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# An Analysis of Environmental Accounting and Firm Profitability of Reliance Industry Limited

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## Abstract

Environmental accounting is the ability to provide accurate information in the financial statements regarding the estimated social cost occasioned by the production externalities on the environment and how much deliberate intervention cost had been incurred to bridge the gap between the marginal social cost and the marginal private cost by a firm. The objective of this study is to establish whether there is any significant relationship between environmental accounting and profitability of Reliance Industry Limited, Gujarat. The data for the study were collected from annual reports and accounts of Reliance Industry Limited, Gujarat. The data were analyzed using multiple regression models. The key findings of the study shows that there is significant negative relationship between Environmental Accounting and Return on Capital Employed (ROCE) and Earnings per Share (EPS) and a significant positive relationship between Environmental Accounting and Net Profit Margin and Dividend per Share. Based on this it was recommended that government should give tax credit to organizations that comply with its environmental laws and that environmental reporting should be made compulsory in India so as to improve the performance of organizations and the nation as a whole.

## Key words :

- Environmental Accounting
- Firm Profitability
- Corporate Social and Environmental Disclosures
- Return on Capital Employed
- Net Profit Margin
- Divided per share
- Earnings per Share

**1. Introduction:**

Accounting for environment helps in accurate assessment of costs and benefits of environmental preservation measures of companies. It provides a common framework for organizations to identify and account for past, present and future environmental costs to support managerial decision-making, control and public disclosure. The severity of environmental problems as a global phenomenon has its adverse on the quality of our life. Measures are being taken both at the national and international level to reduce, prevent and mitigate its impact on social, economic and political spheres. The emergence of corporate environmental reporting (CER) in India has been an important development, both for better environmental management and overall corporate governance. Global awareness of stakeholders on corporate environmental performance has already made traditional reporting redundant. Corporate houses run into the risk of loss of faith of their stakeholders, if in future, environmental performance information is not included in their main stream reporting.

**2. Environmental Accounting Meaning:**

Environmental accounting means a flexible tool to provide information not necessarily provided in traditional managerial systems. Environmental accounting that provides information on performance evaluation of control decision-making and reporting to help managers the economic and environmental implications as well built as the market value of those uses that are not, its use requires a change in culture. Environmental accounting, part of wider changes in the organization and the community it provides and by providing more fundamental knowledge of and participation in everyday work activities, to the continual development of the approach environmental accounting branch of accounting that collect environmental costs and use data in the calculation of cost of goods and services deals. The accounting environment can include activities such as accounting systems that enhance the ability to detect Recording and reporting the work of destruction and environmental pollution and environmental-based integration as a source of CapitaLand consideration of environmental costs as an acceptable cost of computational processes and economic

**3. Environmental accounting in India:**

Environmental reporting of Indian companies can be broadly categorized into two types' mandatory disclosure and voluntary disclosure. Preliminary investigation of this study shows that Indian companies practice more of voluntary environmental reporting in the form of satellite reporting, sustainability reporting, GRI reporting and internet reporting. In year 2001, a country wide survey, the first of its kind, was carried out by Business Today, a business magazine, and The Energy Research Institute (TERI, 2001) to understand the environmental practices of corporate India. Findings of the survey revealed that more than 75% of the sample had environmental policy; about 70% have environmental audit system; 60% had an environment department; four out of every ten Indian Companies had formal environment certification.

**4. Review of Literature:**

Over the past decades companies have recognized the benefits of environmental reporting. As a result, there was dramatic increase in the number of companies reporting in numerous ways. It is important to understand as to how far standard setting improves credibility in reporting through major surveys. However, most studies are based on content analysis of annual reports.

- Firstly, a survey by International accountancy firm KPMG (2005) shows that there is not just an increase in the number of corporate responsibility (CR) information in annual (financial) reports but also on the assurance. There are standards available for assurance on non -financial information like the International Standard for Assurance Engagements (ISAE) 3000, and Accountability's AA1000 Assurance Standard. In 2005 survey number of companies issuing corporate responsibility reports is approximately 80% representing 21 nations in comparison to 2002 survey with only 50% companies in the reporting arena. This result supports the widespread understanding that multinational corporations publish more CR than other national companies. Prior research on internet based environmental disclosure concludes that multinational corporations of developed nations prefer digital reporting over print medium.

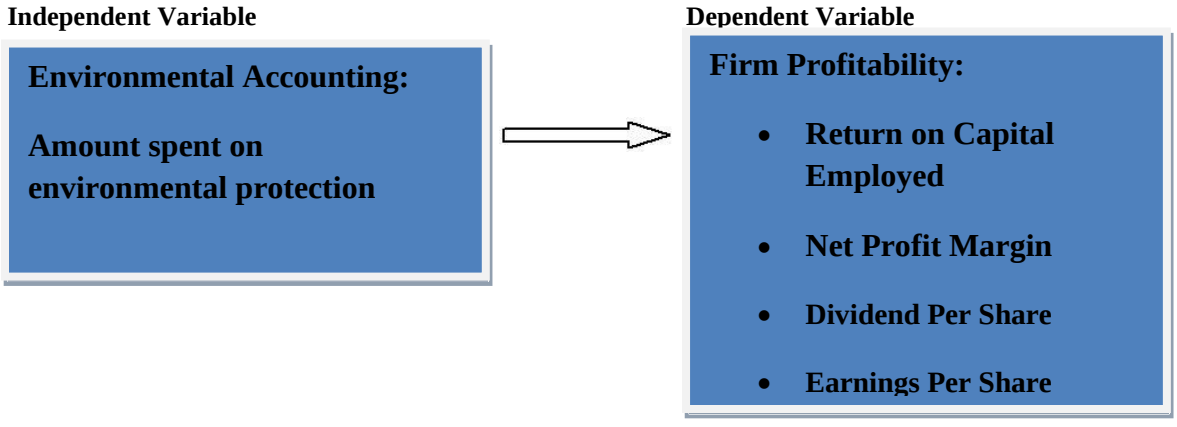
- Secondly, GRI guidelines provide principles and detailed indicators for reporting on all aspects of CR performance. Sustainability Reporting Guidelines of the Global Reporting Initiative (GRI) developed through a multi-stakeholder process bring in dramatic increase in corporate reporting practices. There are 660 companies spread over 50 countries report on the basis of GRI guidelines. This widespread use of international guidelines by GRI assures comparability, which is one of the 11 major GRI Reporting Principles. Further, their study expects GRI guidelines to reap the following benefits such as: improved relationships with stakeholders; breaking down internal organizational insularity through information sharing; reduction of volatility and uncertainty in share prices; building brand image; and creation of competitive advantage.

**5. Environmental and Profitability:**

Social performance information, social audit, social accounting, socio-economic accounting, social responsibility accounting and social and environmental reporting have been used interchangeably in the literature. Corporate environmental disclosure is a part of social reporting and the environmental disclosures are mainly non-financial in nature. The extent of literature on corporate disclosure focuses on the determinants of voluntary disclosure and on the effect of voluntary disclosures on return earnings relation. However, there is a lack of specific studies regarding Corporate Social and Environmental Disclosures (CSEDs) both in developed and developing countries.

Profitability as well as corporate financial performance was used by a number of researchers as an explanatory variable for differences in disclosure level. However, the relationship between corporate financial performance and corporate social and environmental disclosure is arguably one of the most controversial issues yet to be solved. The proponents argue that there are additional costs associated with the social and environmental disclosure and, the profitability of the reporting company is depressed.

**Figure 1 Conceptual Framework**




**6. Objective of the study:**

The main objective of this study is to establish whether there is any significant relationship between environmental accounting and firm profitability in Reliance Industry Limited, Gujarat.

i. To investigate whether there is any

significant relationship between environmental accounting and Return on Capital Employed (ROCE).

ii. To establish whether there is significant relationship between environmental accounting and Net Profit Margin (NPM).

iii. To determine whether there is significant relationship between environmental accounting and Divided per share (DPS).

iv. To examine if there is significant relationship between environmental accounting and Earnings per Share (EPS).

**7. Hypothesis of the study:**

i. $Ho_1$: There is no significant relationship between Environmental Accounting and Return on Capital Employed.

ii. $Ho_2$: There is no significant relationship between Environmental Accounting and Net profit Margin.

iii. $Ho_3$: There is no significant relationship between Environmental Accounting and Dividend per Share.

iv. $Ho_4$: There is no significant relationship between Environmental Accounting and Earnings per Share.

**8. Analysis of the study :**

In order to find out the relationship between different variables, the data were then analyzed using multiple regression analysis through the use of econometric model. The model is specified below:

**ENVC = f (ROCE, NPM, DPS, and EPS)**

Where: ENVC, ROCE, NPM, DPS and EPS represent Environmental Cost of Companies; Return on Capital Employed; Net Profit Margin; Dividend per Share; and Earnings per Share respectively.

The econometric form of the model is as follows:

$$\mathbf{ENVC=a_0+ a_1 ROCE+a_2NPM+a_3DPS+a_4EPS+u_t}$$

Where: a0+a1+a2+a3+a4 and $u_t$ represent intercept, Impact of Return on Capital Employed, Impact of Net Profit Margin, Impact of Dividend per Share, Impact of Earnings per Share and Error terms respectively. The apriori expectation is that Environmental Accounting has a positive relationship with the Return on Capital Employed (ROCE), Net Profit Margin (NPM) Dividend Per Share (DPS) and Earnings Per Share (EPS) in the period under study. Amount spent by each company as their environmental cost was used as proxy for environmental accounting while Return on Capital Employed (ROCE), Net Profit Margin (NPM), Dividend Per Share (DPS) and Earnings Per Share (EPS) were used as proxy for firm profitability.

Data for this research study were secondary data generated from Annual Reports and Accounts of selected company quoted on the Reliance Industry Limited, Gujarat. The formulae for calculating the ratios are presented in table 1 below.

**Table 1: Measurement of Variables**

| Variables | Formula |
|---|---|
| Return on Capital Employed (ROCE) | $\frac{Profit\ before\ Tax}{Capital\ Employed} x100$ |
| Net Profit Margin (NPM) | $\frac{Net\ Profit}{Turnover\ /\ Sales} x100$ |
| Dividend Per Share (DPS) | $\frac{Gross\ dividend - preference\ dividend}{No.of\ ordinary\ shares\ in\ issues\ and\ ranking\ for\ dividend} x100$ |
| Earning Per Share (EPS) | $\frac{Profit\ after\ tax\ before\ extra\ ordinary\ item\ less\ preference\ dividend}{No.\ of\ ordinary\ shares\ ranking\ for\ dividend} x100$ |

The results for different measures of environmental accounting and profitability of the firms including Return on Capital Employed, Net Profit Margin, Dividend Per Share and Earning Per Share are presented in the following section. First, the descriptive analysis is presented followed by multiple regression analysis to see the association between Net Operating Profitability and all independent variables. The data obtained from the various financial statements are presented in a tabular form as shown in table 1 below:

**Table 2: Descriptive Statistics of Reliance Industry Limited of Gujarat**

| Year | ENVC Rs.(Crore) | ROCE % | NPM % | DPS Rs. | EPS Rs. |
|---|---|---|---|---|---|
| 2018-19 | 215 | 11.6 | 5.9 | 8.5 | 61.2 |
| 2017-18 | 764 | 13.2 | 7.8 | 8 | 62 |
| 2016-17 | 171 | 13.9 | 8.1 | 7 | 49.7 |
| 2015-16 | 1232 | 20.3 | 10.5 | 13 | 49.7 |
| 2014-15 | 1355 | 20.3 | 14 | 13 | 105.3 |
| 2013-14 | 4116 | 20.5 | 10.1 | 11 | 82.2 |

**Source:** Reliance Industry Limited of **Financial Statements of Various Years**

In analyzing the data presented in the above table, the ordinary least square regression method was used. The result of the data analysis is presented below.

**Table 3: Result of Regression Analysis**

| Variable | Coefficient | Std Error | t-Statistic | Prob. |
|---|---|---|---|---|
| ENVC | -3985.24 | 999.99 | -3.98 | 0.16 |
| ROCE | 761.04 | 139.97 | 5.44 | 0.12 |
| NPM | -774.11 | 204.00 | -3.80 | 0.16 |
| DPS | -364.90 | 190.81 | -1.91 | 0.31 |
| EPS | 52.55 | 15.40 | 3.41 | 0.18 |
| R-squared | 0.98 | Mean dependent var | | 26.12 |
| Adjusted R-squared | 0.90 | S.D dependent var | | 28.34 |
| S.E of regression | 491.2154 | F-statistic | | 10.81 |
| Sum squared resid | 241292.59 | Prob(F-statistic) | | 0.22 |
| Durbin-Watson stat | 8.53 | | | |

In the show the Table -3 From the result presented above, all the variables except Return on Capital Employed (ROCE) and Earnings Per Share (EPS) are in line with the apriori expectation. It can also be seen that Environmental Accounting has a positive relationship with the Net Profit Margin (NPM) and Dividend Per Share (DPS) and a negative relationship with Return on Capital Employed (ROCE) and Earnings Per Share (EPS) in the period under study. Using the Co-efficient of variation from the model presented above, it will be observe that autonomous Environmental Accounting which is represented by Environmental Cost (ENVC) is a negative 8839618 when all other variables are held constant.

Consequently, a unit change in Environmental Cost (ENVC) will lead to negative change of about 761.04 units in ROCE less the autonomous component provided all other variables arc held constant. Also, a unit change in ENVC provided all other variables are held constant will have a positive change of about -774.11 units in NPM less the autonomous component. Furthermore, a unit change in ENVC will lead to a positive change of about -364.90 units in DPS less the autonomous component. And a unit change in ENVC will lead to a negative change of 52.55 units in EPS.

Using the T- Ratio to test for their statistical significance, it is evident that only NPM and DPS variables are statistically significant. This is due to the fact that their observed T- values are positive and above the “rule of thumb of 2”. The other variables are statistically insignificant because their observed t-values are either negative or far less than the 'rule of thumb' of 2. From the R- squared of 0.98, the regression co-efficient indicates that about 83% of the changes in the dependent variable are explained by the changes in the independent variables. The F-value of 10.81 indicates that the parameter estimate cannot be dismissed at 5% level of significance. This is due to the fact that the calculated F- value is more than the critical K-value. The D.W statistic of 8.53 indicates the absence of auto - correlation since it is up to rule of Thumb of 2. In the course of this research, some hypotheses were formulated and they include:

$Ho_1$: There is no significant relationship between Environmental Accounting and Return on Capital Employed.

$Ho_2$: There is no significant relationship between Environmental Accounting and Net profit Margin.

$Ho_3$: There is no significant relationship between Environmental Accounting and Dividend per Share.

$Ho_4$: There is no significant relationship between Environmental Accounting and Earnings per Share.

To test for the above hypotheses, the researcher had to consider the test of significance, which is the F-statistic. The tool of F-statistic helps in determining the overall joint significant of the explanatory (independent) variables on the dependent or explained variable. At 5% level of significance, K critical or F tabulated is 0.001 when comparing this with the calculated value from the above table, which is 10.81. The decision rule is that, if the calculated value is greater than the tabulated, reject null hypothesis (Ho). Hence, the null hypotheses are rejected since f-cal (10.81) is greater than the f-tab (0.001). It indicates that the explanatory variables are jointly significant at explaining or causing much variation in the dependent variable (Environmental cost). The null hypothesis is therefore rejected, which mean that Environmental Accounting has significant relationship with the various variables used in measuring firm profitability. It is also necessary to

note that this relationship with the variables of corporate performance is cither positive or negative.

**9. Limitations of the Study**

Empirical research on corporate environmental disclosure is available largely for developed nations and very few is available for Asian countries. This research is probably one of the very few initial research works with respect to environmental accounting by Indian corporate.

Hence, the extent of prior research literature available on environmental accounting reporting by Indian companies is limited. The sample size considered for this research is too small to generalize and conclude for diverse sectors of Indian companies. There is scope for doing further theoretical and action research in this field.

**10. Conclusion**

Environmental costs cover all cost; incurred concerning environmental protection such as emissions treatment as well as wasted material, capital and labour which so called 'non product output' as a result of inefficiency production activities. Different firms may consider different elements into environmental costs but it is important that all significant and relevant costs are incorporated for sound decision making purpose. The general picture, which emerges from current reporting, is that since the disclosures of environmental information are voluntary, there is a diversity of reporting practice. Large companies tend to report more environment information in their annual reports than the medium-scale businesses; and the disclosure, tend to be more qualitative than quantitative despite the fact that there is a significant relationship between environmental accounting and Firm Profitability.

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