

Exploring the Impact of Environmental Sustainability on Firm Performance in the Manufacturing Industry in Jordan

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Abstract

Environmental sustainability is an important component of a firm's Corporate Social Responsibility. It relates to firm practices that ensure the conservation of the environment and natural resources, such as water, land and air. This research study aims to study the concept in relation to firm performance in Jordan. It proposes that environmental sustainability practices of a company in Jordan's manufacturing industry positively influence its financial performance. For this purpose, the study assesses the relationship between environmental sustainability score and the profitability ratios. Results reveal a significant positive impact of sustainability score on the ROA of the companies. It is therefore recommended to manufacturing firms in Jordan to focus more on environmental CSR and sustainability practices, which would result in improved efficiency and profitability.

Keywords: Environmental sustainability; CSR; Firm performance; Net margin; ROA; ROE; Manufacturing industry; Jordan.



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1. Introduction

Environmental sustainability is a global issue, which has emerged at the organisational level as a key challenge for the management of manufacturing firms due to the increasing awareness of global warming and the exhaustion of natural resources, causing various stakeholder groups to shift their expectation on green practices (Schrettle *et al.*, 2014). Gimenez *et al.* (2012), explain that studying sustainability from the perspective of the manufacturing field is fundamentally significant due to two reasons; the first one being that manufacturing firms now have to disclose the amount of energy and other natural resources they utilise in their reports as well as, the damage that these activities incur. Second, these firms are now required by law to act in a prudent manner, accounting for the employee's health and safety practices and the impact on the quality of life of the society. This is because manufacturing industries around the world employ the majority of personnel, consequently contributing and impacting external community the most. Hence, firms in these industries account for the significant impact on sustainability's environmental and social dimension (Gimenez *et al.*, 2012).

Sarkis *et al.* (2011), refer to sustainability as the practices of satisfying the demand of the firm's stakeholder's without compromising on the firm's ability to meet the needs of its future stakeholder. However, sustainability in the corporate world is subjected to a broader notion as it encompasses environmental, social and economic aspects; as entailed by the triple bottom line conceptual framework (Slaper and Hall, 2011). That is why the strategic decision-making process now involves the consideration of sustainability as the challenge demands a revision of current business practices. Managers, therefore; have to take into account recent developments in the changing dynamics of markets, assessing the competencies of the firm and predicting future advancements that differentiate their strategy (Aggarwal, 2013).

Empirical evidence from academic and applied literature has examined the relationship between environmental green practices and its impact on firm's financial performance concluding mixed results (Jacobs *et al.*, 2010; Kenneth *et al.*, 2012; Schrettle *et al.*, 2014). Whilst the studies focusing on the relationship of firm's environmental performance and financial stability as a measure of stock market performance largely found a strong positive relationship (Hart and Ahuja, 1996; Jacobs *et al.*, 2010). On the other hand, the studies, which investigated the relationship between sustainability practices and the consumer's willingness to pay a high price for environmentally friendly products found a negative relationship, suggesting that sustainable products are less valued by consumers than non-sustainable products (Anstine, 2000; Luchs *et al.*, 2010).

This paper focuses on the case of Jordanian manufacturing firms. It evaluates whether decisions related to environmental sustainability affects a firm's performance in Jordan's manufacturing industry. By doing so, the study provides fundamental research for future work on sustainability to enhance the firm's performance and contributes to the existing scholarship on environmental sustainability, consequently making managerial as well as theoretical contributions.

2. Literature Review

2.1. Theoretical Background

Environmentally sustainable practices of corporates are referred to the disclosures of impacts business activities have on the environment and natural resources such as water, land, air, and noise pollution. The International Accounting Standards, constituents of an environmental management and communication framework (Eccles and Krzus, 2010). Various studies in the past have examined the impact corporate environmental practices have on firm's

financial performance (Aggarwal, 2013; Luchs *et al.*, 2010). However, the results extracted are concluded to be inconsistent with one contradicting another claim. Here, we can discuss two major schools of thought. One is the conceptual framework of Legitimacy Theory introduced by Lindblom (1994) and the second one is Freeman (1984) Stakeholder Theory.

According to Legitimacy Theory, in order for corporates to survive and sustain in the market for the long run, they essentially need to match the societal norms and meet their expectations. This theory, therefore, argues that the characteristics of corporate social and environmental responsibility help firms to minimize the risks of supervisory actions which regulates environmental damaging business activities and tends to spread the risks of boycotts by stakeholders and pressure groups, thereby strengthening an organisation's warrant to operate making it less costly. On the other hand, Stakeholder Theory highlights that firms have greater accountability towards its stakeholders apart from the shareholders since stakeholders consist of all the customers, suppliers, government, community, employees and future coming generations. Henceforth, it is critical for firms to strengthen their relationship with the broad range of stakeholders through their corporate social and environmental responsibility. Subsequently suggesting that if firms ignore the interest of these stakeholders, it may result in the negative brand image of the organisation within public which would lead to an unfavourable impact on sales and financial performance of the firm (Aggarwal, 2013).

2.2. Corporate Social Responsibility (CSR) and Environmental Sustainability

Baumgartner (2014), has explained that CSR in principle is seen as an integrated approach to incorporate social and environmental aspects into corporate activities. Scholars have presented several contradicting arguments on the exact definition of Corporate Social Responsibility (CSR) resulting in hindrance to understanding the antecedents and impacts of this business activity. Some researchers in the past debate that CSR activities for corporates are decided upon the consideration of maximising shareholders wealth as the single social responsibility which a business has Jensen (2002); Levitt (1958); McWilliams and Siegel (2001). Others discuss CSR in context to those actions which reflect social good, going beyond the internal benefits of the firm and are an essential requirement by the state's law (Babiak and Trendafilova, 2011; Baumgartner, 2014; Orlitzky *et al.*, 2011). The general consensus, however, has made natural environmental the basic fundamental of any CSR activities. Existing studies have honed upon the development of environmental management practices by corporates as an indication of awareness of their business activities impacting the environment. Research also criticizes such environmental practices of corporates merely as an indicator to serve to the shareholders that the invested company has the best interest in society and is concerned about environmental safety. This way many corporates and brand name have avoided public pressure groups and societal ban from consumers of their product.

Based on the CSR and environmental sustainability the research has found a converging shift in management literature due to the shared practices and disclosure of economic, environmental and social concerns. Shrivastava in 1995 observed an 'eco-centric' management shift highlighting the rising concern of sustainable organisations in relation to ecology and environment. The organisation in manufacturing industries being governed under the principle of the eco-centric framework is identified to create harmonious relationships among their corporate and natural social environments. Consequently, seeking systematic ways to renew natural resources and simultaneously minimizing pollution and managing waste. Therefore, environmental responsibility is now assessed through the existing pollution abatement programs and laws, which goes to the extent to make corporates conserve natural resources, and volunteer in eco-friendly practices, natural resources restoration via reducing emissions from auto machine operations. Braam *et al.* (2016), suggested that recent studies identify a shared concern for social and environmental activities subjected to rectify the harm being done on the environment via business activities. CSR addressing environmental management are basic consequences of legal and social sanctions which require regulatory compliance on waste an organisation produces annually. Regardless of the main aim of corporates environmental strategy that is constituted on the concerns of shareholders, consumers, employees or government, environmentalism as a whole has now transformed from something seen as an external market environment to a fundamental objective of any organisation.

According to studies, CSR is perceived to be connected to environmental sustainability challenges. The study aimed to analyse the prospects for CSR to be a partial solution for the environmental sustainability challenges. It focused on the ethical models and theories of CSR, which further focused on management's responsibilities, in order to maintain a balance between the stakeholder's interest and CSR ethical requirements. The study took into account the institutional perspectives from Europe, US and UK for the effectiveness of the ethical implications of CSR, as validation for environmental sustainability challenges and initiatives. As the shareholders' hold a prominent position in the US and UK companies, the stance of ethical implications of CSR in these countries is contradicting and can be difficult to understand. Shareholders have been found to be reluctant to accept and bear the short-term costs related to the CSR projects. The study also presented the strategic model for CSR, according to which, in order to enhance corporate profitability and shareholder's wealth, companies must spend on non-profitable and CSR activities. Furthermore, this theory proved the potential to overcome the obstacles in the way to acquire ethical CSR values and shareholders goals, as the theory presented a strategic cost-benefit analysis to support this idea. The idea was that the companies will invest in the environmental sustainability project if they found it beneficial for them in the longer-runs (Millon, 2015).

2.3. Environmental CSR and Firm Performance

Firms are being extremely conservative in relation to their environmental management disclosure. Indeed, with each passing year, many reports account for financial stability as an effect of environmental performance development (Kitsikopoulos *et al.*, 2018). Correspondingly, Kassinis and Vafeas (2006) and Welford *et al.* (2007) examined moderating affect CSR has on financial performance and institutional investors concluding that environmental responsibility had a positively significant impact on capital structure ownership, although keeping in mind that financial performance was high at that time.

Proactive CSR has been defined as a process that involved business policies and practices adopted voluntarily by the companies, which go beyond the governing requirements, in order to perform their social responsibilities to positively respond to the society needs (Torugsa *et al.*, 2012). Adeneye and Ahmed (2015), have described the theory of corporate social responsibility to be connected to social, environmental and economic issues related to firms' operations. This study is inclined towards environmental issues caused by the firm's actions. Environmental CSR has been described to be a key and discrete part of the main concept of CSR, which has been described by different researchers having different perspectives. Environmental Corporate Social Responsibility (ECSR), has been defined to be an obligation to perform the company's operations, which promote the elimination of waste products and emission of hazardous gases while managing the use, effectiveness and yield of company's resources (Rahman and Post, 2012). Studies have aimed to investigate the impact of CSR on the overall and financial performance, further establishing a competitive advantage to the firms via ECSR, where the companies had a high priority for CSR and expected to improve the products and operations of their suppliers, in order to contribute in environmental development. Such companies comprehend all those through which the buying companies helped their suppliers in decreasing the negative impact on the environment (Ağan *et al.*, 2016). Many studies have suggested that proactive CSR has been known for supporting the environmental integrity and protection that goes beyond the regulatory guidelines, in order to focus on innovation, eco-efficiency, environmental leadership, and pollution prevention, which further strived to minimize the bad effect on environment through-out the product life cycle (Torugsa *et al.*, 2012). According to Rahman and Post (2012), ECSR has also been described to be public friendly activities, which go beyond the necessary obligatory requirements; in short, it focuses on organisation-specific activities that limit the adversarial influence on the environment.

CSR has been an area of extended industry focus and research, which has led to development of numerous studies, models, approaches and theories to explain the importance, impact and benefits of CSR strategies, which ultimately contribute towards the firm's innovative performance and gaining and a competitive edge (Torugsa *et al.*, 2012). According to Adeneye and Ahmed (2015), the concept of CSR is also said to be society related, while the concept of corporate financial performance is said to be organisation-specific. Many studies focused on the relationship between CSR and firm's financial performance. Some studies have recounted that CSR activities of companies have a positive impact on their performance, but studies also revealed a mixed response. A study gauged a causal relationship between CSR, firm's reputation and its performance. The contributing relationship described a cycle between the three variables, that good corporate performance ensures decent CSR position, which further promotes a good reputation. Then this good reputation helps in getting more business and growth in the company's performance, which leads to improved CSR activities and so on. Then the second cause-and-effect association recommended that enhanced corporate financial performance further leads to earning goodwill, which results in taking part in more CSR activities (Mustafa *et al.*, 2012).

The relationship of CSR affects the performance of companies in the manufacturing sector has been analysed by studies, which further helped the development and implementation of CSR activities specifically in the manufacturing industry. Chen *et al.* (2015), performed a study, where 75 sample companies were selected from five subgroups of the manufacturing industry, namely, metal production sector, paper and forest industry, automobiles sector, health care and the chemical industry. The CSR performance was measured under the guidelines provided by GRI and the financial performance of the selected companies were measured by indicators like return on equity, growth in total revenue and other cash flow ratios. The results of this study revealed that the companies acting according to the guidelines provide by GRI manual, performed financially well, gauged by their ROE ratios. Therefore, the study supported the previous studies where it was understood that profitable firms have an extra budget to support and improve the results of CSR activities, which will also enhance the corporate social image of the firm. Furthermore, Torugsa *et al.* (2012), analysed the importance of proactive corporate social responsibility in the field of manufacturing, where 171 different SMEs were selected of the Machinery and Equipment division in the Australian Manufacturing Industry. The study aimed to investigate the correlation between management capabilities, proactive CSR and financial performance in the manufacturing business, where the results revealed that there was a positive correlation between the adoption of proactive CSR activities and the financial performance and success of the companies.

It can be said that several studies have attempted to explore the global connection between CSR activities and firm performance and their impact on the environment and the whole society. Studies also referred to previous studies, involving companies of different countries. A study included 52 earlier researches about the association between company performance and CSR activities, which presented that firms which were more socially responsible have greater and sustainable financial results. Furthermore, a survey study was conducted, which accounted for 280 companies in UAE, the results revealed that CSR activities have a supporting relationship with the three determinants of firm's performance, namely, personnel commitment or engagement, corporate integrity and economic performance. The positive association between company performance and CSR activities have also been proved by 1000 Taiwanese companies and different Australian firms. Furthermore, researches involving banks in

Jordan also supported firm performance and CSR activities (Saeidi *et al.*, 2015). Companies in Jordan also focus on CSR activities. Some studies focus on the relationship between company performance and the CSR activities. A causal study aimed to investigate an association between CSR, employee engagement and organisation's performance in Jordan. The study specifically targeted the mobile telecommunication industry, where 350 respondents were involved to collect relevant information, which was further analysed via simple and multiple regression tests. The outcome off the study presented a substantial and positive relationship between CSR activities, employee engagement and the overall organisational performance (Obeidat, 2016). Jordan is said to be a small country with fewer natural resources, but still, the government places a great amount of attention on the disclosure of CSR activities by the companies. Noteworthy stances have been carried out by Jordanian government, in order to improve the CSR requirements for the organisations, which included legislation and regulatory regulations for Jordanian organisations to disclose and document their environmental/social efforts in their annual reports or sustainability reports, in order to guarantee quality and reliability of reporting. Though the government supports CSR activities, still fewer researches have been carried out in this area and there has been a low level of CSR disclosures from the listed companies of Jordan (Ibrahim and Hanefah, 2016).

Therefore, to fill the gap between the researchers conducted on CSR activities in Jordan; this study is conducted, evaluating the impact of environmental sustainability on firm performance of Jordanian manufacturing firms.

3. Methodology

The objective of the research paper is to examine the impact of environmental sustainability on firm performance in the Jordanian manufacturing industry. It statistically analyses whether decisions related to the environmental sustainability of the manufacturing companies operating in multiple business sectors of Jordan affect a firm's financial performance. Therefore, the study pursues a quantitative research methodology with an aim to gain statistical evidence and establishing a sustainability-performance model.

For measuring the environmental sustainability score, the study uses key global environmental sustainability indicators, which include material use, energy consumption, water consumption, waste management and recycling, carbon dioxide emission, other atmospheric emissions, and environmental compliance. These eight environmental sustainability indicators are used to constitute the overall sustainability score. Scoring is based on a scale of 1 and 0. A Jordanian company exhibiting compliance or adoption of these environmental measures in its sustainability and/or annual report are given a score of 1, while no compliance/adoption receives a 0 score. It means the data source of the study is official sustainability reports or annual reports of the Jordan-based manufacturing companies. The total sustainability score is the average of the eight individual indicators' score and therefore ranges from 0 to 1.

Firm financial performance is based on three financial ratios: net profit margin (NM), return on assets (ROA) and return on equity (ROE). These measures reflect a firm's profitability for a specific period. This study is based on the data of two periods (financial years): 2017 and 2018. Moreover, the research analyses the data of 11 Jordanian manufacturing firms operating in different business sectors.

For data analysis, the study considers descriptive statistics, correlation and regression analysis. It applies descriptive statistics to explore the characteristics of the data collected, while it performs inferential tests (correlation and regression) to address the following hypotheses:

H1: There is a significant impact of environmental sustainability score on firms' Net profit margin.

H2: There is a significant impact of environmental sustainability score on firms' Return on Equity.

H3: There is a significant impact of environmental sustainability score on firms' Return on Assets.

Based on the above hypotheses, the study proposes the following linear regression models:

$$NM = \alpha + \beta (\text{Sustainability Score})$$

$$ROE = \alpha + \beta (\text{Sustainability Score})$$

$$ROA = \alpha + \beta (\text{Sustainability Score})$$

The following section of the research paper statistically tests the above hypotheses using the proposed linear regression models.

Results

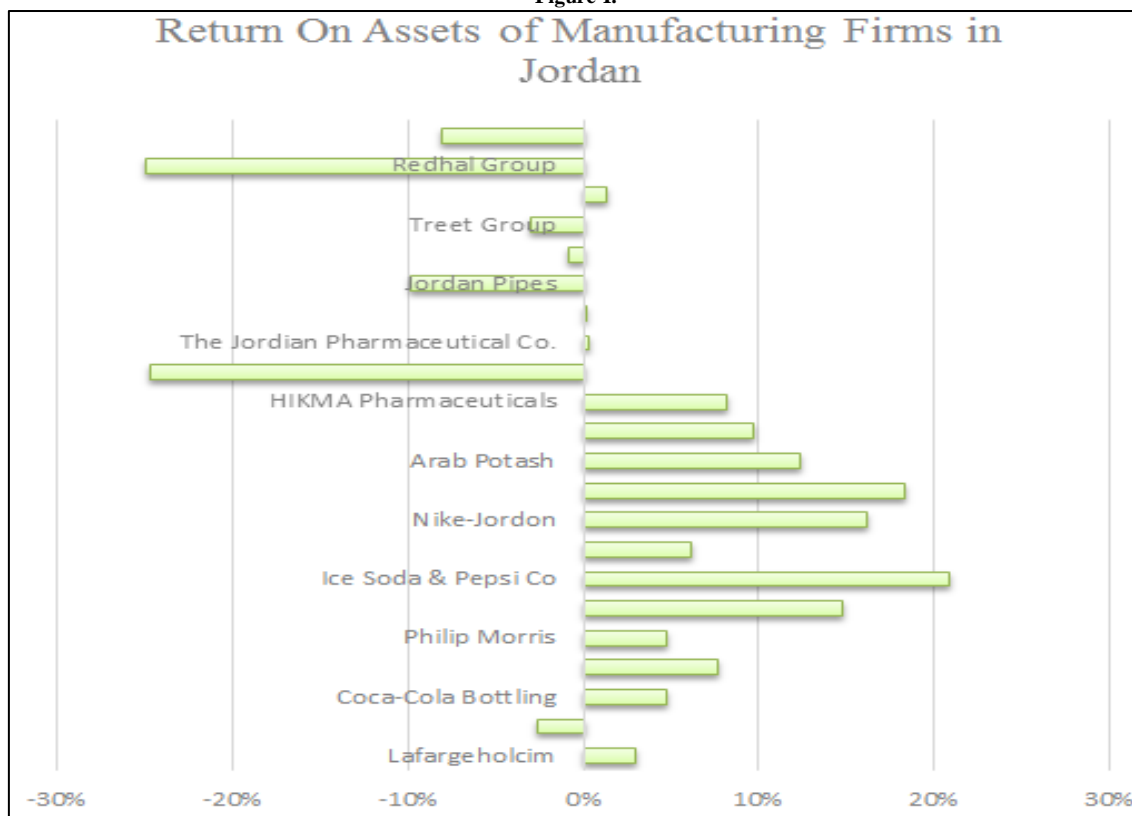
Table-1.

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Net Margin	22	-0.43	0.26	0.0102	0.16461
Return on Asset	22	-0.25	0.21	0.0242	0.11938
Return on Equity	22	-0.77	0.86	0.0122	0.35137
Sustainability Score	22	0.00	1.00	0.5390	0.36337
Valid N (listwise)	22				

The descriptive statistics of the data reveals that the average environmental sustainability score of the Jordanian manufacturing firms is 0.539, which is almost in between the best (1) and the worst (0) score. The study observes that some of the manufacturing companies have exhibited full adoption/compliance with the sustainability indicators/measures (as shown by the maximum score of 1) while few have shown no compliance. Here, the average ROA of the firms is greater than average ROE and Net Margin, due to outliers in the data (huge losses posted by HIKMA Pharmaceuticals and negative equity recorded by Philip Morris Jordan). The mean annual ROA of

manufacturing companies is equal to 2.42%, while the mean annual NM and ROE are 1.02% and 1.22% respectively. The study reveals a high standard deviation in the data since the manufacturing firms differ with respect to sectors, size and years of operations.

Figure-I.



In order to assess the relationship between environmental sustainability and firm performance, the research study preliminary performs Pearson correlation analysis. It is a statistical tool that examines the association between two or more variables.

Table-2.

Correlations		Net Margin	Return on Asset	Return on Equity	Sustainability Score
Net Margin	Pearson Correlation	1	.801**	.461*	0.299
	Sig. (2-tailed)		0.000	0.031	0.177
	N	22	22	22	22
Return on Asset	Pearson Correlation	.801**	1	.505*	.450*
	Sig. (2-tailed)	0.000		0.017	0.036
	N	22	22	22	22
Return on Equity	Pearson Correlation	.461*	.505*	1	0.210
	Sig. (2-tailed)	0.031	0.017		0.347
	N	22	22	22	22
Sustainability Score	Pearson Correlation	0.299	.450*	0.210	1
	Sig. (2-tailed)	0.177	0.036	0.347	
	N	22	22	22	22

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

The correlation analysis reveals that environmental sustainability score of the manufacturing firms is significantly correlated with ROA only at 0.05 level. Here, the strength of the relationship is moderate, as shown by the Pearson correlation coefficient of 0.450, and the direction of the relationship is positive. It means a high environmental sustainability score is correlated with high profitability. The test is unable to find a significant association of sustainability with the other two profitability measures.

For further validating the results and testing the set hypotheses, the study performs regression analysis.

Table-3.

Regression Analysis						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-0.063	0.062		-1.006	0.326
	Sustainability Score	0.135	0.097	0.299	1.400	0.177
a. Dependent Variable: Net Margin						
		B	Std. Error	Beta		
2	(Constant)	-0.098	0.136		-0.715	0.483
	Sustainability Score	0.204	0.211	0.210	0.963	0.347
a. Dependent Variable: Return on Equity						
		B	Std. Error	Beta		
3	(Constant)	-0.055	0.042		-1.308	0.206
	Sustainability Score	0.148	0.066	0.450	2.252	0.036

a. Dependent Variable: Return on Asset

According to Table 3, only model 3 is statistically significant at 0.05 level, $t = 2.252$, $p < 0.05$. That is, the impact of environmental sustainability is significant on the ROA of the Jordanian manufacturing firms, during the period 2017 and 2018. On the other hand, the impact of sustainability is insignificant on NM and ROE.

Table-IV.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.450 ^a	0.202	0.162	0.10926

a. Predictors: (Constant), Sustainability Score

The ROA-based sustainability-performance model is explaining 20.2% of variance as shown by the r-squared value. While the adjusted r-square is 16.2% exhibiting the true explanatory power. The results of the study are consistent to previous literature findings that observed a positive and significant impact of sustainability practices of manufacturing firms and financial performance (Chen *et al.*, 2015; Torugsa *et al.*, 2012). The underlying reasons here could be that greater efforts related to environmental sustainability practices enhance efficiencies such as through a reduction in waste and energy use; thus, resulting in higher profitability (Piedra-Muñoz *et al.*, 2016). In addition, sustainability practices in an organisation positively contribute to the workforce attitude, thus increase productivity and profitability (Whelan and Fink, 2016).

Based on the above results, it can be concluded that only H3 among the three propositions is accepted i.e. there is a significant impact of environmental sustainability score on firms' Return on Assets.

Here, the regression model would be:

$$\text{ROA} = -0.055 + 0.148 (\text{Sustainability Score})$$

The model shows that a unit change in the environmental sustainability score enhances ROA by 14.8%.

4. Conclusion

Environmental sustainability is one of the important corporate world issues, and its significance is enhancing with increasing global warming and exhaustion of natural resources. This study was specifically focused on the case of Jordan-based manufacturing firms, examined whether environmental sustainability score significantly influences firms' profitability. Based on the data of 11 manufacturing companies, for the years 2017 and 2018, the study observed that the impact of environmental sustainability is statistically significant on ROA at 0.05 level, but insignificant on ROE and NM. Based on the results, it can be recommended that manufacturing firms in Jordan should focus on such sustainability initiatives to enhance their productivity, efficiency, and profitability as discussed in the previous literature.

This study is based on a limited sample size due to unavailability of sustainability and financial data. Future study may consider a change in methodology such as the use of primary research to explore the subject and perform a more in-depth analysis of the problem.

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