Impact of Environmental Accounting on Corporate Performance A Study of Corporations Adopted Environmental Accounting in Pakistan

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ABSTRACT

One of the major factors affecting corporate performance in Pakistan is a company's attitude toward the environment. The aim of this research is to find how environmental accounting affects corporate performance in Pakistan. The study's data collected from the annual reports and financial statements of 320 non-financial firms on the Pakistan stock exchange. Fixed effect regression analysis was used to examine the findings. The results show that environmental accounting has a positive relationship with earnings per share (EPS), dividend per share (DPS), return on capital employed (ROCE), and net profit margin (NPM). Based on these findings, it is proposed that the government should provide tax credits to companies that follow environmental regulations and enforce environmental reporting in Pakistan to improve business and national performance.

Key words: Environmental Accounting, Corporate Performance, and Corporate Reporting

Introduction

Background

The theory of green accounting is related to calculation of national income in which standard measure of income and output are Gross National Product (GNP), Gross Domestic Product (GDP) and Gross National Income (GNI) etc. In simple words green accounting is a form of accounting that attempts to factor in environmental costs when calculating an enterprise's operating income. It is recommended that policy makers should revise the measure of income that must include green accounting because GNP ignores environment (Ahmad et al., 2018). Green accounting takes into consideration not only the value of natural resources but also the cost or pollution and depletion of natural resources. The green accounting emphasizes more clearly about the quality of economic growth in term of sustainable development. The main goal of green accounting is to assist businesses in understanding and managing possible trade-offs. It is a favor or advantage granted in return for something between traditional economics goal and environmental goal. According to old system NDP is equal to the sum of net exports, financial consumption and net investment. Green accounting on the other hand uses the (SEEA) system of environmental economic accounting which focuses on depletion of limited natural resources and calculates the expense of environmental loss in economic wellbeing as a consequence of inequality decline. Degradation along with its prevention means availability or productivity of natural resources. Thus, the new NDP definition is green, and the EDP formula is EDP= net export + (NAP.EC + (NANP.EC − NANP.N)).

There are three big shortcomings in the SNA (System of National Accounts). First, it ignores the depletion of natural resources including farmland, forest, fishing stocks, and minerals, among other things. Second, there is environmental destruction, which is largely caused by pollution, and third, there is protective expenditure, which the community incurs in facing the external effect of environmental degradation. To address these SNA flaws, the UN's statistical division developed the SEEA scheme, which focuses on calculating the cost of environmental destruction and its mitigation when accounting for the loss of scarce natural resources. As a consequence, the calculation of green and NDP or EDP has been replaced by national product

assessment, which involves the economic cost of natural resource depletion that is needed to manufacture products and services directly or indirectly.

Problem Statement

Green accounting is related to the cost paid for environmental protection all over the world. Green accounting is essential for corporation to spend their earning to the society because they are generating revenue from the society. There the issue is that most of the corporations feel hesitant towards paying such cost and some of them are treating it as general overhead cost. According to the disclosure concept it should be disclosed under corporate social responsibility (CSR) activities. The study is an attempt to highlight the relationship among green accounting and corporate performance. It will provide an aid to the corporations to understand the impact and effects of green accounting on corporate performance.

Research Questions

The primary research question of this study is whether there is any impact of environmental accounting on corporate performance. As this research has employed four proxies to measure the corporate performance therefore, the secondary research questions are as follows:

1. Is there any impact of environmental accounting on earnings per share?
2. Does environmental accounting affect dividend per share?
3. Is there any impact of environmental accounting on return on capital employed?
4. Does environmental accounting affect net profit margin?

Objectives of the Study

The primary objective of this study is whether there is any impact of environmental accounting on corporate performance. The secondary objectives are as follows:

- To examine the impact of environmental accounting on earnings per share
- To investigate the impact of environmental accounting on dividend per Share
- To find the impact of environmental accounting on return on capital employed

- To investigate the impact of environmental accounting on net profit margin

Significance of the Study

The study is important in the context of corporations because it will help them understand why green accounting is important for a firm's performance. It is crucial for the investors also to know the impact of environmental accounting on the firm's performance as it will help them take better investment decisions. Policy makers can also utilize the findings to implement the environmental regulations and enforce reporting formalities on the businesses.

Literature Review

Review of Past Studies

This section discusses past studies on the subject and highlights the importance of environmental accounting for the corporate performance.

According to Ahmad et al., (2018) green accounting is a framework which provides the measurement for the past, present and future environment cost which can be considered for decision making process. Green accounting helps people to understand the concept of environmental accounting and to observe the environmental performance of everything that is around a particular place, person or thing. Their study aimed to find relationship between the performance of non-financial firms and green accounting in Pakistan. The regression analysis methodology was used in this research, which used annual data from 2006 to 2016. Green accounting and firm size were found to have a positive relationship with the performance. Although the effects of the return on capital employed and earnings per share were found insignificant.

According to Abdullah (2018) in the past twenty years, the relationship between information of green accounting and company's performance has dragged the consideration of critical research. Makori & Jagongo (2013) suggested that the green accounting is the capability to deliver correct information in the financial statement about the projected social cost which caused by the creating externalities on the situation and how greatly considered the mediation cost had been occurred to link the gap among margin private cost and margin social cost by a company. Their study employed the data of medium-small enterprises in Indonesia. The structural equation

model was used in this analysis, and the results showed that environmental accounting information system capability has a positive and significant impact and environmental accounting information system requirement.

The research conducted by Bassey et al. (2013) looks into the impact of green accounting and reporting on business performance in oil and gas companies in Nigeria's Niger Delta. The Pearson's product moment correlation co-efficient was used for the analysis. The sample of the study was planned to use stratified sampling and a random sampling procedure. The data were collected from secondary and primary sources. The data were gathered and obtainable by the tabulation analysis and also the correlational analysis of Person's product moment. The result of the study showed that the company's profitability has a positive relationship with the environmental accounting.

Huang and Fu (2019) investigated the relationship among the financial and environmental performance of companies. The study suggested that the environmental responsiveness of people, the general concern of corporates and the green accounting rules and procedure of the government, the system of green accounting which is implement by many corporates and at that moment they should reflect their green accounting performance. The findings revealed that adopting a green accounting system has a negative impact on the financial performance of businesses, and it does not significantly improve their green performance.

Yahaya (2018) examined the impact of green accounting on the financial performance of firms in Nigeria. Their study adds to the literature by investigating the impact of financial performance of registered environmental-sensitive corporations on green disclosure practice in Nigeria. The correlation analysis revealed that there is a positive and significant relationship between financial performance and green reporting practices. Moreover, the results of the regression revealed that green reporting have significant and positive impact on financial performance. The findings showed that the research determined that green revelation practices are significantly affecting financial performance.

In their study Magara et al. (2015) highlighted the effect of green accounting application on the financial performance of the organizations. The variables of the study were financial performance (Dependent Variable) and green accounting as an

independent variable. Both quantitative and qualitative data were used. The results of the study showed that the financial performance of the firms is positive related to agreement of green laws and pursuing of green cost saving, green evaluation and green information. According to Agarwal (2018) environmental accounting is a route for corporate growth. Through using this as a technique several of the green cost can be decrease by accurate result and similarly by effecting environmental technologies. Their study aimed to highlight the importance and meaning of environmental accounting. He suggested that the environmental accounting performs an important role in the (CSR) Corporate Social Responsibility of a corporation.

Review of past studies show that environmental accounting has a link with the corporate performance. Such a study is needed in Pakistan where, environmental accounting is new, and enforcement of these regulations is required.

Conceptual framework
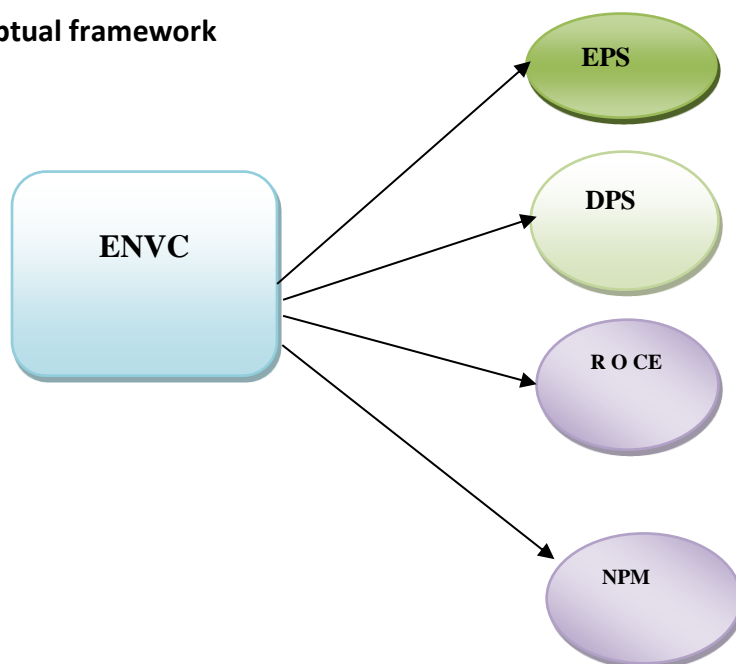
Hypotheses of the Study

Following hypotheses are drawn based on the findings of the past research papers and purpose of the current study.

The primary hypothesis of the study is:

H_1: There is a positive relation between environmental accounting and corporate Performance.

H_o: There is no impact of environmental accounting on the corporate performance

The secondary hypotheses of the study are formulated as follows:

$H_{1.1}$: Environmental cost positively affects the earnings per share

$H_{1.2}$: Environmental cost has positive impact on dividend per share

$H_{1.3}$: There is a positive relation between environmental cost and return on capital employed

$H_{1.4}$: Environmental cost has a positive influence on the net profit margin.

Methodology

The purpose of this study is to investigate the impact of environmental accounting on the firm performance in Pakistan. Population of this study was all the non-financial firms listed on the Pakistan Stock Exchange. But due to the availability of data on the important variables the sample was reduced to only 320 non-financial firms. The time span of this study is 10 years, that is from 2014-2023. Data for this study is collected from the financial reports of the respective firms.

Variables of the Study

The dependent variable of this study is firm performance. For the robustness of the findings this study has employed four proxies of the firm's performance. These are earnings per share, net profit margin, return on capital employed and dividend per share. The independent variable is environmental accounting. The control variables used in this study are firm size and leverage.

Variables Measurement

Earnings Per Share (EPS)

Earnings per share is the percentage of a company's profit that is assigned to each outstanding share of common stock.

According to the formula EPS is equal to:

$$\frac{Profit\ after\ tax\ before\ extra\ ordinay\ items\ less\ preference\ dividend}{No.of\ ordinary\ shares\ ranking\ for\ dividend} \times \frac{100}{1}$$

Net Profit Margin

The Net Profit Margin (also known as "Profit Margin" or "Net Profit Margin Ratio") is a financial ratio used to calculate how much profit a company makes from its overall sales. It determines how much a company's net profit is per dollar of sales. The net profit margin is calculated by dividing net profit (also known as net income) by total sales and presenting the result as a percentage. The formula for Net Profit Margin is :

$$\frac{net\ profit}{Turnover/sales}\ x\ \frac{100}{1}$$

Return on Capital Employed (ROCE)

This ratio is used to determine how well a business generates income from its capital. A higher ROCE is always more favorable, as it indicates that more profits are generated per dollar of capital employed. ROCE is determined using the following formula:

$$\frac{profit\ before\ tax}{capital\ employed}\ x\ \frac{100}{1}$$

Dividend per Share (DPS)

Dividends per share is calculated by multiplying the total amount of dividends paid out by the number of shares outstanding over time (including interim dividends).

Dividend per share is determined using the following formula:

$$\frac{Gross\ dividend-preference\ dividend}{No.of\ ordinary\ shares\ in\ issues\ and\ ranking\ for\ dividend}\ \frac{100}{1}$$

Environmental Cost (ENVC)

The proxy for the independent variable environmental accounting is Environmental Cost (ENVC). It is measured as the total cost of each activity divided by the total operational costs yields the relative distribution pattern of environmental costs.

Firm Size

Firm size, calculated by the natural log of total assets, is an indicator that influences environmental cost and corporate performance. Larger firms may generate more money, which might be connected to shareholder expectations and socially responsible behavior issues (Hillman & Keim, 2001).

Financial Leverage

Financial leverage is measured as total debt divided by total assets (Fischer & Sawczyn, 2013). As per the previous researchers' financial leverage as the corporate risk, which was calculated by the debt ratio. (Waddock & Graves, 1997) indicated that a company's risk might have an impact on its corporate financial performance over impacting long-term investment cost alternatives.

Econometric Model

This study has employed four proxied of the firm performance and included two control variables. Therefore, the four models to be analyzed in this study are as follows:

$$EPS = \beta_0 + \beta_1 ENVC + \beta_2 FS + \beta_3 FL + e_i \text{ --------- (1)}$$

$$DPS = \beta_0 + \beta_1 ENVC + \beta_2 FS + \beta_3 FL + e_i \text{ --------- (2)}$$

$$ROCE = \beta_0 + \beta_1 ENVC + \beta_2 FS + \beta_3 FL + e_i \text{ --------- (3)}$$

$$NPM = \beta_0 + \beta_1 ENVC + \beta_2 FS + \beta_3 FL + e_i \text{ --------- (4)}$$

Data Analysis

The data for this study is analyzed using descriptive statistics, correlation and panel data regression techniques.

Descriptive Statistics

Table 4.1 shows the descriptive statistics of the variables studied in this research.

Table 4.1: Descriptive Statistics

Where EC is environmental cost as an independent variable, EPS is earning per share, DPS is dividend per share, ROEC is return on capital employed, NPM is net profit margin are the proxies of dependent variable firm performance and firm size and financial leverage are control variables of the study.

Variable |	Mean	Std. Dev.	Min	Max
EC	1.653508	3.383708	101,750	1,505,709
EPS	.1548537	.1243212	.002	.59651
DPS	.14682825	.1949855	0	.7394
ROEC	.2153729	.2575606	0	1.052
NPM	.1894209	.1683104	.00053	.7142
FS	2.498310	1.49832	0	10.583
FL	.2753210	.252950	2.1732	3.68521*

The above table shows that the average value of EC is 1.65 with a minimum value of 101,750 and maximum value of 1,505,709 it shows that firms are actively involved in conducting environmental costs. EPS is found to have a minimum value of 0.002 and maximum value of 0.59651. DPS has an average value of 0.1468. ROCE with an average value of 0.215 and NPM with an average value of 0.1894 show that the firms have good financial performance. The maximum value of firm size is 10.583 and that of FL is 3.6.

Correlation Analysis

Table 4.2 Correlation Matrix

Variables	EC	EPS	DPS	ROCE	NPM	SIZE	FL
(1) EC	1.000						
(2) EPS	0.256	1.000					
(3) DPS	0.232	0.585	1.000				
(4) ROCE	0.168	0.605	0.461	1.000			
(5) NPM	0.158	0.587	0.392	0.495	1.000		
(6) firm size	0.238	0.257	0.243	0.249	0.280	1.000	
(7) Financial Leverage	0.252	0.143	0.170	0.136	0.631	0.038	1.000

The correlation matrix can help us to know the association among various variables. EPS, DPS, ROCE and NPM are found to have positive correlation with the environmental cost. It depicts that firms involved in conducting environmental related cost are having good performance. Table 4.2 also shows that firm size and leverage also have a positive correlation with the firm performance.

Regression Analysis

After the careful analysis of the data, i.e. checks of data normality and also the Hausman test for the suitability of the analysis technique, this study has employed fixed effect regression model to estimate the econometric models set for this study. The results and discussion of the regression model is presented below.

Table 4.3: Regression Estimates

M1, M2, M3, M4 depict the regression estimates of the four econometric models discussed in the methodology section of this study. EC is the environmental cost as an independent variable, EPS is earning per share, DPS is dividend per share, ROEC is return on capital employed, NPM is net profit margin are the proxies of dependent variable firm performance and FS and FL are control variables of the study.

Variables	(M1) DPS Coefficient (t-stats) (P-value)	(M2) EPS Coefficient (t-stats) (P-value)	(M3) ROCE (M4) NPM Coefficient (Coefficient) (t-stats) (t-stats) (P-value) (P-value)

Constant	(4.776251)	2.517238	.0326821	2.15234
	(1.96)	3.52	2.10	2.93
	0.022	0.013	0.029	0.023
EC	.2725731	(.2567718)	.3357103	.2973190
	(3.05)	(2.38)	2.39	3.06
	0.013	0.000	0.000	0.021
FS	.1482371	.1406866	.1234872	.1129569
	(3.19)	(2.19)	(3.36)	(1.98)
	0.003	0.028	0.001	0.004
FL	.1809436	.1672573	.1680085	.1588736
	(3.95)	(3.85)	(3.80)	(3.92)
	0.000	0.000	0.000	0.000
R-Squared	0.58	0.55	0.49	0.51
	0.51	0.52	0.53	0.56
	0.53	0.51	0.50	0.53
F-Stats	4.20	16.49	18.64	6.70
	19.18	14.80	17.39	20.75
	7.89	11.45	8.00	13.15
Prob>F	0.03	0.003	0.001	0.000
	0.000	0.003	0.002	0.003
	0.012	0.001	0.000	0.0028

Table 4.3 shows the empirical results of four econometric models. Results show that there is a positive relationship between environmental cost and earnings per share, dividend per share, return on capital employed and net profit margin. Their positive coefficients are found to have the p-value less than 0.05(Level of significance); it means that all these variables have a significant relationship with the independent variable.

Control variables i.e. firm size and financial leverage are also having a positive impact on the firm performance, as the results from the values of coefficient are (.1482371, .1406866, .1234872, .1129569), its t-values (3.19, 2.19, 3.36, 1.98) and the p-values are less than 0.05 (0.003, 0.28, 0.001, 0.004). similarly, the financial leverage

coefficient values are (.1809436, .1672573, .1680085, .1588736), its t-values (3.95, 3.85, 3.80, 3.92) and the p-values are less than 0.05 (0.000, 3.85, 3.80, 3.92).

In the above model one R-square are on average 0.58 means 58% which means that there was 58% change in the dependent variable due to change in the explanatory variable. As for as individual explanatory variable is concerned earning per share was found significant at critical value of p<0.05: The slope of coefficient β1 is .2725731. Due to one unit change in environmental cost earning per share increase .2725731 on average.

In model two R-square value is 0.55 on average means 55% change in the dependent variable due to change in the explanatory variable. As for as individual explanatory variable is concerned dividend per share was found significant at critical value of p<0.05: The slope of coefficient β1 is (.2567718) due to one unit change in environmental cost dividend per share increase (.2567718) on average.

In third model the overall variation between dependent and independent variable is 0.53 on average means 53% as considering the individual variable return on capital employed is found significant towards environmental at p<0.05. However, ROCE statistically significant because it was in the critical range and having impact on the dependent variable.

In fourth model the overall variations between dependent and independent variables is .56 on average means that 56% as considering the individual variable net profit margin is found statistically significant towards environmental at p<0.05 means it was in a critical range and impact on dependent variable.

Conclusion

The outcome of this research is that environmental cost positively affects the corporate's performance (EPS, DPS, ROCE, NPM). All costs associated with environmental protection, such as pollution treatment and waste material, capital, and labour produced as a result of inefficient production activities, are included in environmental costs. Different businesses may consider different factors when calculating environmental costs, but it is critical to include all important and related costs in order to make informed decisions. Because environmental data disclosure is voluntary, the overall picture that emerges from current reporting is that there is a wide range of reporting practices. Despite the fact that there is a significant

relationship between corporate performance and environmental accounting, large companies tend to report more environmental information in their annual reports than medium-sized enterprises, and the disclosure is more qualitative than quantitative

Recommendations

On the basis of the findings, this study recommends that:

1. Because most businesses do not disclose their environmental activities in their annual reports, the government must make environmental reporting mandatory.

2. Government agencies should provide tax credits to businesses that follow the laws of the land in terms of environmental protection, which would promote environmental reporting.

3. Companies, on the other hand, should ensure that they follow all of the country's environmental laws, as this would help them perform better.

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