A Review on Relation between Environmental Performance with Firm Performance and Its Various Impacts

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ABSTRACT

In the current era of green-consciousness, improving environmental performance has been recognized as a useful tool to assist firms in incorporating performance and competitive advantage (Chiou et al., 2011). The eco- centric theory proposes that corporations should not limit their objectives to maximise profits, revenues, or competitiveness. Instead, corporations or companies with proactive orientation strategies have improvedenvironmental performance.The betterment will appear by using environmental performanceindicators which extend the goals to address the activities and their impacts on the environment (Shrivastava, 1995b). These issues affect all levels of a company's operations (Buzzelli,1991). United Nations (1997) considered environmental performance indicators as an information tool that summarises data on complex environmental issues that show the overall statusandtrendsofthose issuesthatcanbe accessed.The present conceptual paper focused on environmental performance, its various indicators, relation between environmental performance and firm performance with various impacts.

Keywords: Environmental Management, EnvironmentalPerformance, Environmental PerformanceIndicators Firm Performance.

1. Introduction

Since companies vary in their operations comparing companies from different industries might not be appropriate. However, when comparing companies' sample groups, it is essential to confirm that the firms are comparable and that there is data available.The choice and use of environmental indicators by companies dependon the type of firms, their sector, size, proximity to environmentally sensitive consumer markets, the time horizon involved, the organisations' corporate culture and degree of external environmental regulation. The core theoretical underpinning of ecological modernisation theory is that green management serves as an innovative mechanism

for firms to gain some benefits such as corporate reputation, financial performance and new product success (Przychodzen and Przychodzen, 2015). Various research studies have discussed firm performance (referredto as FP hereafter) from different angles and the present conceptual paper focused to identify the major environmental performance indicators (referredto as EPIshereafter), various levels of users and functions of EPIs, relationship between Environmental Performance, (referredto as EP hereafter) with FP and its impacts.

2. EnvironmentalPerformance

There has been an increasing need to apply the proactive approach of Environmental Management(referredto as EM hereafter)in the business community by balancing environmental, economic and social performance as part of society's responsibility (Guerci, Longoni and Luzzini, 2016).EPis growing in significance for corporations as well as nations (Mehta and Chugan, 2015). EP mainly relates to manufacturing plants' ability to decrease toxic and hazardous materials consumption, air emissions and solid wastes (Laosirihongthong, Adebanjo and Tan,2013).

3. Environmental Performance Indicators

Theenvironmental indicator is supposed to reflect the different impacts of an activity on the environment and reduce them. That is, EPIs reflect the environmental efficiency of a production process involvingquantities of inputs and outputs. Christmann and Taylor (2001) stated that EP at a country level is not fully comparable across countries. However, selection of meaningful and useful EP measures is becoming increasingly important due to the increased costs of environmental operations, pressures from markets, regulators or public, voluntary initiatives and international standards (Global Environmental Management Initiative, 1997). Hence the EPIsis a composite index that provides a data-driven summary of sustainabilityworldwide.

4. Characteristics of Environmental PerformanceIndicators

Ditz and Ranganathan (1997) comment that a unified reporting framework that embraces transparency, comparability and completeness should include a set of four EPIs such as material use, energy consumption, non-product output and pollutant releases. Desirable characteristics of EPIs are highlighted in the studies (Skilliusand Wennberg, 1998) briefly described asfollows.

i. **Relevance:** The relevance criterion implies simplicity in interpretation and comprehension of indicators and information that responds to the company'sandstakeholders'needs.EPIsshouldadequatelyreflectthe relationship between the company and its environment through input and output flow.

ii. **Accuracy of analysis:** Indicators have used to compare, monitor and be based on sound theoretical foundations, both in scientific and technical terms. The accuracy of analysis implies a limit or reference value to which the index is tocompare.

iii. **Measurability:** Indicators must be sensitive to data and a slight variation of the observed process must show a difference in the acceptable response time and error margin. Measurability, which pertains to the data, is the basis for constructing an indicator and immediately available at a reasonable cost or benefitratio.

iv. **Comparability:** EPIs allow the firms in carrying the core functions such as monitoring the evolution of the performances of a given unit over time, comparing several plants that perform the same kind of production, comparing several companies among a given industrial sector and in comparing different sectors, among themselves.

The review identified four critical categories of EP have derived from the fundamental resource inputs and outputs of a firm.

- Materials use reflects the quantities and types of materials used-EPIs track resource inputs distinguishing their composition and source.
- Energy consumption reflects quantities and types of energy used or generated and provides the energy analogue to materials use also differentiates fueltypes.
- The non-product output shows the quantities and types of waste created before recycling, treatment or disposal. EPIs distinguish production efficiency from end-of-pipe pollution control.
- Pollutant releases refer to quantities and types of pollutants released into the air, water and land. EPIs include toxic chemicals, GHG, solid wastes and othercontaminants.

5. Various Levels of Users and Functions of EPIs

EP and its indicators are very useful at various levels of users such as corporate managers,

production plant managers, marketing managers, purchasing managers, investors and shareholders to achieve and evaluate their specific objectives. The evaluation of EP is very crucial for various categories of stakeholders. Table 1 shows a clear brief outline of the various functions and users ofEPIs.

Table 1: *Various Levels of Users and Functions of EPIs*

Levels of Users	Major Functions
Corporate managers	To monitor the firm's environmental development with strategic targets. To identify harmful wastes and emissions. To communicate corporate environmental performance. To refer to the performance in preceding periods/years.
Production managers	To identify opportunities for efficiency improvements. To convey information on the efforts to limit the environmental impact of plant operations.
Marketing managers	To identify new market opportunities. To defend market positions.
Purchasing managers	To be accountable. To business -to -business relation.
Environmental authorities	To examine the compliance of the firm with set standards. To create databases in developing and implementing various governmental policies.
Investors and Shareholders	To be an indicator of financial performance. To indicate environmental liabilities that could affect the firm's financial performance.
Consumers	To meet the needs of green consumers.

6. Firm Performance

Firms, both for-profit and nonprofit may pursue different objectives and there is probably no single measure that fully captures firm performance (Venkatraman and Ramanujam, 1986). Domains of the concept of financial performance range from outcome-based financial indicators or ratios (e.g., sales growth, return on investment, return on equity and return on assets). The non-financial indicators such as market share, product or service quality, corporate growth and new or innovative product introduction are also assumed to be drivers of organisational efficiency and profitability. As a long-term operational objective, improved non-financial performance has manifested by increased customer loyalty, new customers, enhanced image and reputation of a firm (DeBurgos-Jimenez et al., 2013). In short, Murphy, Trailer and Hill (1996)

comment that FP is a multidimensional concept whoseindicators can be departmental such as production, finance, or marketing (Sohn, Joo and Han, 2007).

7. Relationship between Environmental Performance and FirmPerformance

Demands on companies to measure documents and disclose information about EP will become more invasive in the same way that the financial results measure because EP is now a value significantly for many competitors and successful companies worldwide (Jacobs and Kleiner, 1995). In public companies, EP will become a critical factor to scrutinize (Greeno and Robinson, 1992).Sudies operationalised firm performance with sales volume, market share, return on investment (Ar, 2012), firm image (Hassan, Balan and Prakash, 2016) and customer satisfaction (Suki, 2017). It is difficult to ensure data reliability from the impact of the corporate long-term investment's fluctuations and the rate of return on investment.The relationship between environmental variables and FP affirmed that proactive environmental practice is significantly related to firm performance (Lopez-Gamero et al., 2009).The better EP will enable and lead the organisation to outperform better, especially in terms of improved sales, market position, profit rate and reputation. Fig. 1 shows the managers' core environmental decision areas to ensure better firms' performance.

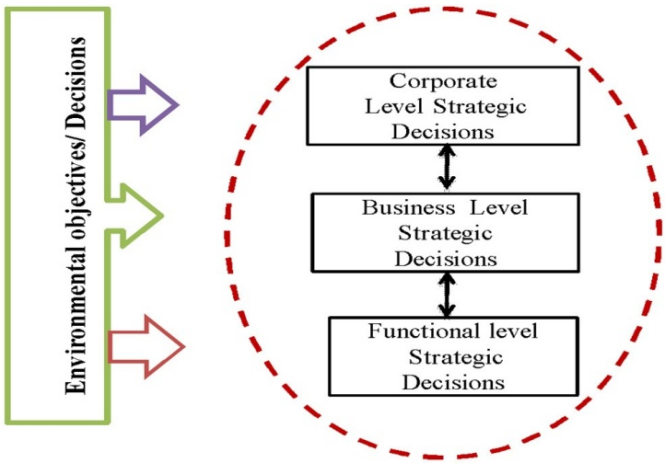

Fig. 1: *Integration of Environmental Decisions at Various Strategic Levels of a Firm*

8. Impact of Environmental Performance on FirmPerformance

Industry EP may be influenced by natural resources and the facilities' output levels to environmental medium (i.e., air, water, land). The successful implementation of green practices is assumed toenhanceEP and improve corporate reputation and customer satisfaction, bringing better financial performance (Albino et al., 2009; Lee, Kim and Choi, 2012). Improving EP is a challenging task for companies that operate in a similar industrial context (Silvestre, Gimenes and Silva Neto, 2017). Studies by Clarkson, Li, Richardson and Vasvari (2011), De Burgos Jimenez et al., (2013) and Fujii, Iwata, Kaneko and Managi (2013) describes the positive consequences of EP on financial outcomes. Financial gains have improved through cost reduction, improved efficiency in using resources and reduced environmental incidents (De Burgos-Jimenez, Vazquez-Brust, Plaza-Ubeda and Dijkshoorn, 2013).

Due to the synergies between reducing environmental impact and improving financial returns (Fujii et al., 2013) EP increases return on assets through sales and improved capital turnover. Laari, Toyliand Ojala(2016) comment that environmental incidents can damage a firm's image from a profit perspective. The efforts to improve EP has widely shown to bring numerous sustainable benefits, such as cost reduction, product differentiation, improved social reputation and legitimation (Lopez-Gameroet al., 2009), ensure increased market share and profitability (Wahba, 2008). According toStefanandPaul(2008)betterEPmayfacilitatenewmarket opportunities, improve overall image or prestige, increase customer loyalty and support salesefforts.

Jacobs, Singhal and Subramanian (2010) describe that EP helps firms to attract resources and social support while expanding market opportunities. Wagner (2005) found that focusing on improvements of EP in terms of reducing (undesired) outputs (i.e. Emissions) from production is unlikely to bring about a positive influence on economic performance beyond relatively low levels of EP. The EP includes company activities considering energy savings and resources used (Chen, Chang and Wu, 2012). These savings have expected to minimise operating expenses and increase company profits. The successful green innovation performance helps firms to achieve greater efficiency, establish and strengthen the core competencies, enhances the green image, which may eventually enable firms to attain superior performance as well as enhanced profitability (Albort-Morant, Leal-Millan and Cepeda-Carrion, 2016). Hence the present review identified that environmental performance has a positive impact on firm performance.

9. Conclusion

Environmental aspects have to integrate with corporate-level strategic decisions as part of organisation philosophy, short term plans and long-term vision. The committiment from top management ensures a link between environmental and organisational objectives, thereby gaining a better reputation or public image. By embedding environmental concerns on marketing strategythrough eco-labelling, eco-packaging and green products with less non-polluting materials, easy to recycle, decompose will boost the public image, market share and sales. The functional level strategy can ensure better waste management, low energy and water consumption and less toxicity in the manufacturing process. Hence better EP will pave the way for better sales, profit and market position among thecompetitors.

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