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Impact of Environmental Disclosure Practices on Financial Performance: A Systematic Exploration of Literature

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Abstract

In a constant quest for profitability, the companies across the globe are making desired and undesired (residual) contributions to the planet's ecosystem. An important way of instilling sustainability in the businesses is by inclusion of environmental disclosure practises in the financial statements of the corporate enterprises. The integration of reporting environmental disclosures with corporate strategy can yield win-win results for the company as well as the stakeholders by reflecting their commitment towards sustainable development and at the same time delivering better value to their shareholders. This paper attempts a systematic review of literature on impact of environmental disclosure practices on financial performance. The studies reviewed in this paper were selected on the basis of Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines with clearly defined eligibility criteria. The study finds that Bloomberg ESG disclosure score has been the leading parameter to measure environmental disclosure practices and financial performance has been primarily measure on accounting-based ratios and on the basis of market value. It also lists the key parameters used to measure 'environmental disclosures' (ED) and 'firm's performance' (FP) used in developed and developing countries. The review suggests that 'environmental disclosures' had a significant and positive impact on majority 'firm's performance' in both developed and developing countries. However, variations in terms of results have also been found in sizeable number of studies. The study will be beneficial to regulatory bodies, researchers and accounting professionals to develop the current understanding of work done and build upon the gaps.

Keywords: *Environmental Disclosure Practices, Environmental Reporting, Financial Performance, Sustainability*

JEL Classification: Q56, M41

1. Introduction

Environmental crisis with increasing average annual temperatures, melting of glaciers, forest fires, increased toxicity due to pollutants in air clearly reflecting global environmental crises, has rarely been as pertinent. International, regional, national and institutional efforts towards preserving and protecting environment through multifaceted ways has for long been the bottom-line of efforts towards sustainable development. Global organisations like United Nations, World Bank, IMF, International accounting associations and regulatory frameworks of various countries and regions have been working hard in taking concrete steps towards sustainability. Though a sizeable number of companies have been practising this voluntarily, it is still not a mandatory exercise world over. Further, whether these

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disclosures affect financial figures of the company or not is of keen interest with the researchers, policy, makers, companies, investors and stakeholders at large. Corporate sector primarily works with the objective of shareholders wealth maximisation. A move towards environmental disclosure practices can produce concrete results either when they are forced mandatorily or when such disclosures and accounting reporting yield positive financial benefits and aid in further growth and maximisation of shareholder's wealth.

Integrated reporting, inclusion of Environmental disclosure practices, increased transparency and accountability, alignment to global standards and efforts towards sustainable development goals (SDGs) are considered as the facets of corporate social responsibility (CSR) and have been increasingly recommended in academic researches, working papers, and matters of public policy as a means to advance sustainable development.

Though such efforts have found their place in almost every economy of the world, the efforts in developed economies might differ significantly from the efforts of their developing counterparts. A multitude of reasons, including awareness among stakeholders, robust regulatory framework, accountability for tasks and open systems concept leads to variations in environmental disclosure practises of the companies operating in such countries. Environmental reporting would include reporting and disclosing environmental matters in the annual report of the company. This may include voluntary disclosures by the company and mandatory releases of information. Researches comparing developed and developing countries often find differences in these parameters due to varying regulatory environments, stakeholder pressures, and levels of environmental awareness. Developed countries' firms might exhibit more advanced practices in terms of quality, adherence to international standards, and higher stakeholder expectations. In contrast, firms in developing countries may be at different stages of adopting such practices.

Therefore, further research is needed to identify determinants of environmental reporting in developing vs. developing countries. Several studies on Environmental Disclosures (ED) reporting have been conducted including dimensions like type and extent of ED, alignment with GRI standards, impact of ED on financial performance (FP), environmental performance, and ED as part of ESG disclosures. It is pertinent to review the extensive current literature on this aspect of environmental reporting. Further, a comparative study analyzing the key determinants of ED and financial performance and impact of ED on FP, in the results of research from developed and developing countries can yield fruitful results. With this backdrop, this study conducts a systematic literature review on key parameters of EDP (environmental disclosure practices) and financial performance and any significant difference among the impact of ED on financial performance with respect to developed vs developing countries. Consequently, this research will be a reference for future research on this theme and will aid the stakeholders in the decision-making process related to ESG planning and allocating funds towards environmental issues and their due reporting in accounting. The paper begins with introduction on the subject in Section 1 followed by background and literature review in Section 2. The next two sections present the objectives of the study and research methodology. Section 5 presents the research results; and Section 6 concludes the research.

2. Review of Existing Literature

2.1 Studies on environmental disclosure and financial reporting

(Porchelvi, 2019) suggests that environmental disclosure reporting is primarily classified into three categories:

1. Descriptive and performance reporting: Such reporting was led by UK companies that included description of environmental policies and corporate activity along with data on performance in environmental areas as emission control and energy savings.
2. Quantitative environmental accounting: Such reporting encompasses "quantitative input-output analysis".
3. Financial environmental reporting: These companies prepare comprehensive report specifying the content of standard environmental report which serves the stakeholders and companies.

Though there is a difference in the types of disclosure practices adopted by companies, still the criticality of these practices and their reflection on an organization's FP is a key area of thrust. These disclosures play a catalyst's role in narrowing the information gap between companies and their shareholders. In fact, stakeholders including employees, customers, regulatory authorities and the public are also served with relevant information. International and national accounting bodies along with the governments have been working on crystallizing the paradigm shift from voluntary disclosures to comprehensive, standardized and mandatory reporting frameworks, driven by increased pressure from stakeholders, NGOs, ticking issue of global warming and massive increase in environmental awareness.

(Tilt, 2001)discussed that during the early years of evolution of environmental disclosures, the firms often reported positive environmental actions to positively impact their corporate image. But these initial disclosures lacked standardization and were often criticized for their limited scope and lack of verifiability. Early twenty-first century witnessed growth in environmental awareness and move towards comprehensive, standardized and reliable disclosures where regulatory bodies played a significant role. Researchers have highlighted how regulatory mandates have led to more comprehensive environmental reporting, moving companies toward greater degree of transparency and accountability through reporting of their environmental practices. Further, the introduction of global standards and guidelines, such as the Global Reporting Initiative (GRI), has helped in standardizing environmental disclosures. (Cho et al., 2015) examine the impact of adopting GRI standards on the quality of environmental disclosures. The study concluded that such standards improve the environmental disclosure reporting. (Harte & Owen, 1991) focused on the disclosure of the information relating to the external environmental impact of corporate activity and concluded that most of the environmental reporting was still at a general level and very close to a mere general commitment to green issues.

Hence, (Porchelvi, 2019) summarizes that environmental disclosure practices have evolved from voluntary, often superficial reports to more structured, mandatory, and standardized disclosures. This evolution has been driven by regulatory pressures, stakeholder demands, and the strategic interests of companies in demonstrating their commitment to environmental sustainability.

2.2 Systematic literature review (SLR)

SLR entails extensive research of existing literature on a given theme in a structured and standardized manner. It is a systematic process to identify relevant literature of a key area and synthesizes the results and status of research. It is a useful tool to lay down the foundation of work already done and future scope of research.

(Hazwani Hassan et al., 2021) studied the status of carbon disclosure and reporting literature and analysed the determinants involved in the carbon disclosure and reporting researches using Preferred Reporting Items Systematic Reviews and Meta-Analysis (PRISMA) method. They explained and discussed how each factor motivated the carbon disclosure in various studies.

(Hazwani Hassan et al., 2021) concluded that "carbon disclosure is still not mandatory in most countries globally, and many firms have developed different practices and approaches concerning the disclosure of carbon emissions".

3. Objectives

This research aims to synthesize the research on environmental disclosures and financial performance and intends to be a reference point for further research. The research objectives are as follows:

- To develop an understanding on impact of environmental disclosures (ED) on financial performance (FP).
- To examine the present status of research in developed vs developing economies.

4. Research Methodology

The present Systematic Literature Review was conducted in February 2024 using "Preferred Reporting Items for Systematic Reviews and Meta-Analyses" (PRISMA) guidelines. The shortlisted articles were further reviewed using relational content analysis to meet the research objectives. The following three sub-sections detail the eligibility criteria framed for the study, databases used to gather information, search query and data collection process based on inclusion and exclusion criteria.

4.1 Eligibility Criteria (EC)

Eligibility (inclusion/exclusion) criteria laid down for the purpose of this study is as follows:

- EC1: Articles that were published in peer-reviewed journals were included.
- EC2: Only English language articles to be included.
- EC3: All articles should be open access so that full text to enable further study and analysis.
- EC4: The article should cover the impact of ED practices on FP of the companies.

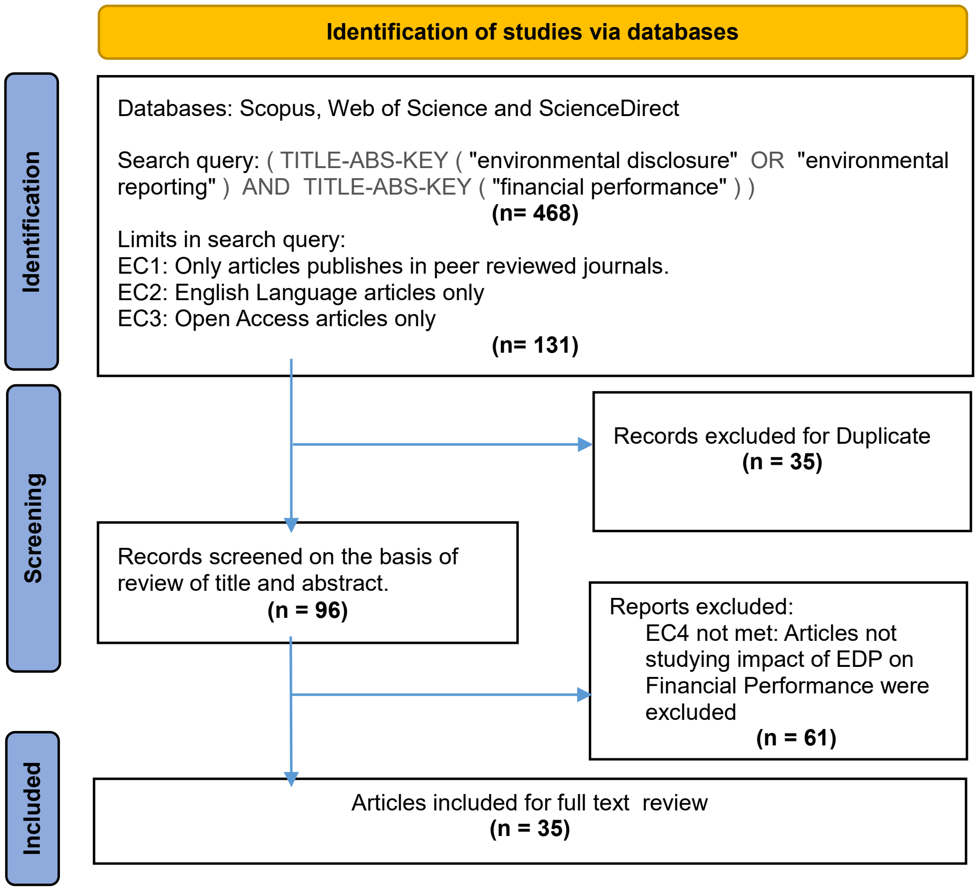
4.2 Databases Referred and search items

A total of three reliable databases of peer-reviewed journals were accessed. The search results listed 468 articles by running a search query of the title, abstract, and keywords (TITLE-ABS-KEY ("environmental disclosure" OR "environmental reporting") AND TITLE-ABS-KEY ("financial performance")) of articles indexed by Web of Science, Scopus and Science Direct.

4.3 Search Results

Further, limits were added to search query to meet eligibility criteria 1 and 2 which brought down the number of eligible articles to 402. EC3 recommends only open access journals to keep the articles available for further studies. This criterion further refined the number of results to 131. Additionally, 35 duplicate entries of articles were removed due to indexation in more than one database. The remaining 96 articles were screened by authors through content analysis of Title and abstract. Only the articles focusing on impact of ED practices on FP were included. Hence, EC4 led to exclusion of 61 articles. This research paper is based on a systematic literature review of 35 studies of this field, that were able to meet the criteria laid down for selection.

Figure 1. "Article search and selection process"(Page et al., 2021)



Source: Authors' compilation

The number of publications in this area have shown a consistent increase over the last decade except a dip during the COVID-19 period. However, the most cited papers on ED practices and their relationship with FP are from the year 2016, followed by 2018 and 2020 respectively.

Table 1: Article and Citations details

Publication Year	Articles	Citations
2015	3	47
2016	2	486
2018	4	227
2019	2	54
2020	9	209
2021	3	170
2022	4	91
2023	7	10
2024	1	0
Grand Total	35	1294

Source: Authors' compilation

5. Results and Discussion

This section has been divided into three main sub-sections encompassing the main theme of this literature review. The first subsection enlists the key parameters used by researchers worldwide for measuring environmental disclosure practices or environmental reporting practices. The second subsection provides details of the major parameters used for measuring financial performance of the company. These are primarily measured through accounting-based measures and market value-based measures respectively. The last section provides details of all the research papers included in the study and the relationship found by them between ED practices and FP. Further, the study also makes an attempt to provide a comparative analysis in all these three sections with respect to developed and developing economies.

Table 2: List of reviewed articles with key findings

Article Citation	Database	Country and Sample	Statistical Tools Employed	Impact of EDP on FP
(Turturea, 2015)	Scopus	18 companies of France, Germany and United Kingdom	Evaluation scheme along with Likert Scale	Extent of ED and SD were studied but no specific variables
(Hossain et al., 2015)	Scopus	131 companies, Bangladesh	Regression models	CSR has an insignificant negative association with FP (market value based) but is significant and positive when related to FP (accounting based)
(Dobre et al., 2015)	Scopus	30 Companies (Romania)	Panel data Regression with Fixed effects	Negative and insignificant relationship between ED and FP
(Qiu et al., 2016)	Scopus, Web of Science	FTSE350 index companies of UK	Regressions	No relationship between ED and FP
(Chen et al., 2016)	Scopus, Web of Science	Listed construction companies from developed countries	ANOVA analysis and stepwise regression	EP has significant impact on FP
(L. W. Lu & Taylor, 2018)	Scopus	500 largest US companies	Simultaneous Equations Approach	EP and FP have negative relationship and EP and ED have positive relationship. The impact of ED on FP was not studied.
(Baboukardos, 2018)	Scopus, Web of Science	692 French companies	Linear price-level model	Negative impact of environmental performance ratings on FP
(Hassan & Romilly, 2018)	Scopus, Web of Science	1392 companies from 45 Countries	Simultaneous Equations with Granger causality test	ED and current FP is highly significant in all samples, however its negative for developed countries & positive for total and developing country

(Sampong et al., 2018)	Scopus, Web of Science	Single (South Africa), 126 companies	Panel data Regression with Fixed effects	Negative and insignificant relationship between ED and FP
(Kim & Oh, 2019)	Scopus, Web of Science	214 listed Indian companies	Panel data Regression and t-test	CSR and FP have U-shaped relationship
(Wasara & Ganda, 2019)	Scopus, Web of Science	Single (South Africa), 10 companies	Panel data Regression with Fixed & Random effects	Negative relationship between ED and FP
(Pereira et al., 2020)	Scopus	69 Brazilian companies	Panel data Regression with Random effects	Positive and significant relationship between CSP and FP but disclosure doesn't intensify this relationship. ED impact not studied separately
(Azzam et al., 2020)	Scopus	Single (Jordan), 1705 firm-year observations	Panel data Regression with Fixed effects	While SD is positively associated with FP, ED does not have this association.
(Oluseyi-Sowunmi et al., 2020)	Scopus	46 listed Nigerian companies	Ordinary Least Square (OLS) Regression	Positive and significant impact of ED on FP
(Atasel et al., 2020)	Scopus	39 Turkish companies	Panel data Regression	Positive and significant impact of ED on FP
(Madaleno & Vieira, 2020)	Scopus, Web of Science	47 listed companies from Spain and Portugal	GMM- generalized method of moments	Positive and significant impact of ED on FP
(Wahyuningrum et al., 2020)	Scopus	36 listed Indonesian companies	Multiple Regression	EP and FP does not impact ED significantly
(Albitar et al., 2020)	Scopus	FTSE350 index companies of UK	Panel data Regression with Fixed effects	ESG score and IR has significant positive impact on FP
(Hardiningsih et al., 2020)	Scopus	39 companies of Indonesia, Malaysia	Regression analysis with Warp PLS	ED and SD have significant positive relationship with FP
(Ammer et al., 2020)	Scopus, Web of Science	Single (Saudi Arabian)	Panel data Regression with Fixed & Random effects	Positive and significant impact of ED on FP
(Gerged, Beddewela, et al., 2021)	Scopus, Web of Science	405 companies from GCC countries	2SLS and GMM with Panel Data	ED is significantly positive with respect to firm's value
(W. T. Lu et al., 2021)	Scopus, Web of Science	752 Chinese companies	Multiple Regression	Negative impact of ED on FP for carbon-intensive but significant in non-carbon intensive industries
(Masliza et al., 2021)	ScienceDirect	Single (Malaysia)	Cluster Regression Analysis	Positive and significant impact of ED on FP

(Saygili et al., 2022)	Scopus, ScienceDirect	36 public companies of Turkey	Pooled ordinary least squares (OLS) model	Negative impact of ED on FP
(Al-Waeli et al., 2022)	Scopus	25 Iraqi companies	Multiple Regression	Positive and significant impact of ED on FP
(Chouaibi et al., 2022)	Scopus, Web of Science	Multi (North American and West European), 523 companies	Panel data Regressions with Fixed effects	Positive and significant impact of ED on FP
(Pulino et al., 2022)	Scopus, Web of Science	Single (Italy)	Panel data Regressions with Random effects	Positive and significant impact of ED on FP
(Maria Kristari & Yusram Teruna, 2023)	Scopus	39 Indonesian companies	Panel data Regressions with Fixed effects	Negative impact of ED (carbon emission) on FP. CSR disclosures do not impact FP positively
(Firmansyah et al., 2023)	Scopus	26 Saudi Arabian listed companies	Panel data Regression	ED has an insignificant negative association with FP (market value based) but is significantly and positively related to FP (accounting based)
(Wu & Li, 2023)	Scopus, Web of Science	531 Chinese companies	Hierarchical linear model (HLM)	Positive and significant impact of ED on FP
(Mintah & Gulko, 2023)	Scopus	8 airline companies of UK	Coding structure is based on the GRI guideline	Covid 19 has negatively significant and increased disclosures have significant positive relationship with FP
(Malik et al., 2023)	Scopus, Web of Science	Single (China), 8,619 unique observations over 12 years	Multiple Regression	Positive and significant impact of ED on FP
(Lehenchuk et al., 2023)	Scopus, Web of Science	Single (Turkey), 48 companies	OVER and SEP models	Impact of ED on FP is not studied separately
(Wang et al., 2023)	Scopus, Web of Science	Single (China)	Multiple Regression with Fixed effects	U-shaped relationship between environmental protection investment and FP
(Escamilla-Solano et al., 2024)	Scopus, Web of Science	103 listed Spanish companies	Partial least squares structural equation modelling	ED is neither positively nor negatively significant with FP hence study concludes that environmental dimension does not harm business profitability

SD: Social Disclosures, ED: Environmental Disclosures, FP: Financial performance, EP: Environmental Performance

Source: Authors' compilation

Table 2 shows that the existing literature on the effect of EDP on FP have covered diverse countries across the globe with different structural parameters. A majority of the existing studies have utilized panel data econometric techniques, viz. Pooled OLS, Panel OLS with fixed effects and random effects, and panel GMM. Simultaneous Equations approach has been adopted by few studies.

5.1 Key Parameters of Environmental Disclosure

Table 3 lists various key parameters of environmental disclosure used by researchers to evaluate the firm's reporting practices. Bloomberg ESG disclosure score, Greenhouse gas emissions, Carbon emission disclosures, Carbon Disclosure Leader Index (CDLI), Sustainability reports, Disclosure index, content analysis, Environmental disclosure and environmental performance ratings , GRI G4 Sustainability Reporting Guidelines, Financial statement notes in Annual reports and PROPER ratings are the key parameters used in majority of the studies. Bloomberg ESG disclosure score has been the most frequently used parameter with (Albitar et al., 2020; Ammer et al., 2020; Chouaibi et al., 2022; Gerged, Beddewela, et al., 2021) reporting its positive impact on the firm's financial performance.

Table 3: Key Determinants of Environmental Disclosures

Key Parameters	Developed/ Developing	Result (+/-)	Previous Articles
Bloomberg ESG disclosure score	Developed	Positive and significant	(Albitar et al., 2020; Chouaibi et al., 2022; Ammer et al., 2020; Gerged, Matthews, et al., 2021)
	Developed and Developing	Both -Positive and Negative with different parameters.	(Firmansyah et al., 2023; Hassan & Romilly, 2018; Masliza et al., 2021)
Greenhouse gas emissions	Developed	Negative	(Turturea, 2015)
Carbon emission disclosures	Developing	Negative	(Maria Kristari & Yusram Teruna, 2023)
Carbon Disclosure Leader Index	Developing	Negative	(W. T. Lu et al., 2021)
Sustainability reports	Developed	Positive	(Escamilla-Solano et al., 2024; Madaleno & Vieira, 2020)
	Developed	Negative	(Lehenchuk et al., 2023)
	Developing	Positive and significant	(Pereira et al., 2020)
	Developing	Negative	(Sampong et al., 2018; Wasara & Ganda, 2019)
Disclosure index- Annual reports	Developed	Positive and significant	(Pulino et al., 2022)
	Developing	Negative	(Azzam et al., 2020)
	Developing	Both -Positive & Negative with different parameters.	(Hossain et al., 2015)

Environmental disclosure scores and Environmental performance ratings	Developed	Positive	(Pulino et al., 2022; Qiu et al., 2016)
	Developed	Negative	(Baboukardos, 2018)
	Developing	U-shaped	(Kim & Oh, 2019)
	Developing	Positive and significant	(Hardiningsih et al., 2020; Wu & Li, 2023)
GRI G4 Sustainability Reporting Guidelines	Developed	Negative	(Saygili et al., 2022)
	Developed	Positive	(Atasel et al., 2020; Mintah & Gulko, 2023)
Content Analysis of Annual Reports	Developed	Significant	(Chen et al., 2016)
	Developed	Negative and insignificant	(Dobre et al., 2015)
	Developing	Positive and significant	(Al-Waeli et al., 2022; Oluseyi-Sowunmi et al., 2020)
Annual reports-Financial statement notes	Developing	U-shaped	(Wang et al., 2023)
PROPER ratings	Developing	Negative	(Wahyuningrum et al., 2020)

Source: Authors' compilation

Further, GRI G4 Sustainability Reporting Guidelines were used to measure the impact by three developed country samples and found to be negatively impacting FP (Saygili et al., 2022), but positive impact on FP shown in (Atasel et al., 2020; Mintah & Gulko, 2023). The measures of Greenhouse gas emissions, Carbon emission disclosures and Carbon Disclosure Leader Index (CDLI) had a negative impact on FP (W. T. Lu et al., 2021; Maria Kristari & Yusram Teruna, 2023; Turturea, 2015). Six of the studies have assessed environmental disclosure through content analysis of annual reports, sustainability reports and disclosure index and these disclosure parameters were found to be positively impacted FP (Al-Waeli et al., 2022; Oluseyi-Sowunmi et al., 2020; Pulino et al., 2022) but the same were found to be negatively related in the studies by (Azzam et al., 2020; Dobre et al., 2015). ED measured through PROPER ratings tool was applied by (Wahyuningrum et al., 2020) and stated the negative impact. Two studies reported U shape relationship with the determinants of Environmental disclosure scores (Kim & Oh, 2019) and financial statement notes(Wang et al., 2023).

5.2 Key Determinants of Financial Reporting

Table 4 shows the variables used to measure financial performance while calculating impact of ED practices on the FP of the sample firms. The variables are primarily categorized into three categories including accounting-ratios based measures, market value-based measures and a combination of both.

It is interesting to note that as much as nine developing countries applied accounting-based measures to capture financial performance. While (Al-Waeli et al., 2022; Oluseyi-Sowunmi et al., 2020; Wu & Li, 2023) found a positive impact of environment disclosures on FP, the studies by (Azzam et al., 2020; W. T. Lu et al., 2021; Maria Kristari & Yusram Teruna, 2023; Wahyuningrum et al., 2020; Wasara & Ganda, 2019) established a negative relationship with the same measures. Hence, accounting based measures were found to be negatively impacted by ED in majority of the developing country studies.

Table 4: Key parameters measuring Financial Reporting

Key Parameters to measure Financial performance	Developed/ Developing Countries	Impact on ED (+/-)	Previous Articles
Accounting based parameters			
Return on assets (ROA) and Return on equity (ROE)	Developed	Negative and insignificant	(Dobre et al., 2015; Saygili et al., 2022)
	Developing	Both -Positive and Negative results with different parameters.	(Hossain et al., 2015)
	Developing	Negative	(Azzam et al., 2020; Maria Kristari & Yusram Teruna, 2023; Wahyuningrum et al., 2020; Wasara & Ganda, 2019)
	Developing	Positive and significant	(Al-Waeli et al., 2022; Oluseyi-Sowunmi et al., 2020)
Net profit margin and Debt to asset ratio	Developing	Negative impact for carbon-intensive industries.	(W. T. Lu et al., 2021)
EBIT and ROA	Developed	Positive and significant	(Pulino et al., 2022)
EPS, ROA and ROE	Developing	Positive	(Wu & Li, 2023)
Profitability, liquidity and leverage	Developed	Positive and significant	(Mintah & Gulko, 2023)
EBITDA, ROA, ROE, assets turnover ratio	Developed	Negative	(Lehenchuk et al., 2023)
ROS and EPS	Developed	Positive	(Qiu et al., 2016)
Market based parameters			
Market value of the Firm	Developed	Negative	(Baboukardos, 2018)
	Developing	Positive and significant	(Pereira et al., 2020)
Tobin's Q	Developed	Negative	(L. W. Lu & Taylor, 2018) *Negative relationship with EP &FP.
	Developed	Not studied the impact of ED on FP	(Turturea, 2015)

Combination of accounting and market value based parameters			
Tobin's Q: ROA Return on assets.	Developed	Positive and significant	(Albitar et al., 2020; Gerged, Beddewela, et al., 2021; Ammer et al., 2020; Madaleno & Vieira, 2020)
	Developed	Negative	(Escamilla-Solano et al., 2024)
	Developed and Developing	Both Positive and Negative	(Hassan & Romilly, 2018)
	Developing	Positive and significant	(Hardiningsih et al., 2020; Masliza et al., 2021)
	Developing	Negative and insignificant	(Sampong et al., 2018)
	Developing	U-shaped	(Kim & Oh, 2019; Wang et al., 2023)
Tobin's Q and ROE	Developed	Both -Positive and Negative results with different parameters.	(Firmansyah et al., 2023)
ROA,ROE and Market value of the Firm	Developing	Positive and significant	(Malik et al., 2023)
	Developed	Positive	(Atasel et al., 2020)
Tobin's Q, ROA, ROE, Market Value of Firm's Market value of the Firm	Developed	Positive and significant	(Chouaibi et al., 2022)
ROA, ROS and Tobin's Q	Developed	Positive	(Chen et al., 2016)

Source: Authors' compilation

Additionally, there are six developed countries that used accounting-based measures to calculate firms' performance. While (Mintah & Gulko, 2023; Pulino et al., 2022; Qiu et al., 2016)found environmental disclosures to be positively impacting financial performance, (Dobre et al., 2015; Lehenchuk et al., 2023; Saygili et al., 2022) found the negative impact of ED on FP. The next major parameter market-based tools were applied by (Baboukardos, 2018; L. W. Lu & Taylor, 2018) and showed a negative impact in the two developed countries samples taken by the respective study. However, (Pereira et al., 2020) being a developing country sample showed a positive relationship.

Majority of studies belonging to developed countries samples used factors like return on sales, Tobin's Q, return on assets, return on equity, market value and found a positive impact of environmental disclosure on FP ((Albitar et al., 2020; Ammer et al., 2020; Atasel et al., 2020; Chen et al., 2016; Chouaibi et al., 2022; Gerged, Beddewela, et al., 2021; Madaleno & Vieira, 2020)). Both positive and negative impacts were shown in (Hassan & Romilly, 2018) and (Firmansyah et al., 2023)both being developed country-based samples and (Escamilla-Solano et al., 2024) showed the negative impact with reference to a developed country.

(Hardiningsih et al., 2020; Malik et al., 2023; Masliza et al., 2021) belonging to developing countries samples used a combination of accounting and market-based measures and found positive relationship with environmental disclosures. While two of the studies (Kim & Oh, 2019) and (Wang et al., 2023) found a U-shaped relationship, (Sampong et al., 2018) found a negative impact of ED on FP.

There are inconsistencies between the measures used to record financial performance and results displayed through developed and developing country samples. Though accounting-based measures have been positively impacted by environmental disclosures in majority of developed countries' studies yet no other conclusive evidence regarding developing countries or the role of market-based parameters has been distinctively identified.

5.3 Impact of Environmental Disclosure on Financial Reporting

This section presents an overview and discussion with several studies that have examined the impact of ED practices on financial reporting of the firms. Moreover, the variations in measurement of environmental disclosure practices and parameter are used for financial reporting also led to different results in different studies. The study included a total of 35 research papers spanning over a decade listed in the table below as per the eligibility criteria specified earlier. There were eighteen studies from developed and sixteen research papers from developing countries with one research paper on comparative analysis of developed vs developing country. Due to the nature and evolutionary stage of environmental disclosure practices and their coverage in the annual reports, it becomes pertinent to analyse whether the impact of such disclosures varies due to the development status of a nation.

5.3.1 Developing Countries

A deeper look into the results of studies based on developing country samples reveal that ED practices have a significant impact on FP of the companies. As much as ten studies ((Al-Waeli et al., 2022; Hardiningsih et al., 2020; Hassan & Romilly, 2018; Hossain et al., 2015; W. T. Lu et al., 2021; Malik et al., 2023; Masliza et al., 2021; Oluseyi-Sowunmi et al., 2020; Pereira et al., 2020; Wu & Li, 2023)) have found a positively significant impact of environmental disclosures on financial performance and only three studies ((W. T. Lu et al., 2021; Maria Kristari & Yusram Teruna, 2023; Wasara & Ganda, 2019)) have concluded a negatively significant relationship. It is pertinent to note here that (Pereira et al., 2020) analysed the impact of corporate social performance on financial performance instead of environmental disclosures. Also, (W. T. Lu et al., 2021) found a positively significant impact of ED on FP for 'non carbon intensive' companies' sample and negatively significant relationship for 'carbon intensive' companies' sample.

Hence, we find that majority of the studies from developing countries have reinstated faith in positive and significant role of environmental disclosure practices on firm's financial performance except (Hossain et al., 2015) and (Sampong et al., 2018) where negative but insignificant impact was noticed.

Also, (Wang et al., 2023) and (Kim & Oh, 2019) concluded that ED has a U-shaped relationship with financial performance instead of a linear one. Only (Azzam et al., 2020) held that there was no relationship between ED and FP.

5.3.2 Developed Countries

The research results from developed countries support the hypothesis of positively significant impact of environmental disclosures on financial performance ((Albitar et al., 2020; Atasel et al., 2020; Chen et al., 2016; Chouaibi et al., 2022; Firmansyah et al., 2023; Gerged, Beddewela, et al., 2021; Hardiningsih et al., 2020; Madaleno & Vieira, 2020; Mintah & Gulko, 2023; Pulino et al., 2022)). Here, (Firmansyah et al., 2023) concluded with positive and significant relationship when FP was measured through accounting-based measures. Hence, we find that majority of the studies from developed countries have reinstated faith in positive and significant role of environmental disclosure practices on firm's financial performance except (Hossain et al., 2015) and (Sampong et al., 2018). Only four studies including (Baboukardos, 2018; Hassan & Romilly, 2018; L. W. Lu & Taylor, 2018; Saygili et al., 2022) have found negative and significant impact of ED on FP. It is interesting to note that (Qiu et al., 2016) concluded that there is absence of relationship between ED and FP. Even (Escamilla-Solano et al., 2024) didn't find any significant relation and concluded that absence of negative relationship indicates that ED doesn't harm profitability. A negative but insignificant impact of ED on financial performance was concluded by (Dobre et al., 2015) and (Firmansyah et al., 2023) while using market value-based measure of firm's performance.

6. Conclusion

Concerted efforts at international and national levels towards fair environmental disclosures and better environmental performance clearly resonate with the worldwide concerns over environment and sustainability. Both developed and developing countries are aware of the significance and ill-effects that reckless efforts can lead to. This study has been an attempt to draw a comprehensive picture of worldwide efforts and understanding differences in approaches adopted by developed and developing nations, if any. Although there are consistent efforts, developing countries still struggle with regulatory, awareness and economic issues. The study makes a significant contribution by concluding that in majority of the studies reviewed, ED practices have a positive and significant impact on FP. The results have been equally supportive for both developed and developing countries. Additionally, despite the costs involved in shifting to environmentally conscious approach, markets have shown positivity towards companies' responsible efforts. However, some select studies have also concluded negative impact of ED on financial performance. These inconsistencies can be taken up for further research by conducting a more comprehensive review of literature and/or by using larger samples with more parameters and longer study periods. Environmental performance and its disclosures grab attention of regulatory bodies and activists alike. However, increase regulatory requirements can significantly contribute towards quicker shift to environmentally conscious efforts and their inclusion in the annual reports. Moreover, harmonization at global level can bring uniformity in the presentation of environmental disclosure making comparisons easier. A more environmentally conscious firm can contribute towards a more inclusive and sustainable economy and can in turn achieve 3Ps (profit, people and planet). This paper has both theoretical and practical implications. Environmental disclosure reporting by firms in developed and developing countries and its influence on financial performance forms the theoretical view on the accounting literature. Practically the content discussed in this paper may influence corporates and government to frame environmental reporting standards and strong regulations to conserve the natural resources.

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