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The Effect of Carbon Disclosure Project on Financial Performance: Empirical Evidence from India

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Abstract

The study attempts to test the impact of carbon disclosure projects on financial performance. Data has been gathered from the National Stock Exchange and Bombay Stock Exchange of the listed companies. EViews software has been adopted to apply correlation and multi-linear regression. The findings indicate that carbon disclosure project produces a positive impact on financial performance. Financial performance is an independent variable which consists of five variables under the independent variable such as return on equity, return on asset, liquidity ratio, solvency ratio and market ratio. The carbon disclosure project is a dependent variable. The study's conclusions provide with companies' information and guidance on how to implement carbon disclosure projects and business responsibility and sustainability reporting and how it is directly related to business performance. The results of this study could assist shareholders in making investment decisions and in deciding how to establish a carbon disclosure projects program in their business.

Keywords: BRSR, CDP, EViews, Financial performance

INTRODUCTION

Carbon Disclosure Project was established in 2000 and has its headquarters in the United Kingdom. It conducts business with hundreds of organizations all around the world. The main goal of CDP is to promote accountability and transparency in environmental reporting. It accomplishes this by requiring that businesses and other organizations disclose details regarding their carbon emissions, water usage, dangers of deforestation, and other climate-related information. In every year, CDP gathers this information and makes it accessible to the public, businesses, governments, and investors. The Carbon Disclosure Project is working in India as well and it has been interacting with Indian businesses to get them to disclose their carbon emissions and other climate-related information. The CDP India report typically contains data and analysis from Indian businesses that take part in CDP's yearly disclosure process. One of the main programmes encouraging businesses and organizations to reveal their environmental effect, particularly about carbon emissions and climate change, is the Carbon Disclosure Project (CDP).

There are various connections between the financial performance of businesses and the Carbon Disclosure Project (CDP). Environmental, social, and governance (ESG) considerations are becoming more and more important to investors and financial institutions when making investment decisions. Companies with excellent sustainability initiatives and environmental transparency are more likely to draw socially conscious investors and obtain funding with favorable terms. Environmental issues are becoming more and more important to stakeholders and consumers. Businesses that proactively publish their carbon emissions and demonstrate a commitment to sustainability may gain a competitive edge, improve brand perception, and increase consumer loyalty, all of which can have a beneficial impact on financial performance.

Securities Exchange Board of India ("SEBI") has introduced business responsibility and sustainability reporting in India. There are nine principles of the 'National Guidelines for Responsible Business Conduct'(NGRBC). In Business Responsibility and Sustainability Reporting ("BRSR") reporting also disclosing sustainability reporting, carbon disclosure project, sustainable development goals, integrating reporting and others also. Researcher has collected data from BRSR report of CDP. There are sixty-five questions only for CDP. The current work is focusing on examining the relationship between financial performance and carbon disclosure project. It appears that this study will benefit the existing literature evaluations and assist investors in making decisions. The research paper outline is formatted as follows: In **Section 2**, there is literature review. In **Section 3**, presents the research methodology. In **section 4**, there is research methodology. **Section 5** presents the results and discussion.

LITERATURE REVIEW

(Matisoff et al., 2013)We analyze the content of Carbon Disclosure Project (CDP) responses from 2003 to 2010. It emphasis on how much indirect emissions are taken into account by businesses. The CDP has shown a rise in openness in several sectors, like Scope 2 emissions, in recent years.

(Charumathi & Rahman, n.d.)The study examines the effect of women board on climate change reporting to carbon disclosure project (CDP). Secondary data were used in this investigation. The study of finding indicates that the women directors on boards has positive relationship with climate change-related disclosure to CDP.

(Blanco et al., 2016)We employ this method to assess Scope 3 carbon emissions that many of the top companies in the US to CDP (formerly the Carbon Disclosure Project). We predict that, based on these businesses disclosed, on average, 22% of their total Scope 3 emissions.

(Stanny, 2018)This preliminary study examines greenhouse gas disclosures made voluntarily. We contrast the statutory amounts with the sums that businesses voluntarily declare to the CDP.

(Luo & Tang, 2014)Stakeholders are using carbon data more and more in their decision-making, yet there is growing uncertainty about the validity of corporate carbon disclosure, and there aren't any empirical studies that address this problem. This study aims to determine if voluntary carbon disclosure accurately represents businesses' actual carbon performance.

(Chen et al., 2021)There is little research on the voluntary carbon disclosure project (CDP) undertaken by cities. As a result, this study uses data from the CDP to investigate the impact of population (Pop) and GDP on city-level carbon emissions. The dataset covers the years 2012 to 2016 and refers to a collection of several cities from around the globe.

(Ott et al., 2017)Our findings show that the factors influencing the decision to respond and the factor influencing the decision to publish are different.

(Ganda, 2018)The results show that carbon performance has a favourable impact on return on equity (ROE) and return on sales (ROS). On the other hand, it produces a negative link between market value added (MVA) and return on investment (ROI).

(Kusumawati et al., 2022a)This study aims to investigate the relationship between CSR and financial performance, with leverage and earnings management serving as moderating factors.

RESEARCH METHODOLOGY

SEBI introduced business responsibility report in 2012. Only top 100 listed entities based on the market capitalization were required to compile and publish business responsibility report. Furthermore, SEBI instructed the top 500 listed companies published report in 2017. In addition, SEBI has suggested to renaming the business responsibility report to business responsibility and sustainability report as well as add some important non-financial reporting like sustainability-reporting and carbon disclosure project.

There are five independent variables such as return on equity, return on asset, liquidity ratio, solvency ratio and market ratio. The dependent variable is carbon disclosure project. The independent variable and dependent variable data have gathered from annual report. In table 1, there are principle details which help collecting the data of carbon disclosure project.

Table-1 showing Principle details

S.NO	PRINCIPLE	DETAILS
1	Principle 1	As per this principle, the entity should conduct and govern itself with ethics, transparency, and accountability.

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2	Principle 2	As per this principle, the entity should provide details of goods and services that are safe and contribute to sustainability throughout its lifecycle.
3	Principle 3	As per this principle, the entity should promote the wellbeing of its employees
4	Principle 4	As per this principle, the entity should respect the interests of all stakeholders and also become responsive towards all stakeholders, specifically to those who are disadvantaged, vulnerable and marginalised.
5	Principle 5	As per this principle, the entity should respect and promote the human rights.
6	Principle 6	As per this principle, the entity should respect, protect and make efforts to restore the environment.
7	Principle 7	As per this principle, the entity should act in a responsible manner, when engaged in influencing public and regulatory policy
8	Principle 8	As per this principle, the entity should support inclusive growth and equitable development
9	Principle 9	As per this principle, the entity should engage with and provide value to its customers and consumers in a responsible manner

At the outset, the Committee recommends that the format be called 'Business Responsibility and Sustainability Report (BRSR)' instead of Business Responsibility Report. The BRSR has three sections and the purpose and structure of each of these has three sections. The alignment between brsr and cdp are useful such as reduce the reporting burden from Indian companies, CDP is aligned with international framework TCFD and Sustainable development Goals. It works as data analysis framework for the investment decision making. SEBI has given format to publish the BRSR report. The measurement of report is not qualitative but quantitative also. There are 75 questions in the BRSR report that are not related to carbon disclosure report. Left 65 questions out of the 140 questions are related to carbon disclosure report in table 2.

Table-2 depicts a detailed table about content score of subheading

CDP Section	Title	Number of questions
Categories		
Section A:	General Disclosure	17 questions out of 24 questions
Section B:	Governance and Management	12 questions
Section C: Principles		
Principles- 1	Ethics, Transparency& Accountable	2 questions out of 9 questions
Principles- 2	Sustainable Provision of goods	7 questions out of 9 questions
Principles- 3	Well-being of employees	1 question out of 21 questions
Principles- 4	Respect Interest of all stakeholders	2 questions out of 5 questions
Principles- 5	Respect Human Rights	0 questions out of 15 questions
Principles- 6	Protect and restore the environment	19 questions out of 21 questions
Principles- 7	Influencing public policy	2 questions out of 3 questions
Principles- 8	Inclusive Growth	2 questions out of 10 questions
Principles- 9	Engage with consumers	1question out of 11questions.
TOTAL		65 questions out of 140 questions.

The Financial performance is independent variable. Return on equity, return on asset, liquidity ratio, solvency ratio and market ratio are collected from the Indian companies annual report. Financial performance is a measurement of how effectively a company can utilize resources from its main line of business and generate income. Based on several criteria, only 20 companies have published carbon disclosure reports in financial year 2021-2022. EViews is a tool which is used to analyze data. There are many tests used for checking the reliability and validity of data such as normalization test, autocorrelation test, multicollinearity test and heteroskedasticity test. For the analysis, Multiple linear regression and correlation has used. According to Healy and Palepu (2001), carbon disclosure report is measured by an index. There are

65 questions. All the element disclosed by each sample company is coded 1 and code 0 if the company does not disclose the elements then, the score for each item was added, and the total score reflects the CDP score.

RESULT AND DISCUSSION

TABLE-3 showing definitions of variable

VariableType	Variable Name	Variable Symbol	Variable Definitions
Dependent Variable	Carbon Disclosure Project	CDP	Total 65 question Company provided information=1 Not being provided information= 0
IndependentVariable	1. Return on Equity 2. Return on Asset 3. Liquidity Ratio 4. Solvency Ratio 5. Market Ratio	ROE ROA LR SR MR	Net Income/ Shareholder equity (Net Income+ Interest expenses)/Asset Current Asset/Current Liability total liability/ Capital Net income after interest and taxes/ no of outstanding shares

The description of variable results reveals the variable type, variable name, variable symbol, and variable definitions in table 3. There are five components of independent variables. (Mehra & Sharma, 2021)Financial performance consists of return on equity, return on assets, liquidity ratio, solvency ratio and market ratio. Carbon disclosure is dependent variable. Liquidity ratio is proxy of current ratio. The solvency ratio is proxy of debt-equity ratio. The market ratio is the proxy ratio of earning per share.

TABLE-4 depicts descriptive analysis.

VARIABLE	MEAN	MEDIAN	MAXIMUM	MINIMUM	Std.Dev	SKEWNESS	KURTOSIS
CDP	60.75	62.00	65.00	50.00	4.45	-1.18	3.26
ROE	0.117	0.060	1.103	-0.137	0.253	3.111	12.84
ROA	0.259	0.224	0.740	-0.010	0.155	1.488	5.976
LR	1.915	1.840	4.220	0.760	0.796	1.035	4.49
SR	0.150	0.090	0.840	0.000	0.214	2.050	6.640
MR	44.42	34.92	207.00	9.80	43.21	2.92	11.35

Table 4 shows descriptive analysis of independent variable and dependent variables. The average value of CDP is higher than the other variables such as return on equity, return on asset, liquidity ratio, solvency ratio and market ratio. The mean value of return on equity is 0.117 and ranges from -0.137 to 1.103, with a standard deviation of 0.253, followed by the mean value of return on asset is 0.259, with the standard deviation of 0.155. (Sofyan Rasyid, n.d.)The mean value of the market ratio is 44.42 and ranges from 9.80 to 207.00, with the standard deviation of 43.21. It also reveals skewness and kurtosis value of all the variables.

TABLE-5: Normalization test

Jarque Bera	113.98
Possibility	0.0001

Researcher used normalization test with the help of Jarque- bear in table 5. The results of the test obtained a probability value is 0.0001 which is smaller than 0.05 in table. It indicates that the data are normally distributed.

TABLE-6: Multicollinearity test

Variable	Centered-VIF
ROE	3.1184

ROA	1.2740
LR	3.0794
SR	1.2642
MR	2.3848

In this research, multi-linear regression model has been used. In multi regression models, not only one independent variable but more than one independent variable. There is one model to determine multicollinearity which is called variance inflation factor. The values of all the independent variables are greater than the 10. It indicates that there is no multicollinearity between the variables in table 6**.**

TABLE- 7 Showing heteroscedasticity test

Variable	Significance
ROE	0.391
ROA	0.965
LR	0.275
SR	0.314
MR	0.801

Ordinary least squares (OLS) regression presupposes that all residuals are taken from a population with a constant variance (homoscedasticity), which makes heteroscedasticity an issue. (Hayatun et al., 2012)The residuals should have a constant variance to meet the regression assumptions and be able to rely on the results. Each independent variable has a significant value by using Glejser test. The significance value is greater than 0.05 (> 0.05) in table 7. It indicates that there is no heteroscedasticity in the regression model.

TABLE-8: Autocorrelation test.

DURBIN-WATSON STATS
1.831867

The Durbin-Watson model is the best for testing autocorrelation in table 8. (Kusumawati et al., 2022b)Durbin-Watson test score of around two indicates that there is no relationship between residuals. It is implying that the error factors in the model are independent. Durbin-Watson value between 1.5 and 2.5 suggests that there is no autocorrelation.

TABLE-9 showing correlation analysis

	CDP	ROE	ROA	LR	SR	MR
CDP	1.0000					
ROE	0.0643	1.0000				
ROA	-0.0998	0.1422	1.0000			
LR	0.2556	-0.1261	0.0182	1.0000		
SR	0.1905	-0.1405	-0.1198	-0.4561	1.0000	
MR	0.2229	0.2185	-0.0807	0.19711	-0.1116	1.0000

Correlation represents the relationship between the variables. (Hapsoro et al., 2019)It represents the strength of one variable affecting the other variable. Return on equity, current ratio, debt-equity ratio, earning per share are positively correlated with the cdp but return on asset is negatively correlated with cdp. The coefficient of return on equity is 0.0643. On the other hand, lr, sr, mr are correlated with coefficient of 0.255, 0.190 and 0.222 in table 9.

TABLE-10 showing regression analysis

Variable	Coefficient	Std. Error	T-Statistics	Prob	Conclusion
ROE	54.4928	19.740	2.760412	0.0146	Significant
ROA	3.503274	13.878	0.252418	0.8041	Not significant
LR	18.16706	2.8553	6.362568	0.0000	Significant
SR	51.24357	14.6918	3.48789	0.0033	Significant
MR	0.017427	0.08483	0.205414	0.8400	Not significant

R-SQUARE	77.98				
Adjusted R-SQUARE	82.37				

According to regression analysis, carbon disclosure projects and financial performance all have a positive and significant impact on firm and stakeholders while investment decision making in table 10. The coefficient of return on equity is positive (54.49) and significant at the 5 percent level (p- value 0.0146). (Kusumawati et al., 2022a)Additionally, the coefficient of current ratio (18.16) and debt-equity ratio (51.24) have favourable effect and are significant at the 1 percent level (p-value 0.000 & 0.0033). R^2 Square lies between 0 to 1. R^2 Square (77.98) explains that more than half of the data explains this model. On the other hand, return on assets and earnings per share have not significant impact.

CONCLUSION

The article investigated the association between carbon report and firm financial performance. The based on findings of the analysis performed that carbon performance had significant effect on return on equity, current ratio, and debt-equity ratio. On the other hand, carbon performance had no significant effect on return on assets and earnings per share. For investor point of view, Financial and non-financial information are important while making investment decision. Based on the results of analysis, only one year was covered by this research. Other financial performance ratios also include such as total asset turnover ratio, liquidity ratio, gross profit turnover, net profit margin, and so forth. This variable can be studied further in the future. We also indicate that there is plenty of room for future research in this field.

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