Impact of Corporate Social Responsibility on Profitability of Public and Private Sector in the Era of Industry 5.0

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Abstract

The significance of corporate social responsibility (CSR) in enhancing financial performance, has received a lot of attention. In the era of Industry 5.0, where societal issues and technological advancements collide, the role of CSR becomes important, as it maintains trade-off between them. This study intends to investigate how CSR practises affect profitability of both public and private sector. This study aims to offer important insights into the changing dynamics of the business landscape by evaluating the relationship between corporate social responsibility initiatives and profitability. Five companies were selected randomly from public sector and private sector each. The profitability and corporate social responsibility expenditure of the selected companies were analysed for the period of five years from 2018-19 to 2022-23. The result shows that there is positive impact of CSR expenditure on profitability of public and private sector companies. The implication of this study can help and guide strategic decisionmaking procedure and support long-term expansion of organisations in the context of Industry 5.0.

Keyword: Industry 5.0, Corporate Social Responsibility, Profitability

1. **Introduction:** Corporate Social Responsibility (CSR) has emerged as a critical aspect of business strategy, reflecting a company's commitment to balancing economic success with social and environmental concerns. In the rapidly evolving landscape of Industry 5.0, characterized by advanced technologies and interconnected systems, the impact of CSR on the profitability of both public and private sector entities becomes a subject of heightened importance. As Industry 5.0 reshapes business models, organizations face the imperative to align profitability with sustainability. The literature suggests that companies adopting CSR practices not only mitigate risks associated with environmental and social issues but also create long-term value. The review highlights the importance of integrating CSR into strategic decision-making processes to achieve a harmonious balance between financial success and societal well-being. In the era of Industry 5.0, characterized by the integration of cyber-physical systems, artificial intelligence, and the Internet of Things, the role of CSR has evolved. Scholars argued that CSR now extends beyond philanthropy to encompass environmental sustainability, ethical business practices, and social impact. (Elkington, 1997; Carroll, 1999). The review of literature suggests that companies adopting proactive CSR measures are better positioned to adapt to the challenges posed by Industry 5.0.

2. **Literature of Review:** This literature review explores existing research and insights to discern the relationships between CSR initiatives and financial performance in the context of Industry 5.0.

2.1. **Public Sector and Corporate Social Responsibility:** The public sector, traditionally driven by public service goals, has also embraced CSR in the era of Industry 5.0. Previous Researches indicated that CSR initiatives in the public sector contributed to improve stakeholder relationships, increased organizational trust, and enhanced public image. However, the literature revealed a need for further exploration into the direct impact of CSR on financial performance within public sector organizations (Hart, 1995; Orlitzky et al., 2003).

2.2. **Private Sector and Corporate Social Responsibility:** In the private sector, where profit maximization is a primary goal, the relationship between CSR and financial performance was extensively studied. Numerous studies highlighted a positive correlation between CSR activities and profitability. However, challenges such as measuring the direct financial impact of CSR and balancing short-term costs with long-term benefits remain subjects of ongoing debate (Margolis and Walsh, 2003; Porter and Kramer, 2006).

2.3. **Impact of CSR on Profitability**: In prior research on CSR and profitability, limitations and biases were noted. Using a comprehensive instrument, no relationship between social responsibility and profitability was found among corporate CEOs (Aupperle, Carroll and Hatfield, 1985). Using Fortune magazine's ratings, relationships between CSR perceptions and financial performance measures were analyzed. Prior performance was found more closely linked to CSR than subsequent performance, and risk measures were more associated with social responsibility than previously thought (McGuire, Sundgren and Schneeweis, 1988). The relationship between CSR and economic performance in 56 UK companies were examined using measures from the new consumer group. Relationships existed but were weak and inconsistent across various performance indicators (Balabanis, Phillips, and Lyall, 1998). Using a descriptive design, the study examined CSR's impact on 500 UK firms' performance metrics like MBV and ROCE. CSR correlated positively with MBV and ROCE, aligning with stakeholder theory's assertion on shareholder wealth maximization through CSR (Adeneye and Ahmed, 2015). In the Indian context, the relationship between corporate social responsibility and financial performance was examined using data from 28 banks listed on the Bombay Stock Exchange (BSE) over 10 years (2007-16). A positive impact on financial performance was observed, suggesting that CSR was beneficial (Maqbool, and Zameer, 2018). The influence of CSR on corporate financial performance was studied in Taiwan using CSR awards. Firms emphasizing CSR saw better financial outcomes, with a consistent link after addressing endogeneity. The Google Search Volume Index affected the CSR-CFP connection, especially in electronics, and board ownership had contrasting effects in non-electronics. (Hou, 2019). The relationship between corporate social responsibility, environmental investments, and financial performance was examined in Nigerian manufacturing firms. Positive relationships were found between internal environmental investments and financial performance, while external investments showed an insignificant positive correlation. Additionally, a significant difference in profitability was observed between environmentally conscious and non-conscious firms (Shabbir and Wisdom, 2020). In the Lithuanian energy sector, a study examined the impact of CSR activities on financial performance using a new assessment method. Results indicated a predominantly neutral relationship between CSR and financial performance from 2017 to 2020 (Adamkaite, Streimikiene, and Rudzioniene, 2023). The association between a firm's profitability and its CSR disclosures was examined. Both voluntary and mandatory CSR disclosures negatively affected profitability, with

voluntary disclosure having a stronger impact. Firms with better governance or financial conditions mitigated this negative effect (Xue, Chang, and Xu, 2023). The study examined the impact of CSR on firm value in Indonesian and Malaysian pharmaceutical companies from 2016-2020. Eight companies from each country were sampled. Profitability was found to moderate the influence of CSR on company value (Hermawan, et., al., 2023). The study analyzed 215 observations from Indonesian Stock Exchange companies (2018-2020). Using panel data analysis, it found that investment decisions negatively impacted firm value, with CSR and profitability moderating this effect consistently across various models (Suteja, et., al., 2023).

3. Objective of the Study: There are following objectives of the study.

- To find the impact of Corporate Social Responsibility Expenditure on Profitability of Public Sector Companies.

- To find the impact of Corporate Social Responsibility Expenditure on Profitability of Private Sector Companies.

4. Conceptual Framework Figure 4.1 Conceptual Framework of the variables taken for the study
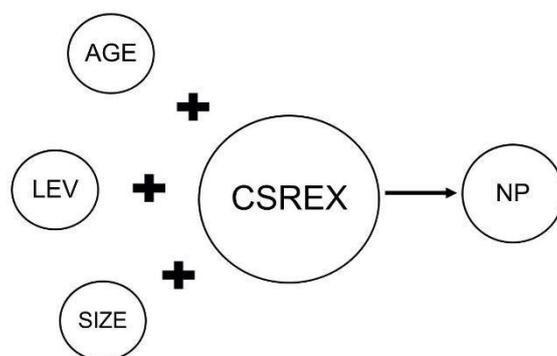
Source: Self- Created

Figure 4.1 shows conceptual framework of the variables taken for the study. NP represents the net profit. CSREX denotes corporate social responsibility expenditure. Firm's Age is denoted by AGE. Leverage is represented by LEV. SIZE represents total size of a company, which is measured by assets.

5. Research Methodology:

5.1. Sampling Method: Sampling methods refer to the technique's researchers use to select individuals or units from a larger population to participate in a study. Judgement sampling method was used to select the sample size from sampling frame.

5.2. Sampling Frame: A sampling frame is a list or other device used to define a researcher's target population from which a sample is drawn. National CSR Portal is taken as a sampling frame.

5.3. Sample Size: Sample size refers to the number of observations or individuals that are included in a study or experiment. Total 10 companies were selected, 5 companies from public sector and 5 from private sector. Table 5.3. shows the list of companies selected for study.

Table 5.3. List of companies selected for study

Public Sector Companies	Private Sector Companies
Oil And Natural Gas Corporation Limited	Reliance Industries Limited
NTPC Limited	HDFC Bank Limited
NMDC Limited	Tata Consultancy Limited
Indian Oil Corporation Limited	Infosys Limited
Power Grid Corporation of India Limited	ITC Limited

Source: Self- Created

5.4. Variables for the Study: variable refers to any attribute, phenomenon, or quantity that can take on different values. Variables are essential in empirical research as they allow researchers to measure, manipulate, and analyse various phenomena or attributes of interest.

5.4.1. Independent Variable: The independent variable that is hypothesized to cause an effect on the dependent variable. Corporate Social Responsibility Expenditure is taken as in dependent Variable.

5.4.2. Dependent Variable: The dependent variable is the variable that is observed, measured, or recorded by the researcher to assess the effect of the independent variable. Net Profit is taken as dependent Variable for the study.

5.4.3. Control Variable: A control variable is a variable that is held constant or regulated to ensure that it does not influence the relationship between the independent variable(s) and the dependent variable. Firm Age, Leverage and Firm Size were taken as control variables for the study.

5.5. Tools and Techniques: Correlation Analysis, Regression Analysis and Analysis of Variance (ANOVA) was used for data analysis.

5.6. Hypotheses:

H01: There is no any impact of CSR Expenditure on Net Profit of the Public Sector Companies. **Ha1:** There is significant impact of CSR Expenditure on Net Profit of the Public Sector Companies.

Table 5.6.1. Model Summery for Regression Analysis

R	R Square	Adjusted R Square	Standard Error of the Estimation
.969	.932	.901	.16711

Source: Self- Created

Table 5.6.1. shows the model summery for regression analysis. The correlation coefficient R is 0.969, which implies a very strong positive linear relationship between the predictor variables and the dependent variable. The coefficient of determination, R Square indicates the proportion of the variance in the dependent variable that is predictable from the independent variables. R Square is 0.932, which suggests that approximately 93.2% of the variability in the dependent variable can be explained by the independent variables in the model. Adjusted R Square adjusts for the number of predictors in the model, providing a more realistic estimate of the explanatory power of the model. Adjusted R square is .901, which indicates that about 90.1% of the variability

in the dependent variable is explained by the independent variables, adjusted for the number of predictors. Standard Error of the Estimation represents the standard deviation of the residuals. A standard error of 0.16711 suggests that, on average, the predicted values from the model are approximately 0.16711 units away from the observed values. In summary, the model is significant, and three out of four predictors (CSREX, LEVERAGE, and SIZE) have significant relationships with the dependent variable, while AGE does not. The model explains approximately 90.1% of the variance in the dependent variable, adjusted for the number of predictors.

Table 5.6.2. Results of Analysis of Variance (ANOVA)

Model	Sum of Squares	Degree of Freedom (df)	Mean Square	F	P-Value
Regression	3.383	4	.837		
Residual	.300	7	.043	19.465	.000
Total	3.683	11			

Source: Self- Created

Table 5.6.2. indicates the Results of Analysis of Variance (ANOVA). The regression model is statistically significant as evidenced by the F-statistic of 19.465 with a corresponding p-value of .000 (which is less than the conventional significance level of 0.05). This suggests that the model does a good job of explaining the variability in the dependent variable. Sum of Squares (3.383) suggests the total variability explained by the model. Degrees of Freedom (df=4) indicates the number of predictors or variables in the model. Mean Square (.837) represents the average variability explained by each predictor. The F-value of 19.465 provides a ratio of the variability explained by the model to the unexplained variability. The p-value of .000 further confirms that the model's results are statistically significant, implying that at least one predictor variable is significantly related to the dependent variable.

Table 5.6.3. Calculated Constant and β Values

Variables	Unstandardised Coefficient (B)	Standard Error	t	Sig.
Constant	2.665	1.025	2.526	.003
CSREX	.521	.150	2.264	.020
AGE	-.113	.129	-1.216	.121
LEVERAGE	-.102	.113	-1.499	.101
SIZE	.121	.051	3.283	.001

Source: Self- Created

Regression Model:

NP = 2.665 + .521 (CSREX) - .113 (AGE) -.102 (LEVERAGE) + .121 (SIZE)+ Ɛ

Where, NP represents the net profit. CSREX denotes corporate social responsibility expenditure. Firm's Age is denoted by AGE. Leverage is represented by LEV. SIZE represents total size of a company, which is measured by assets. ε is the error term or the unexplained variance in the model.

Table 5.6.3. indicates the result of Constant and β Values. The value of Intercept is 2.665. If all the independent variables (CSREX, AGE, LEVERAGE, and SIZE) are set to zero, the expected Net Profit is 2.665 units. For every one-unit increase in CSREX (0.521), keeping all other variables constant, the Net Profit is expected to increase by 0.521 units. For every oneunit increase in AGE (-0.113), keeping all other variables constant, the Net Profit is expected to decrease by 0.113 units. This could indicate that older entities (companies, individuals,

assets) might have lower net profits. For every one-unit increase in LEVERAGE (-0.102), keeping all other variables constant, the Net Profit is expected to decrease by 0.102 units. This suggests that higher leverage might be associated with lower net profits, indicating financial risk. For every one-unit increase in SIZE (0.121), keeping all other variables constant, the Net Profit is expected to increase by 0.121 units. This implies that larger entities, as measured by SIZE, tend to have higher net profits. ε is the error term in the regression model, capturing the variability in Net Profit that is not explained by the independent variables in the model.

In summary, this model provides insights into how changes in CSREX, AGE, LEVERAGE, and SIZE relate to Net Profit. Variables like CSREX and SIZE appear to have a positive association with Net Profit, while AGE and LEVERAGE have a negative association. The multiple correlation coefficient. It represents the correlation between the observed and predicted values of the dependent variable.

H02: There is no any impact of CSR Expenditure on Net Profit of the Private Sector Companies.

Ha2: There is significant impact of CSR Expenditure on Net Profit of the Private Sector Companies.

Table 5.6.4. Model Summery for Regression Analysis For Null Hypothesis H02

R	R Square	Adjusted R Square	Standard Error of the Estimation
.971	.942	.931	.15314

Source: Self- Created

Table 5.6.4. shows the model summery for regression analysis of Hypothesis H02. The correlation coefficient R is 0.971, indicating a very strong linear relationship between the dependent and independent variables. The coefficient of determination, R Square is 0.942, meaning that approximately 94.2% of the variability in the dependent variable is explained by the independent variables in the model. This indicates a very high proportion of the variance in the dependent variable is accounted for by the predictors. Adjusted R Square is 0.931. This value considers the number of predictors in the model and provides a more accurate representation of the proportion of variance explained, especially when comparing models with different numbers of predictors. An adjusted R Square of 0.931 is still very high, suggesting that the model is robust even when considering its complexity. The standard error of the estimate is 0.15314. This metric provides an average measure of the accuracy of predictions made by the model. A lower standard error suggests that the model's predictions are closer to the actual values, indicating better predictive accuracy. In summary, the regression model appears to be highly effective in explaining the variability in the dependent variable, as evidenced by the high values of R Square, and adjusted R Square, along with a relatively low standard error of the estimation.

Table 5.6.5. Results of Analysis of Variance (ANOVA) For Null Hypothesis H02

Model	Sum of Squares	Degree of Freedom (df)	Mean Square	F	P-Value
Regression	3.131	4	.782		
Residual	.300	7	.043	18.18	.000
Total	3.431	11			

Source: Self- Created

Table 5.6.5. shows the results of Analysis of Variance (ANOVA) For Null Hypothesis H02. The regression model is statistically significant given the F-statistic of 18.18 and a corresponding p-value of .000 (significantly below the typical significant level of 0.05). Sum of Squares (Regression) is 3.131 indicates the total variability explained by the model. Degrees of Freedom (df) is 4 degrees of freedom, there are 4 predictors or variables in the model. Mean Square (Regression) is .782, which represents the average variability explained by each

predictor. Sum of Squares (Residual) .300 signifies the unexplained variability or error in the model. There are 7 degrees of freedom for residuals, indicating the number of observations minus the number of predictors minus 1. Mean Square (Residual) is .043, which represts represents the average unexplained variability or error. Sum of Squares (Total) is 3.431, which is the total variability observed in the data (sum of regression and residual sum of squares). There are 11 degrees of freedom in total, which typically would correspond to the total number of observations minus 1. In summary, the regression model is statistically significant since its F-value is 18.18 with a p-value of .000. This suggests that the predictors in the model are collectively useful in explaining the variability in the dependent variable.

Table 5.6.6. Calculated Constant and β Values for Null Hypothesis H02

Variables	Unstandardised Coefficient (B)	Standard Error	t	Sig.
Constant	4.685	1.125	3.546	.006
CSREX	.521	.150	2.264	.010
AGE	-.112	.114	-1.216	.121
LEVERAGE	-.127	.121	-1.511	.114
SIZE	.121	.069	3.283	.002

Source: Self- Created

Regression Model:

NP = 4.685+ .521 (CSREX) - .112 (AGE)+ -.127 (LEVERAGE) + .122 (SIZE)+ Ɛ Where: NP represents the net profit. CSREX denotes corporate social responsibility expenditure. Firm's Age is denoted by AGE. Leverage is represented by LEV. SIZE represents total size of a company, which is measured by assets. ε is the error term or the unexplained variance in the model.

Table 5.6.6. Calculated Constant and β Values for Null Hypothesis H02. The value of Intercept is 4.685. If all the independent variables (CSREX, AGE, LEVERAGE, and SIZE) are set to zero, the expected Net Profit is 4.685 units. This serves as the baseline or starting point for Net Profit. A one-unit increase in CSREX (0.521), while holding all other variables constant, is associated with an increase in Net Profit by 0.521 units. This indicates that higher values of CSREX are associated with greater net profits, all else being equal. For every one-unit increase in AGE (-0.112), with all other variables constant, the Net Profit is expected to decrease by 0.112 units. This suggests that older entities might experience a decline in net profits, perhaps due to factors associated with age like increased competition, outdated technologies, or other challenges. With each one-unit increase in LEVERAGE (-0.127), keeping other variables constant, the Net Profit is anticipated to decrease by 0.127 units. This implies that as an entity's financial leverage increases, its net profit tends to decline, possibly indicating higher financial risks associated with increased leverage. For each one-unit increase in SIZE (0.122), holding other variables constant, the Net Profit is projected to increase by 0.122 units. This means that larger entities, as measured by SIZE, tend to have higher net profits, possibly benefiting from economies of scale, broader market presence, or other advantages associated with size. ε represents the error term in the model, capturing the variability in Net Profit that is not explained by the independent variables. In summary, this regression model provides insights into how variations in CSREX, AGE, LEVERAGE, and SIZE relate to Net Profit. Variables such as CSREX and SIZE show a positive relationship with Net Profit, whereas AGE and LEVERAGE display a negative relationship.

6. Conclusion: In the Industry 5.0 era, this study explored CSR's role in public and private sectors, emphasizing its shift from philanthropy to strategic necessity. In the public sector, CSR builds trust and improves resource allocation. For private firms, integrating CSR boosts profitability via enhanced reputation, customer loyalty, and cost savings. Yet, mere superficial CSR risks greenwashing; genuine commitment is crucial. In essence, Industry 5.0 underscores CSR's importance, linking it directly to profitability, stakeholder expectations, and societal value, necessitating authentic engagement from both sectors.

References

Adamkaite, J., Streimikiene, D., & Rudzioniene, K. (2023). The impact of social responsibility on corporate financial performance in the energy sector: Evidence from Lithuania. Corporate social responsibility and environmental management, 30(1), 91-104.

Adeneye, Y. B., & Ahmed, M. (2015). Corporate social responsibility and company performance. Journal of Business Studies Quarterly, 7(1), 151-166.

Aupperle, K. E., Carroll, A. B., & Hatfield, J. D. (1985). An empirical examination of the relationship between corporate social responsibility and profitability. Academy of management Journal, 28(2), 446-463.

Balabanis, G., Phillips, H. C., & Lyall, J. (1998). Corporate social responsibility and economic performance in the top British companies: are they linked?. European business review, 98(1), 25-44.

Carroll, A. B. (1999). "Corporate Social Responsibility: Evolution of a Definitional Construct." Business & Society, 38(3), 268-295.

Elkington, J. (1997). "Cannibals with Forks: The Triple Bottom Line of 21st Century Business." Capstone Publishing.

Hart, S. L. (1995). "A Natural-Resource-Based View of the Firm." Academy of Management Review, 20(4), 986-1014.

Hermawan, S., Sari, Y. A., Biduri, S., Rahayu, D., & Rahayu, R. A. (2023). Corporate social responsibility, firm value, and profitability: Evidence from pharmaceutical companies in Indonesia and Malaysia. International Journal of Professional Business Review: Int. J. Prof. Bus. Rev., 8(2), 1.

Hou, T. C. T. (2019). The relationship between corporate social responsibility and sustainable financial performance: Firm-level evidence from Taiwan. Corporate Social Responsibility and Environmental Management, 26(1), 19-28.

Maqbool, S., & Zameer, M. N. (2018). Corporate social responsibility and financial performance: An empirical analysis of Indian banks. Future Business Journal, 4(1), 84-93.

Margolis, J. D., & Walsh, J. P. (2003). "Misery Loves Companies: Rethinking Social Initiatives by Business." Administrative Science Quarterly, 48(2), 268-305.

McGuire, J. B., Sundgren, A., & Schneeweis, T. (1988). Corporate social responsibility and firm financial performance. Academy of management Journal, 31(4), 854-872.

Orlitzky, M., Schmidt, F. L., & Rynes, S. L. (2003). "Corporate Social and Financial Performance: A Meta-analysis." Organization Studies, 24(3), 403-441.

Porter, M. E., & Kramer, M. R. (2006). "Strategy & Society: The Link Between Competitive Advantage and Corporate Social Responsibility." Harvard Business Review, 84(12), 78-92.

Shabbir, M. S., & Wisdom, O. (2020). The relationship between corporate social responsibility, environmental investments and financial performance: evidence from manufacturing companies. Environmental Science and Pollution Research, 27, 39946-39957.

Suteja, J., Gunardi, A., Alghifari, E. S., Susiadi, A. A., Yulianti, A. S., & Lestari, A. (2023). Investment decision and firm value: moderating effects of corporate social responsibility and profitability of non-financial sector companies on the Indonesia stock exchange. Journal of
Risk and Financial Management, 16(1), 40.

Xue, S., Chang, Q., & Xu, J. (2023). The effect of voluntary and mandatory corporate social responsibility disclosure on firm profitability: Evidence from China. Pacific-Basin Finance Journal, 77, 101919.