen.³⁰ While testing the relationship between FP in terms of ROE and IO, the result showed a negative relationship with the size of -3.66% at the significance level of 0.05. The analysis further examined the hypothesis with the t-test and the p -value, which found the t-test value to be -32.63 with the p -value of 0.00. This finding is in line with the study by Rosalina and Nugraha.³¹

Based on these results, different relationships can be found at different magnitudes of impact. However, this study manages to prove the hypotheses and accept them statistically and academically. This can be attributed to the optimization of different measuring tools and the reliable econometric software. Moreover, the findings are supported by relevant studies, which shows the accuracy of the results. The following section presents further discussions and conclusion based on the analyzed results, in order to give a better understanding of the results and their implications.

DISCUSSION

This study mainly focuses on the aforementioned objectives by assessing the relationship between the studied variables. There are two dependent sub-variables under the FP indicator, while the independent variables were the environmental score of the SDGs (SDG), firm size (FS), board size (BS), and ownership structure (institutional ownership; IO). In this study, FP was measured by ROA and ROE. The analysis result can be concluded as given below.

ROA and Other Independent Variables

The relationship between FP in terms of ROA and the other independent variables, namely the SDG, FS, BS, and IO, was at the significance level of 0.05 or the 95% confidence interval. The model obtained from the analysis was in the form of white noise, which showed that the model was not spurious. This, in turn, showed that the model was free from multicollinearity, heteroskedasticity, and autocorrelation. Therefore, this model was used to further elaborate the study under different conditions. When the environmental score of the SDGs changed by 1%, the FP in terms of ROA varied according to the parameter or the slope, also known as the elasticity value. Such a relationship was positively correlated and consistent with the hypothesis at the 95% confidence interval. Under the same ratio of change in FS, the same reaction of FP in terms of ROA was equal to the elasticity value. Such a relationship was also found to be positively correlated and consistent with the

29 M. Dogan and F. Yildiz, "The Impact of the Board of Directors' Size on the Bank's Performance: Evidence from Turkey," *European Journal of Business and Management* 5, no. 6 (2013): 130–141.

30 J. C. Lin and F. Jen, "An Examination of Board and Firm Performance: Evidence from Taiwan," *The International Journal of Business and Finance Research* 5, no. 4 (2011): 17–34.

31 A. D. Rosalina and N. Nugraha, "The Effects of Ownership Structure on Bank Profitability," *Advances in Economics, Business and Management Research* 65 (2018): 42–46.

hypothesis at the 95% confidence interval. When there was a change of 1% in BS, FP in terms of ROA was closer to the elasticity value. Its relationship direction was found to be negatively correlated but consistent with the hypothesis at the 95% confidence interval. In addition, when IO changed by 1%, FP in terms of ROA was changed accordingly, being equal to the elasticity value. A negative correlation was found in this relationship, which was consistent with the hypothesis at the 95% confidence interval.

The hypotheses of the study were tested by examining the relationship between the dependent and independent variables. A positive relationship between FP in terms of ROA and SDG was found, whose t-test value was greater than the t-critical value at the 95% confidence interval. Therefore, the study accepts (HROA) the stipulated hypotheses. The analysis of the study found a positive relationship between FP in terms of ROA and FS, whose t-test value was greater than the t-critical value at the 95% confidence interval. In addition, the analysis confirmed the negative relationship between ROA and BS, whose t-test value was also greater than the t-critical value at the 95% confidence interval. Finally, the study confirmed the negative relationship between ROA and IO, whose t-test value was again greater than the t-critical value at the 95% confidence interval.

ROE and Other Independent Variables

The relationship between FP in terms of ROE and the other independent variables, namely the SDG, FS, BS, and IO, was analyzed at the significance level of 0.05 or the 95% confidence interval. The obtained model was in the form of white noise, being free from spuriousness. The model ensured the absence of multicollinearity, heteroskedasticity, and autocorrelation. Therefore, the result of the study was further analyzed to draw the following conclusions under different conditions. When SDG changed by 1%, FP in terms of ROE varied according to the parameter or the slope, also known as the elasticity value. This relationship was found to be positive and consistent with the given hypothesis at the 95% confidence interval. While there was a change in FS by 1%, FP in terms of ROE varied accordingly, being equal to the elasticity value. The direction of such a relationship was found to be positive at the 95% confidence interval. When BS changed by 1%, FP in terms of ROE varied at the same elasticity value with a negative relationship. This finding was tested at the 95% confidence interval. Finally, when IO changed by 1%, FP in terms of ROE varied, which was equal to the elasticity value with a negative relationship at the 95% confidence interval.

From the assessment of the hypotheses, the study draws the following conclusions. The relationship between ROE and SDG was found to be positive, whose t-test value was greater than the t-critical value at the 95% confidence interval. Therefore, the study accepts the stipulated hypothesis (HROE). In addition, a positive relationship between ROE and FS was found, whose t-test value was greater than the t-critical value at the 95% confidence interval. The relationship between FP in terms of the ROE and BS was found to be negative, whose t-test value was greater than the t-critical value at the 95% confidence interval. Furthermore, the relationship between ROE and IO was also found to be negative, whose t-test value was greater than the t-critical value at the 95% confidence interval.

CONCLUSION

The SDG agenda is a much-needed global call that allows all stakeholders to participate in battling the global crisis. Climate change is one of the well-known causes of suffering and deterioration worldwide. As part of the global action, the private sector must participate through its investments, initiatives, and even responsible production. This sector is among the ideal stakeholders with great capacity to help the UN achieve the SDGs. In return, it is necessary to show that there are incentives for them after taking actions to fulfill the SDGs. Therefore, this study investigates the relationship between the performance of the SDGs in terms of environment and financial performance.

In addition, the study examines the magnitude of the impact between the two performances, given that they are correlated. It finds that the environmental performance of the SDGs had a significantly positive relationship with both ROA and ROE. Overall, the study concludes that a higher score of the environmental performance of the SDGs can lead to higher financial performance of the Shariah-screened firms with respect to their ROA and ROE. Furthermore, the environmental performance of the SDGs can be enhanced by improving the resource use of firms, increasing innovation, and reducing emissions. The control variables, including firm size, board size, and institutional ownership, are significantly related to the financial performance with different magnitudes and directions. These varied results can be used to push companies to increase their financial performance.

This study is carefully implemented coupled with a methodical research process and application of the multiple regression model to show the relationships between the dependent and independent variables. This study also makes further effort to ensure that the testing model has a property of BLUE, resulting in validation of the models. Upon analyzing the spuriousness and robustness of the studied model, this study confirms the absence of autocorrelation and heteroskedasticity. Compared with other studies, this study has shown its significance through a thorough research framework and recent data integration.

By promoting and partaking in the environmental performance of the SDGs, the firms benefit and profit from financial performance both in the short and long run. Considering the current trend of global investors, many have considered responsible aspects, including environmental conservation, before making their investment. By applying the concept of green finance, sustainable responsible investing, and circular economy, companies are believed to benefit from greater incentives by promoting the SDGs and their environmental preservation. Therefore, it is recommended for all companies to expand their investments and projects for the purpose of the SDGs. If companies focus too much on their own goals without taking global environmental and social responsibility, they may not be able to enjoy future resources, as they all would be used up and destroyed without any replacement, rather than preserving and protecting them. Therefore, companies should focus on improving ways to be better responsible by reducing air pollution and CO₂ emissions as much as possible. Moreover, they should also play an active role in the community and sponsor innovative projects for the betterment of the planet.

LIMITATIONS AND FUTURE STUDIES

This study has a shortage of data, leading to a limit in the scope of the study into the heavy industry with four sub-sectors under the energy sector. The findings obtained in this study may not truly reflect the entire market through all the constituents listed in the DJIMWI. Similarly, it may not necessarily reflect other areas relevant to this study, as there are still many areas that need to be explored further. The small data source may not produce most accurate and reliable results. However, this study has explored what is necessary to answer the research questions by reducing potential error in its findings.

The study is limited to four variables, namely the environmental scores of the SDGs, firm size, board size, and ownership structure. In fact, financial performance is affected by a number of factors other than the ones discussed here. Therefore, it is important for future research to consider other factors coupled with different dimensions, including the social, developmental, and governance performance of the SDGs. The reason is that these scores will indeed have an impact on the value creation of companies while addressing modern challenges without compromising future resources. In addition, a comprehensive study should be conducted to integrate all other sectors such as manufacturing firms, financial companies, or transportation firms, in order to further investigate the impact made by different sectors and how they are off-setting or reconciling each other, in an effort to achieve the SDGs.

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