

Leveraging Bottom Line of Trade through Environmental Proactiveness

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Abstract

It is frequently hypothesized that incorporation of environmental issues in trade practices may leverage the bottom line of trade and improve its environmental performance. Whether or not this hypothesis is true is as important from the perspective of environmental proactiveness as questions relating to the relevant issues: (1) What are the relevant environment performance indicators for a facility's environmental proactiveness; and (2) How environmental proactiveness of any trade practice is measured. Based on ample empirical evidence for Indian grossly polluting units, this paper addresses that there are six primary environmental performance indicators (EPIs) viz., environmental policy, environment department, regulatory compliance, environmental audit, EMS certification and environmental cost management that may reflect the level of incorporation of environmental issues in trade practice. We have tried to measure this level of integration by applying quantitative scores. We have termed this as 'environmental proactiveness score (EPS)'. Furthermore, we have shown the variation in the nature of firm's environmental proactiveness on the basis of EPS.

1.0 Introduction

In the recent past corporate world had witnessed many-fold increase in the requirements of the environmental regulations in the trade practice. Such requirements are likely to be further strengthened in the future. This warrants businesses to take more responsibility for the environmental damage that they create and to leverage bottom line of the trade practice through environmental proactiveness. The beginning of 21st century have witnessed the fast changing trade environment in our country and gradual changes in customers' expectations that have made it necessary to trade practice to take a proactive approach to deal with problems relating to environmental pollution control and management.

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There are four reasons why trade practice should take environmental factors into account in its management processes. Those four reasons are ethical, economical, legal and commercial. From ethical point of view, as human beings we have a duty to look after the world in which we live and to hand it on to our children in good shape. From economic point of view, conserving resources and not generating waste products or wasting energy means we save on cost. From legal point of view, more and more governments are passing laws to control how we interact with the environment. Therefore we need systems to make sure we stay within the law, otherwise we can be fined and damage our reputation. From commercial point of view, without evidence of an environmental management system, the number of customers prepared to trade will start to fall. On the other hand, by being able to demonstrate good environmental practice, new market opportunities may open up (Edwards, 2001).

Globally, the trade practices are faced with the challenge of integrating environmental considerations into their production and marketing plans. The major concern to environmental management is determining ways in which industrial action can be made compatible with nature. When we say that business should contribute to the good of the society, it implies that business has an obligation both for stakeholders and environment. Here, the concept of corporate social responsibility comes up (Bowen, 1953). Further, it is attempted to aim at taking a holistic and integrated approach towards environmental management in trade practice for carrying capacity based sustainable development.

However, major changes in corporate strategy are clearly visible due to the increased environmental concerns of stakeholders and the belief that being 'green' pays through cost reduction and increased market entry (Bhargava and Welford, 1999). A more effective use of raw materials in production results in diminishing costs for example, and a greener corporate image leads to an increase in market share. New market opportunities might also be created in the form of new products and technology (Bostrum and Poysti, 1992; Taylor, 1992; Gladwin, 1993; Welford and Gouldson, 1993; Bhattacharya, 2004).

For India, very few empirical efforts have been spent on identifying the role of different environment performance indicators (Gupta and Goldar, 2003; Chakrabarti and Mitra, 2005; Pahuja, 2006) in trade practice. In the early 1990s, firms began to implement individual environmental management systems (EMSs), including environmental reports and plans for continuous improvements in production processes and environmental performance. Since then, the voluntary adoption of international norms, such as the standards of the International Standards Organization (ISO) 14001, has become a vital supplement to mandatory environmental policies based on regulation and legislation, involving the monitoring of environmental performance and the assessment of achievements in trade practice.

However, as it was found that Indian trade practice is not proactive compared to those in developed countries (West Bengal Pollution Control Board, 2004-2005), the central research issue in this study was to assess the present position of trade practice in case of Indian companies regarding corporate environmental management and the level of proactiveness in management of environmental issues through appropriate policies and procedures. Thus, the present study attempts to reveal the position of sample units regarding environmental management. It aims to assess how far the units are proactive in management of environmental issues.

2.0 Review of Literature

To date, the literature on the relationship between corporate environmental management practices and trade performance has mainly focused on the choice of an optimal policy instrument regarding selection of environmental performance indicators in case of any business unit.

Little (1991) adapts the traditional business value chain (Porter, 1985) to the environmental management in order to identify the various ways in which the internal performance drivers can contribute in the development of competitive environmental strategies. Taylor's research (1992) shows that leading companies are using environmental pressures to improve operational efficiency, heighten corporate image, develop new products and opportunities and thus, gain a competitive edge. This could mean a change in corporate culture, objectives, plans and even allocation of resources (Welford and Gouldson, 1993).

With a very few exceptions, such as Gupta and Goldar (2003), Chakrabarti and Mitra (2005), Pahuja (2006), it was found that no extensive study has yet been made in the Indian context attempting to measure the position of trade practice in the field of environmental management. Also, previous studies had hardly made any effort to identify the different environmental indicators for making the trade proactive. As a consequence, there appears to be a lack of econometric studies on the issue of corporate environmental management based on large-scale surveys at the firm-level.

OECD (2004) identifies 'environmental policy', 'environmental management system' and 'environmental performance reporting' as three major indicators of company's efforts at improving the environmental performance of business units. Takahashi and Nakamura (2005) choose 'formalization', 'centralization' and 'professionalization' as the independent variables of corporate greening. Ito (2006) puts stress on a number of indicators viz., 'environmental management system', 'environmental accounting', 'environmental reporting', 'environmental ranking', 'financial support for eco-conscious financial products' and 'eco funds'. Besides these, he also considers 'environmental labels', 'life cycle assessment', 'environmental performance ratings', 'support tools for small and mid-sized enterprises', 'environmentally compatible design' as the other variables. Sohal and Zutshi (2006) identify some critical

success factors (viz., 'top management commitment', 'implementation support', 'proper communication', 'awareness amongst personnel', etc.) as primary indicators. The Northern Ireland Eighth Environmental Management Survey (2006) chooses 'environmental policy', 'environmental audit', 'level of regulatory compliance', 'certification status', 'level of management bearing the responsibility to control environment department', 'employee awareness', 'training programme', etc. as prime environmental indicators.

In the field of environmental performance, some authors used the term environmental performance indicators (EPIs), which Tyteca (1994) defined as tools that allow the analysis of the improvement (or deterioration) of a given firm's environmental performance. Furthermore, the tools that are applied for incorporation of environmental issues in trade practice are Environmental Auditing, Life Cycle Assessment, Eco-Labeling, Environmental Management System, Pollution Prevention; etc. (Fava *et al.*, 1993; Cascio, Woodside and Mitchell, 1996). Issues dealing with an organization's style of management include environmental management system, environmental auditing and environmental performance evaluation. Whereas, product evaluation consists of environmental aspects in product standards, eco-labeling and life cycle assessment.

Regarding quantification of the above-mentioned environmental performance indicators, Davis (1994) stated that quantity measures give weight and usefulness to qualitative information such as environmental policies, but only as long as the qualitative message is clear. Fiksel (1994) expressed his opinion regarding such quantification in the same tune.

In some studies, environmental performance indicators have been weighted on the basis of their relative importance to the environmental proactiveness. The weights used have either been determined by the researcher or taken from previous studies. While in some other studies, unweighted indicators have been used. In such an index, equal weight, i.e. 'one' has been assigned to each environmental performance indicator of the environmental proactiveness on the assumption that all environmental performance indicators are equally important to arrive at proactiveness score (for example, the Northern Ireland Eighth Environmental Management Survey, 2006 where all environmental performance questions were equally weighted). Any weighted index may involve an element of subjectivity, but it may facilitate the true measurement of the score recognizing perceived importance of different primary indicators to overall environment management (Wallace, Naser and Mora, 1994). It is most unlikely that each primary indicator has equal weightage in framing a real life environment policy. Business in the Environment and KPMG Peat Marwick (1992), Global Environmental Management Initiative (1998), Gupta and Goldar (2003), Wier *et al.* (2005) arguing in the same tune, put weightage of each performance level based on priority during the evaluation of environmental proactiveness. Fiksel (1994) stated that there is no universal weighting scheme that will suit the needs of diverse organizations and each industry and/or company should develop a scheme that suits its business characteristics.

3.0 Data, Sample and Methodology

3.1 Sample Design

Our facility and firm-level data set of grossly polluting units of West Bengal, India originates from the Annual Report of West Bengal Pollution Control Board (WBPCB), 2004 – 2005. The data set is based on 55 valid questionnaires, including questions relating to trade-specific characteristics and environmental portfolio.

It was reported in the Annual Report of WBPCB that there are total 332 numbers of grossly polluting units in West Bengal. Major concentrations (around 10% or more) of those units were seen in Howrah, Burdwan, Kolkata, 24 Pgs. (N), Hooghly and Medinipur districts. These six districts covered about 84.75% of total grossly polluting units in West Bengal. Considering time and resource constraints, it was decided to restrict the survey among 25% of those units. Accordingly, 55 grossly polluting units were target units for our study. Based on the nature of sample units, we identified 5 major industry segments, namely, 'chemical'; 'ferrous metal'; 'food & beverage'; 'non-ferrous metal' and 'thermal power'. Rest of the sample units that did not fall under these 5 industry segments were clubbed under head 'others'.

3.2 Data for the Study

The information was collected on the basis of personal interview and group discussions with executives and workers of the target units as well as officials of the various regulatory agencies including the various Chambers of Commerce. During survey, most of the times we involved Personnel Manager / HRD Manager, Production Manager, Environment Manager, Works / Factory Manager, R&D Manager, Finance Manager and Operation Manager (Safety Department) to fill up the questionnaire, since the questionnaire covered different functional areas. Again, to avoid bias, information obtained from top / middle management level was checked through the discussion with shop floor level workers as well as other staff members.

3.3 Methodology

Literature survey and focus group discussion method were used for the selection of environmental performance indicators and major sub-indicators. Further, based on the previous empirical studies, it was decided to attribute some score/weightage to each of the indicators. Later, based on previous studies on environmental performance and our sample survey, normally accepted norms, also the theoretical considerations and availability of data, a number of indicators had been selected as potential environmental performance indicators for explaining the variation in the environmental proactiveness among the selected units. Furthermore, the variation in the nature of firm's environmental proactiveness was derived on the basis of EPS.

4.0 Indicators & Scores

4.1 Selection of Indicators

Based on the previous studies and discussions with the Chairman, WBPCB and also with the top personnel of other trade bodies, viz., Indian Chamber of Commerce, the Bengal Chamber of Commerce and Industry (BCCI), Federation of Indian Chambers of Commerce and Industry (FICCI), etc., the study concentrated on 6 primary indicators and some major sub-indicators that may lead the units towards environmental proactiveness.

The primary 6 indicators are as follows:

1. Environment Policy;
2. Environment Department;
3. Regulatory Compliance in the areas of
 - A) Air Quality
 - B) Effluent
 - C) Generation of Solid & Hazardous Wastes
 - D) Generation of Noise
4. EMS Certification;
5. Undertaking Environmental Audit;
6. Environmental Cost Management.

4.2 Assignment of Score

Based on the previous empirical studies, it was decided to attribute some score/weightage to each of the indicators mentioned above considering their perceived importance towards environmental proactiveness for any trade practice. The environmental performance indicators are divided into various sub-indicators to measure Environmental Proactiveness Score (EPS). Scores were assigned for each sub-indicator after consulting experts in the field and government officials. The break up of maximum achievable score for each indicator is given below:

Primary Indicator	Score/Importance
Having Environment Policy	90
Having Environment Department	90
Meeting Regulatory Compliance	310
EMS Certification	100
Undertaking Environmental Audit	100
Environmental Cost Management	310
Total	1,000

Source: Results computed.

For each of such sub-indicators sample units were assigned scores on the basis of their performance in that particular area. Ultimately, to obtain EPS, following formulae was applied:

$$EPS = \frac{ScoreObtained}{MaximumAchievableScore} \times 100$$

Accordingly, the study evaluated the combined proactiveness score value of the surveyed units based on performance with respect to all of the six primary indicators.

Accordingly, the subsequent section (Section 5) makes the analysis and Section 6 focuses on the results.

5.0 Empirical Results

In this section, the major empirical findings of the present study are reported under the following two heads:

- (i) Findings relating to the position of sample units regarding Environmental Performance Indicators
 - (ii) Findings relating to the quantitative evaluation of environmental proactiveness of the sample units
- (i) Major findings relating to the position of sample units regarding Environmental Performance Indicators:

Relating to Environment Policy:

- 50.91% (28) of the surveyed units had an environment policy.
- Out of 28 surveyed units having environment policy, 32.14% had not formally adopted their environment policy.
- 50% of the surveyed units had not mentioned their environment policy in their mission statement/preamble.

Relating to Environment Department:

- Majority (61.82%) of the surveyed units did not have any environment department.
- In case of only 23.81% units having environment department, senior management level staff members took the position of head/in-charge of the environment department.

Relating to Environmental Compliance:

- Out of 48 surveyed units that had taken specific measure in the area of air pollution, in majority (62.50%) of the cases implementation status was average.

- Out of 34 surveyed units that had taken specific measure in the area of water pollution, in 41.18% of the cases implementation status was average.
- Out of 28 surveyed units that had taken specific measure in the area of land pollution, in 42.86% of the cases implementation status was average.
- Out of 23 surveyed units that had taken specific measure in the area of noise pollution, in 13.04% of the cases implementation status was average.

Relating to EMS Certification:

- Out of all 55 surveyed units, certification was obtained by 25 (45.45%) units.
- Out of 25 certified units, 18 units were certified under ISO 9001 only. 3 units were certified under ISO 14001 besides ISO 9001. 4 units were certified under OHSAS 18001 besides ISO 9001 and ISO 14001.
- All ISO 14001 certified units undoubtedly stated that social responsibility was a major driving force for initiating ISO 14001 implementation.

Relating to Environmental Audit:

- Majority (60%) of the surveyed units did not undertake environmental audit.
- 38.89% of the surveyed units undertook environmental audit annually.
- In 46.15% cases environmental audit undertaken by internal departments was not verified externally.

Relating to Environmental Cost Management:

- In case of 27.27% of the surveyed units, environmental improvement was not covered in the company budget.
 - Analysis of annual budget for the study period (2005 – 2006) revealed that in case of majority of surveyed units having separate financial allocation for environmental matters, 10 – 15% of the total planned expenditure was separately allocated for fulfilling the objectives of environment policy.
- (ii) Major findings relating to the quantitative evaluation of environmental proactiveness of sample units:

Combined Proactiveness Score based on Overall Environmental Performance:

- Out of 55 surveyed units, 23 units (41.82%) obtained less than 50% score, out of maximum achievable score.

- Out of these 23 units, 4 were ISO 9001 certified and the rests 19 did not have any certification.
- 25 (45.45%) units obtained 50 - 70% score, out of which some (56%) were ISO 9001 certified and the rests did not have any certification.
- Out of all ISO 9001 certified units, majority (77.77%) obtained score in the range of 50 – 70%.
- Units that were ISO 14001 certified had scored more than 70%.

The overall statistics relating to Environmental Proactiveness Score by industry segment considering the status of all the six primary indicators is reported in Table 1.

Table 1

Summary Statistics of Environmental Proactiveness Score by Industry Segment

Sl. No.	Industry Segments	Environmental Proactiveness Score (%)		
		Mean (%)	Std. Dev.	Range (%)
1	Chemical	53.60	17.46	27.76 - 82.60
2	Ferrous Metal	44.21	10.71	27.03 - 61.76
3	Food & Beverage	52.36	4.43	46.27 - 56.89
4	Non-Ferrous Metal	53.76	11.77	36.72 - 76.40
5	Thermal Power	64.36	13.10	40.14 - 74.52
6	Others	55.17	13.37	31.33 - 75.38
	Overall	52.03	13.89	27.03 - 82.06

Source: Questionnaire Survey. Results computed.

Table 1 reveals that the highest mean score value was obtained by the units of thermal power. Poor performance was observed in case of units of ferrous metal industry. Medium performance was reflected in case of other industry segments.

Our analysis revealed the logic behind the poor proactiveness score of the units. Some of the major lacuna that were identified are: sometimes they didn't have any environmental policy or if they had any environment policy, it took long time to formulate such a policy or they had not mentioned their environmental policy in the mission statement or they had not changed their environmental policy after its formulation; or they didn't have any environment department; or they didn't undertake any environmental audit or if they undertook

environmental audit, it was done by only internal departments and not verified externally; or in the area of land/noise pollution they had not taken any preventive/precautionary measure or they recycled very insignificant amount of solid wastes and dumped their solid wastes instead of selling their wastes to the other units and as a result they didn't generate enough revenue or they disposed off their hazardous wastes without following required safety precaution; or they did not incur adequate cost for taking care of environmental issues and as a result they were not reaping benefits as desired.

6.0 Summary and Conclusion

The major question addressed in this paper is: How is the bottom line of the business trade leveraged? How is the environmental proactiveness of the business units measured? What are the different environmental performance indicators? How does the environmental proactiveness vary from unit to unit? On the basis of a unique facility and firm-level data set for Indian grossly polluting units, we have chosen six primary environmental performance indicators (EPIs) viz., environmental policy, environment department, regulatory compliance, environmental audit, EMS certification and environmental cost management that may reflect the level of incorporation of environmental issues in trade practice. We have tried to measure this level of integration by applying quantitative scores. We have termed this as 'environmental proactiveness score'. The results of this study broaden our understanding of Environmental Performance Indicators by identifying them and exploring their relative contributions to the decision to incorporate environmental issues in trade practice.

Accepting these results, it would be advisable to focus environmental policy, environment department, regulatory compliance, environmental audit, EMS certification and environmental cost management and on stimulating internal factors in order to leverage the bottom line of the trade practice through enhancing environmental proactiveness, for instance, through the opportunity to employ certification as a marketing instrument for firms that are already validated. The EPIs also help to improve organizational reputation and strategically align the facility with future changes in the general trade environment. Facilities that fail to maintain their environmental indicators, therefore, appear to forego these competitive advantage opportunities.

These findings have important implications for future research. The concept of environmental proactiveness in trade practice is broad in scope and several issues come within its purview. Hence, improvements and extensions of the present study can not be ruled out. There is need for continuing more exploratory and empirical research on different aspects of environmental proactiveness in trade practice. An empirical study may be pursued to explore the presence of any trade specific determinant(s) that may explain the variation in the extent of environmental proactiveness score. If yes, then how those determinants are

interrelated and significant. An in-depth study on environmental proactiveness may be made in specific areas of trade practice particularly where extent of environmental proactiveness is found to be poor, such as environmental audit, environmental cost management, etc. Furthermore, in future, environmental management practices in sample units for several years may be examined, after taking steps to standardize year wise data or reduce their asymmetries, instead of focusing on one-year data, as this could provide stronger and more relevant result. Future research may also pursue a comparative study of trade practice and environment proactiveness of Indian companies and of that in developed countries, to see how far trade practice and environment management practices in Indian companies are lagging behind the International level.

In summary, this study attempts to leverage the bottom line of trade practice through exploring empirically the position of industrial units in West Bengal regarding environmental management. It is desired to assess how far the sample units are proactive in management of environmental issues. In addition, it is desired to analyze the nature of variation in proactiveness score among the surveyed units. In this context, such study can serve as a simple guideline for viewing a trade portfolio at a glance and may serve as a starting point for discussing incorporation of environmental issues among strategic business units of any trade practice.

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