

**FROM VALUATION TO VIABILITY: HOW FIRM VALUE AND CREDITWORTHINESS INFLUENCE SUSTAINABILITY?**

**Wajid Alim**

Assistant Professor, Lahore School of Accountancy and Finance, University of Lahore. [wajiduolcc.edu.pk](mailto:wajiduolcc.edu.pk)

**Muhammad Arham**

MPhil Scholar, Lahore School of Accountancy and Finance, University of Lahore

**Ammara Sarwar\***

Assistant Professor, Department of Management Sciences, The University of Lahore, Sargodha Campus. Corresponding Author Email:

[ammara.sarwar@sgd.uol.edu.pk](mailto:ammara.sarwar@sgd.uol.edu.pk)

Ali Raza

Department of Management Sciences, The University of Lahore Sargodha Campus. [Alirazagondal44@gmail.com](mailto:Alirazagondal44@gmail.com)

**Haji Hussnain Shah**

Lecturer, Department of Management Sciences, The University of Lahore, Sargodha Campus. [hussnain.shah@lbs.uol.edu.pk](mailto:hussnain.shah@lbs.uol.edu.pk)

**Abstract**

Individual and institutional investors have increased their interest in environmental, social, and governance (ESG). In the last decade, the amount of assets under management in socially responsible investment products has grown. Given the ever-growing importance that Millennial and Z generations have posed and are posing on the theme, this trend is intended to accelerate. This study aims to examine the influential role of firm value and creditworthiness on a firm's sustainability in an international setting by using the ESG score as an integrated measure of a firm's sustainability performance. There are two theories regarding the impact of a firm's value and creditworthiness on a firm's sustainability. The stakeholder theory argues that businesses should consider the interests of all stakeholders, not just shareholders, and that creating value for multiple stakeholders leads to long-term success. Agency theory provides insights into the challenges of managing relationships where decision-making authority is delegated and helps identify strategies to mitigate conflicts of interest and improve organizational

performance. To perform empirical tests, the study used an international sample for 5 years between 2017 and 2022. The authors find a positive relation between firm value and creditworthiness with sustainability performance, after controlling for variables that have been found to affect firm sustainability in the existing literature. A higher debt service coverage ratio indicates a lower risk of default thus leading to higher firms' sustainability. Similarly, firms having good value significantly contribute toward sustainability. Given the growing international capital market and intensifying global competition, the valuation implications of sustainability in an international context are of practical interest to management, investors, and regulators worldwide. The outcome of the research encourages policymakers and management to enhance the firm's value to contribute well to sustainability. The current paper studies the international variation in market valuation and creditworthiness of firm sustainability performance in terms of the Stakeholder and agency theories on sustainability. The authors explore the relevance of sustainability performance concerning investor protection and the reporting environment across countries.

**Keywords:** Sustainability, Firm Value, Creditworthiness, Developed Countries

### **Introduction**

In today's world, sustainability is a major concern. The origins of sustainability can be traced back to the 1700s when its full implications were not yet understood. During this period, behavior was primarily influenced by religion, societal norms, ethical principles, and cultural values; ethical investing strategies that considered these factors were often overlooked. In the 1980s and beyond, legislation focused more on the economy, the environment, and societal well-being (Cubas-Díaz & Martínez Sedano, 2018). Sustainability has become a crucial component of business strategy for future generations and company expansion, as it involves a long-term evaluation of critical factors (Sorin, Adrian-Nicolae, & Eugen, 2022). An organization's capacity to

sustain itself, ensuring ongoing growth through efficient resource utilization and forward-thinking practices, depends on its commitment to sustainability. Modern sustainability is achieved by integrating environmentally conscious practices, ethical social engagement, and sound economic strategies, fostering a harmonious and enduring global community (Bateh, Heaton, Arbogast, & Broadbent, 2013; Hariram, Mekha, Suganthan, & Sudhakar, 2023).

The current study provides a comprehensive approach to achieving sustainability considering the range of factors. It offers insights about an additional dimension encompassing a large body of study. Specifically, the study focuses on relevant factors such as a firm's value and creditworthiness concerning sustainability. Strong profit margins that support operations, reserve building, and reinvestment are the foundation of a healthy company's value (Sutomo & Budiharjo, 2019). It has been argued that sustainability practices play a crucial role in shaping creditworthiness in the market because this provides a good signal to the market and makes firms safer and more secure borrowers (Bahl, Kiran, & Sharma, 2023; Bonacorsi, Cerasi, Galfrascoli, & Manera, 2024). Strong creditworthiness reflects a firm's financial health which is considered to be a driver for sustainable growth (Stolper, 2009). Furthermore, this also compels firms to invest in sustainable practices (ESG) to get the attention of the stakeholders and investors (A. Almaqtari, Elsheikh, Tawfik, & Youssef, 2022).

Investors view firm value as a gauge of company success since it reflects worth based on revenue, profitability, and assets (Haryono, Iskandar, Paminto, & Ulfah, 2016). Corporate sustainability involves considering economic, social, and environmental factors in decision-making. (Rahman, 2022) assert that boosting sustainability reporting is essential for enhancing one's brand and drawing in investors who prioritize sustainability. Companies that prioritize sustainability benefit stakeholders in the long run (Eccles, Ioannou, & Serafeim, 2014; Fulton, Kahn, & Sharples, 2012). Sustainability disclosure has a major effect on firm value (Haryono & Iskandar, 2015). Creditworthiness is

essential for both people and companies. For people, it has an impact on lending terms and credit availability. It establishes a company's capacity for funding, which is essential for expansion (Attig, El Ghouli, Guedhami, & Suh, 2013). Sustainability practices and creditworthiness are always found in bidirectional relationships. Firms investing more in sustainable practices are considered to have good credit scores because of catching more investment and funds (Kanno, 2023). On the other hand, firms having good credit scores get better credit terms (Clark, Feiner, & Viehs, 2015) for financing which maximizes fund availability for investing in ESG practices.

### **Literature Review and Proposed Hypotheses**

Sustainability practices like environmental, social, and governance (ESG) factors play a prevalent role in the long-term success of any firm. Almost all firms now actively invest in ESG practices which are influenced by other factors within the firm like governance, financial flexibility, firm strategy, firm value, and firm creditworthiness. A firm's value displays a firm's financial health in the market while a firm's creditworthiness reflects the capacity of the firm to fulfill its debt obligation. Both significantly influence the firm's sustainability practices which ensure the long-term planning and success of firms. Literature witnessed diverse findings between firms' value, creditworthiness, and sustainability practices across countries.

### **Firm Value and Sustainability**

The nexus between firm value and sustainability is due to various basic factors. Based on the stakeholder theory, firms must consider stakeholders like customers, suppliers, investors, and society while making decisions to ensure prosperity. This method quietly deviated from the conventional approach of maximizing shareholder wealth, where the interest of shareholders was giving preferences over other stakeholders. Among all stakeholders, considering sustainability practices for protecting the environment like environmental, social, and governance (ESG) activities that make the environment friendly for human beings has been proven to have a fruitful influence on the overall

firm's value.

Studies examining the influence of sustainability on business value yield inconclusive findings. Certain research indicate a positive correlation, suggesting that sustainability performance increases firm value (Farrukh, Younis, & Longsheng, 2023; Lo & Sheu, 2007; Yu & Zhao, 2015). This effect is particularly significant in nations with robust investor protection and elevated disclosure standards (Yu & Zhao, 2015). Sustainability reporting can have a favorable effect on many ways of measuring a company's worth, such as Tobin's Q, market value per share, and the price/book value ratio (Farrukh et al., 2023; Lo & Sheu, 2007). A study conducted by (Hart & Ahuja, 1996) revealed that companies who adopted pollution avoidance techniques saw substantial enhancements in both their profitability and market value. This study demonstrates that environmental sustainability should be viewed as more than just an expense, but rather as a strategic investment that has the potential to generate significant financial gains. Social sustainability, encompassing labor standards, community participation, and human rights, significantly impacts the value of a company. Companies that place high importance on social responsibility frequently experience improved staff morale, customer loyalty, and brand strength. (Edmans, 2012) discovered that organizations included in the "100 Best Companies to Work for in America" produced superior stock returns compared to their counterparts. These findings indicate that implementing ethical labor standards and fostering a supportive work environment can result in enhanced financial performance.

However, conflicting evidence indicates a substantial negative correlation between business value and compliance with Global Reporting Initiative (GRI) sustainability reporting standards (Nguyen, 2020). The beneficial effect of sustainability on business value substantiates the value-creating theory rather than the value-destroying theory (Yu & Zhao, 2015). Moreover, a significant interaction effect between corporate sustainability and sales growth on firm value has been identified (Lo & Sheu, 2007).



*H1: The Firm's value has a significant impact on the firm's sustainability*

### **Creditworthiness and Sustainability**

The correlation between creditworthiness and sustainability has attracted increasing attention among academic and professional finance circles. This review examines the existing research to understand the effects of sustainable initiatives on creditworthiness and the reciprocal influence. Significant subjects include the importance of environmental, social, and governance (ESG) aspects, their impact on credit ratings, and the broader implications for financial markets and business behavior. Studies have shown that companies that put a lot of effort into having strong environmental practices and good social performance tend to have lower risk profiles. This is because there are less regulatory risks, operations are more efficient, and the company's reputation is better. Bauer, Guenster, and Otten (2004) found that businesses that use proactive environmental management strategies usually had lower debt costs.

Over time, credit rating agencies have added environmental, social, and governance (ESG) factors to their rating systems. The fact that a company is taking sustainability risks into account in its operations shows that it is becoming more conscious that these risks could affect the company's financial health. Moody's report from 2019 says that ESG criteria are now a key part of figuring out how creditworthy issuers are. The report stresses that environmental hazards, such as climate change, can lead to physical and transitional problems that make enterprises less stable financially. There is strong evidence that investing in a way that is good for the environment does not mean giving up on making money. Research conducted by Friede, Busch, and Bassen (2015) indicates that the majority of studies have identified a positive association between environmental, social, and governance (ESG) factors and financial performance. Research shows that organizations with higher ESG scores usually have lower costs of capital. This can be connected to the idea that activities that are good for the environment have less risk. Garg,

Rahman, and Qureshi (2014) discovered that companies with higher corporate social responsibility (CSR) rankings experience reduced expenses while obtaining equity financing. Sustainability practices enhance the effectiveness of risk management frameworks. Eccles et al. (2014) contend that firms with a strong commitment to sustainability are more adept at handling both risks and opportunities, resulting in improved long-term performance.

Extensive evidence strongly supports the idea that sustainability initiatives have a beneficial impact on creditworthiness. ESG elements are highly influential in determining a company's level of risk, the cost of its capital, and its overall financial success. As investors and regulators increasingly prioritize sustainability, the incorporation of sustainability into credit assessment processes is expected to become more profound. Future research should prioritize the development of universally accepted measurements for evaluating the influence of environmental, social, and governance (ESG) aspects on the ability to repay debts, as well as investigating the lasting consequences of sustainable practices on financial markets.

*H2: The firm's creditworthiness has a significant impact on the firm's sustainability*

### **Methodology and Empirical Data**

To check the relation of dependent and independent variables the data for the variables is extracted from the database Refinitiv. The data is employed for four major developed economies China, UK, USA, and Germany. As developed countries cover the major portion of the globe. They emit 23 billion tons of CO<sub>2</sub> which indicates 62% percent of global emissions compared to under-developed countries which is 14 billion tons of CO<sub>2</sub> and cover 38% of global emissions. This means that developed countries emit a higher proportion and contribute to a higher level of harm to society. As it has become a major issue for sustainable growth. The sample under study covers nearly 50% of global emissions and the other is caused by under-developed countries which is less

in proportion to developed countries. Our study uses a purposive sampling technique for the selection of the data.

$$FS_{it} = a_0 + a_1(FV)_{it} + a_2(CW)_{it} + a_3(SIZE)_{it} + \varepsilon_{it} \text{-----}(1)$$

In this model, i represents the number of countries under study (i = 1,2,3,4). Here t represents the number of years, which range from 2017-2022. FS stands for firms' sustainability the dependent variable. Firms' sustainability is our main area of concern under study as it is a key factor for every business. FV represents the firm value, and CW represents the creditworthiness both included as an independent variable. The research aimed to investigate the impact of firm value and creditworthiness on firms' sustainability, as achieving sustainability is the major issue under discussion. So, this research finds out whether these independent variables have any significant impact on firms' sustainability.

**Table 1: Measurement of variables**

<b>Variable Name</b>	<b>Definition</b>	<b>Source</b>	<b>Reference</b>
<u><b>Dependent Variable:</b></u>			
<i>Firm's Sustainability (ESG)</i>	The ESG disclosure score is the score given to companies that practice ESG activities. This score ranges from 0 to 100. A higher number means a high ESG Score.	Refinitiv	(Aydoğmuş, Gülay, & Ergun, 2022)
<u><b>Independent Variables:</b></u>			
<i>Firm's Value</i>	Total Market Value of the Firm measured by Enterprise Value divided by EBITDA.	Refinitiv	(Ebenezer, Islam, Junoh, & Yusoff,



*Creditworthiness* The credit score of the firm is determined using the debt service coverage ratio (DSCR). Refinitiv Christina et al. (2022)

#### Control

#### Variables:

*Firm Size* The natural log of the firm's total assets. Refinitiv Nguyen, D. T. T. (2020)

### **Empirical Results**

**Table 2: Descriptive statistics**

<i>Variables</i>	<i>Obs.</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min</i>	<i>Max</i>
<i>FSUS</i>	2400	54.129	20.415	0.660	95.610
<i>FV</i>	2400	13.737	42.737	-1046.40	678.949
<i>DSCR</i>	2400	7.598	2.260	-0.700	21.935
<i>FSize</i>	2400	7.004	0.842	4.360	8.983

Table 2 represents the descriptive stats of the dataset. The descriptive stats elaborate the key features of the data. It provides the main overview and characteristics of the data. A total of 2400 observations are employed in the dataset. The dependent variable firms' sustainability represented by (FSUS) gives the mean value to be 54.13, the standard deviation is 20.42, the minimum value range in the dataset is 0.66 and the maximum value of the data set is 95.61. The independent variable firm value represented by (FV) has a mean value of 13.74, the standard deviation around the mean is 42.74, the minimum value of the dataset is -1046.4 and the maximum value is 678.95. Another. Another independent variable creditworthiness measured by debt service coverage ratio (DSCR) has a mean value of 7.59, a standard deviation is 2.26, a minimum value is -0.70 and a maximum value is 21.93 in the dataset.

The control variable firm size is represented by (FSize) gives a mean value of 7.00, a standard deviation of 0.84, a minimum value of 4.36, and a maximum value of 8.98 in the dataset.

**Table 3: Correlation matrix**

<i>Variables</i>	<i>FSUS</i>	<i>FV</i>	<i>DSCR</i>	<i>FSize</i>
<i>FSUS</i>	1.000			
<i>FV</i>	0.011	1.000		
<i>DSCR</i>	0.041	0.007	1.000	
<i>FSize</i>	0.149	0.024	0.027	1.000

The correlation matrix table 3 provides the relationship among the variables. It tells about the strength and direction of the variables. A correlation matrix was conducted to affirm the absence of multicollinearity among variables. The absence of multicollinearity means no perfect correlation exists among explanatory variables, hence obeying one of the basic assumptions of the CLRM.

**Table 4: Variance inflation factor**

<i>Variables</i>	<i>VIF</i>	<i>1/VIF</i>
<i>FV</i>	1.000	0.998
<i>DSCR</i>	1.000	0.998
<i>FSize</i>	1.310	0.761
<i>Mean</i>	1.250	

Table 4 provides the results of the variance inflation factor. According to the rule, the Variance Inflation Factor (VIF) values range from 1 to 2 confirming the absence of multicollinearity satisfying the basic assumption.

**Table 5: Heteroscedasticity Test**

<i>chi2</i>	0.02
<i>Prob</i>	0.8894

Table 5 presents the results of the Heteroscedasticity test. The heteroscedasticity test is used to determine if there is some scatterness of the

data around the mean value or not. The violation of this assumption means that there is some error in the data referring to heteroscedasticity. The study used the Breusch Pagan test to unveil whether the error terms are normally distributed. Through our findings, the probability value (0.88) indicates the acceptance of the null hypothesis proclaiming that the data is homoscedastic.

**Table 6: Hausman Test**

<b><i>chi2</i></b>	<b><i>22.12</i></b>
<b><i>Prob</i></b>	<b><i>0.0005</i></b>

Table 6 exhibits the findings of the Hausman test to choose which model is suitable between the fixed and random effect models for the estimation. The P-value indicated is (0.0005) which is much lower than (0.05) at a significance level of (5%) this means that we can reject the null hypothesis that the random effect model is appropriate.

**Table 7: Fixed effect Model**

<b><i>FSUS</i></b>	<b><i>Coef.</i></b>	<b><i>Std. Err.</i></b>	<b><i>T</i></b>	<b><i>P</i></b>
<i>FV</i>	0.0085	0.0076	1.12	0.026**
<i>DSCR</i>	-6.8309	4.1209	-1.66	0.097*
<i>FSize</i>	5.6876	0.4500	12.64	0.000***
<i>Prob &gt; F 0.0003</i>				

Note: \*, \*\*, and \*\*\*, represents significant at 10%, 5%, and 1%.

Table 7, highlights the findings of the fixed effect model uncovering the influence on dependent variables due to variation in independent variables. The results of the fixed effects model used in this study reveal that firm value (FV) has a significant (0.026) and positive (0.0085) impact on firms' sustainability. Findings are supported by arguments that the firm having a good position or good value has the resources to invest further in environment-friendly projects. In addition, firms with a stable position rely on a sustainable position and always struggle to retain such a position so that the company makes investments in corporate social responsibility projects.

Furthermore, the significant relationship between firm value and firm sustainability also discloses the fact that firms after achieving stable growth contribute well to a society based on the Kuznets curve hypothesis which proclaims that growth and sustainable environment have a U-shaped association. The findings of the study also align with the previous findings of (Buallay, 2020; Gherghina & Vintila, 2016).

The findings of the study are opposed to the prior studies (Haryono & Iskandar, 2015), which found a significant negative relationship between firm value and sustainability. A relative concept has been drawn that organizations have to grow instantly and develop sustainability. Investors in the short run only appreciate the financial health of the firm. A business is established aiming at maximizing the firm value to increase the prosperity of the stakeholders. Other studies, also have found a negative relation between firm value and sustainability performance of the firm like (Nyirenda, Ngwakwe, & Ambe, 2013; Tjia & Setiawati, 2012). The current study also opposes the findings of (Behl, Kumari, Makhija, & Sharma, 2022; Friede et al., 2015) indicating that investors are not concerned about the sustainability disclosures, because increased advertising intensity and other concentrations, make investors face financial losses and lose competitiveness due to direct expenditure, less focus on quality products, ethical and management responsibilities towards other non-financial goals, causes business-focused firms to face difficulty to incorporate sustainability practices. The previous findings are also parallel to our findings which indicate that firm value significantly impacts firms' sustainability practices.

Furthermore, creditworthiness (DSCR) is also found to be significant (0.097), and negatively (-6.8309) influences a firm's sustainability. This means that a 1% increase in creditworthiness decreases firms' sustainability by (683.09) %. The negative influence of creditworthiness on the firm's sustainability is that it may be difficult for businesses with lower credit ratings to meet sustainability targets. Lower credit ratings, which often mean

financial instability or more risk, might make it harder for a company to do things in a sustainable way. Because they don't have enough money and interest rates are going up, these companies may put short-term financial survival ahead of long-term sustainability objectives. Because of this, budget constraints and the need to focus on short-term financial performance may make it harder to adopt eco-friendly technologies, get involved in corporate social responsibility, and put solid governance mechanisms in place. Because of this, a company's sustainability performance may suffer when it has trouble paying its bills, which show up in lower credit ratings. The researchers have also indicated a negative relationship between creditworthiness and firms' sustainability (Devalle, Fiandrino, & Cantino, 2017; Friede et al., 2015; Jamprasert, Kuwalairat, Srivisal, & Sthienchoak, 2020; Kim & Li, 2021; Menz, 2010). This also gives ahead that companies can have additional benefits by having higher credit scores which will allow them to increase their sustainability practices. Accumulatively these studies give evidence that higher credit ratings promise increased sustainability practices

The firm size (FSize) has a P-value of 0.000 revealing that it is strongly significant and the coefficient value is 5.68 revealing that a 1% increase in firms' sustainability is associated with a 568.7% increase in firms' sustainability. The results of the study are associated with earlier conclusions which indicate that there exists a positive relation among creditworthiness and sustainability of the firm. The term credit structure holds benefits for the stakeholders as increased creditworthiness lowers the cost of debt capital and thus gives a positive signal to the firm for sustainability practices

**Table 8: Country-Wise Analysis**

	<i>UK</i>	<i>China</i>	<i>Germany</i>	<i>USA</i>
<i>FV</i>	0.005	0.061	0.061	0.019
	0.011***	0.023**	0.034**	0.017***
<i>DSCR</i>	0.005	-4.561	-6.431	-6.431



0.000***	4.481	1.601	1.601
----------	-------	-------	-------

This study extends the analysis across countries to unveil the nexus between firm value, creditworthiness, and sustainability. finding of the current research proclaims that a firm's value significantly influences the firm sustainability. The table findings highlight that firm value significantly and positively influences firms' sustainability in all four countries. Moreover, results also exhibit that the firm's creditworthiness has a significant positive influence on the firm's sustainability in China, however, it remains negative and insignificant in the remaining countries.

### Conclusion

This study examines the relationship among a firm's valuation, creditworthiness, and sustainability disclosure in four developed economies (USA, UK, Germany, and China) from 2017 to 2022. This research regarded firm value and creditworthiness as independent variables, with sustainability disclosure as the dependent variable. The results of the present study highlight the significant impact of firm valuation and creditworthiness on sustainability disclosure practices. The results show a positive link between firm worth and sustainability disclosure. This means that when a company's value goes up, it is more likely to provide information about its sustainability initiatives. Also, organizations that are valued may feel more pressure to be open with their stakeholders, such as investors, consumers, and regulators, about how they handle their environmental, social, and governance (ESG) issues. This stress could come from the expectations that different stakeholders have of them as they become more aware of how important business sustainability is. Also, companies with higher values may have more money to spend on sustainable practices and, as a result, more to share. This shows that more and more people are realizing that sustainable business practices are good for the environment and society, and they may also help a business make money in the long run. The focus on sustainability disclosure in

high-value companies may also demonstrate that these companies see transparency as a way to get ahead of their competition by showing how committed they are to sustainability and responsible governance. Also, things like conflicts of interest, following the rules, and long-term planning might affect the relationship between corporate value and sustainability disclosure. Companies that have great management strategies, a good governance structure, ecological safety, a capital structure that encourages recycling, high environmental and social standards, policies for stakeholders, and ways to cut down on agency conflicts would be able to focus on the firm's sustainability.

The study faces additional scrutiny because of the identified negative link between sustainability disclosure and creditworthiness. Companies that aren't as creditworthy are less likely to give detailed information about sustainability. This is because of money problems and a desire to stay alive in the near term rather than in the long term. Companies that are having problems keeping their credit ratings may choose short-term financial stability over long-term sustainability efforts, which are often perceived as costly and have long-term benefits. Small enterprises may lack the resources or motivation to invest significantly in sustainable practices, perhaps resulting in inadequate disclosure of sustainability activities. The study's results raise important considerations about how to help or encourage enterprises with bad credit to improve their sustainability disclosure. Regulators and politicians may need to consider frameworks that help enterprises that are suffering financial problems adopt sustainable practices. These frameworks may offer incentives or other types of help that make it easier to balance sustainability with financial recovery.

All of these results show that there needs to be a fair way to get firms of all financial levels to report on their sustainability efforts. It's crucial to make sure that companies with lower credit ratings don't fall behind, even as more and more high-value corporations are making sustainability a part of their business plans. This can be done by making rules that make it easier for

enterprises with low resources to report on and practice sustainability. Also, investors and other stakeholders need to be more active in pressing a company to improve its sustainability policies, no matter what its credit rating is.

### **Policy Recommendations**

This study emphasizes the usefulness of sustainability in a global setting and calls on management and policymakers to give sustainable practices a top priority. According to the research, companies that disclose sustainability issues more thoroughly stand a better chance of gaining investment, gaining the trust of stakeholders, and adhering to changing legal requirements. Businesses that match their values with sustainability will be better positioned to compete successfully and secure long-term success as global markets continue to change. As a result, the study promotes a proactive strategy for enhancing firm value via sustainability, fostering a favorable effect on the commercial and social facets of company operations.

### **Study Limitations**

The study also has some limitations as only a smaller sample size was under study. The data assessed was only limited to developed countries as the unavailability of data for underdeveloped countries made it impossible to study and explore. The study has used data from the period of 2016 to 2021 which only led to a limited time frame. Another limitation is that this period has COVID-19 which caused firms to be affected greatly, worldwide firms faced a major economic issue. This period has interrupted the life cycle of every individual and caused a global lockdown moreover businesses were greatly affected in this period. The impact of this period was not fully explored which became a limitation of the study. Another limitation of the study is the attributes related to the firm value, there may be other important and potentially relevant factors that could be used in the study and their impact was important, these factors must be acknowledged.

## References

- A. Almaqtari, F., Elsheikh, T., Tawfik, O. I., & Youssef, M. A. E.-A. (2022). Exploring the impact of sustainability, board characteristics, and firm-specifics on firm value: a comparative study of the United Kingdom and Turkey. *Sustainability*, 14(24), 16395.
- Attig, N., El Ghouli, S., Guedhami, O., & Suh, J. (2013). Corporate social responsibility and credit ratings. *Journal of business ethics*, 117(4), 679-694.
- Aydoğmuş, M., Gülay, G., & Ergun, K. (2022). Impact of ESG performance on firm value and profitability. *Borsa Istanbul Review*, 22, S119-S127.
- Bahl, K., Kiran, R., & Sharma, A. (2023). Scaling up banking performance for the realisation of specific sustainable development goals: the interplay of digitalisation and training in the transformation journey. *Sustainability*, 15(18), 13798.
- Bateh, J., Heaton, C., Arbogast, G. W., & Broadbent, A. (2013). Defining sustainability in the business setting. *American Journal of Business Education*, 6(3), 397-400.
- Bauer, R., Guenster, N., & Otten, R. (2004). Empirical evidence on corporate governance in Europe: The effect on stock returns, firm value and performance. *Journal of Asset management*, 5(2), 91-104.
- Behl, A., Kumari, P. R., Makhija, H., & Sharma, D. (2022). Exploring the relationship of ESG score and firm value using cross-lagged panel analyses: case of the Indian energy sector. *Annals of Operations Research*, 313(1), 231-256.
- Bonacorsi, L., Cerasi, V., Galfrascoli, P., & Manera, M. (2024). ESG factors and firms' credit risk. *Journal of Climate Finance*, 6, 100032.
- Buallay, A. (2020). Sustainability reporting and firm's performance: Comparative study between manufacturing and banking sectors. *International Journal of Productivity and Performance Management*, 69(3), 431-445.

- Clark, G. L., Feiner, A., & Viehs, M. (2015). From the stockholder to the stakeholder: How sustainability can drive financial outperformance. *Available at SSRN 2508281*.
- Cubas-Díaz, M., & Martínez Sedano, M. Á. (2018). Do credit ratings take into account the sustainability performance of companies? *Sustainability*, 10(11), 4272.
- Devalle, A., Fiandrino, S., & Cantino, V. (2017). The linkage between ESG performance and credit ratings: A firm-level perspective analysis. *International Journal of Business and Management*, 12(9), 53-65.
- Ebenezer, O. O., Islam, M. A., Junoh, M. Z. M., & Yusoff, W. S. (2019). The effects of financing risk on the value of firm and profitability: Evidence from Nigerian commercial banks. *Asian Economic and Financial Review*, 9(7), 864.
- Eccles, R. G., Ioannou, I., & Serafeim, G. (2014). The impact of corporate sustainability on organizational processes and performance. *Management science*, 60(11), 2835-2857.
- Edmans, A. (2012). The link between job satisfaction and firm value, with implications for corporate social responsibility. *Academy of Management Perspectives*, 26(4), 1-19.
- Farrukh, B., Younis, I., & Longsheng, C. (2023). The impact of natural resource management, innovation, and tourism development on environmental sustainability in low-income countries. *Resources Policy*, 86, 104088.
- Friede, G., Busch, T., & Bassen, A. (2015). ESG and financial performance: aggregated evidence from more than 2000 empirical studies. *Journal of sustainable finance & investment*, 5(4), 210-233.
- Fulton, M., Kahn, B., & Sharples, C. (2012). Sustainable investing: Establishing long-term value and performance. *Available at SSRN 2222740*.



- Garg, R., Rahman, Z., & Qureshi, M. (2014). Measuring customer experience in banks: scale development and validation. *Journal of Modelling in Management*, 9(1), 87-117.
- Gherghina, S. C., & Vintila, G. (2016). Exploring the impact of corporate social responsibility policies on firm value: The case of listed companies in Romania. *Economics & Sociology*, 9(1), 23.
- Hariram, N., Mekha, K., Suganthan, V., & Sudhakar, K. (2023). Sustainalism: An integrated socio-economic-environmental model to address sustainable development and sustainability. *Sustainability*, 15(13), 10682.
- Hart, S. L., & Ahuja, G. (1996). Does it pay to be green? An empirical examination of the relationship between emission reduction and firm performance. *Business strategy and the Environment*, 5(1), 30-37.
- Haryono, U., & Iskandar, R. (2015). Corporate social performance and firm value. *International Journal of Business and Management Invention*, 4(11), 69-75.
- Haryono, U., Iskandar, R., Paminto, A., & Ulfah, Y. (2016). Sustainability performance: It's impact on risk and value of the firm. *Corporate Ownership & Control*, 14(1), 278-286.
- Jamprasert, N., Kuwalairat, P., Srivisal, N., & Sthienchoak, J. (2020). *ESG and Creditworthiness: Two Contrary Evidence from Major Asian Markets*. Retrieved from
- Kanno, M. (2023). Does ESG performance improve firm creditworthiness? *Finance Research Letters*, 55, 103894.
- Kim, S., & Li, Z. (2021). Understanding the impact of ESG practices in corporate finance. *Sustainability*, 13(7), 3746.
- Lo, S. F., & Sheu, H. J. (2007). Is corporate sustainability a value-increasing strategy for business? *Corporate Governance: An International Review*, 15(2), 345-358.

- Menz, K.-M. (2010). Corporate social responsibility: Is it rewarded by the corporate bond market? A critical note. *Journal of business ethics*, 96(1), 117-134.
- Nyirenda, G., Ngwakwe, C. C., & Ambe, C. M. (2013). Environmental management practices and firm performance in a South African mining firm. *Managing Global Transitions*, 11(3), 243.
- Rahman, A. (2022). An examination of five financial ratios: The Altman Z Score is a technique used to assess the creditworthiness of selected passenger car companies. *International Journal of Multidisciplinary Research and Explorer*, 2(1), 1-6.
- Sorin, S. R., Adrian-Nicolae, I., & Eugen, R. (2022). A POSSIBLE PREDICTIVE CAUSALITY BETWEEN THE NEW GLOBAL TREND, ENVIRONMENTAL, SOCIAL, AND GOVERNANCE (ESG) AND MARKET SENTIMENT THROUGH “GOLD FUTURES/VIX” RATIO. *Revista Economica*, 74(4), 91.
- Stolper, A. (2009). Regulation of credit rating agencies. *Journal of Banking & Finance*, 33(7), 1266-1273.
- Sutomo, H., & Budiharjo, R. (2019). The effect of dividend policy and return on equity on firm value. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, 9(3), 211-220.
- Tjia, O., & Setiawati, L. (2012). Effect of CSR disclosure to value of the firm: Study for banking industry in Indonesia. *World Journal of Social Sciences*, 2(6), 169-178.
- Yu, M., & Zhao, R. (2015). Sustainability and firm valuation: an international investigation. *International journal of accounting and information management*, 23(3), 289-307.