Journal of Cleaner Production 182 (2018) 105–113

Contents lists available at ScienceDirect

Journal of Cleaner Production

journal homepage: www.elsevier.com/locate/jclepro

A framework to evaluate eco- and social-labels for designing a sustainability consumption label to measure strong sustainability impact of firms/products

Ioannis E. Nikolaou Assistant Professor, Corporate Environmental Management *, Thomas Tsalis Post Doc Research, Corporate Environmental Management

Business Economics and Environmental Technology Lab, Department of Environmental Engineering, Democritus University of Thrace, Vas Sofias 12, 67100, Xanthi, Greece

ARTICLE INFO

Article history:
Available online 7 February 2018

Keywords:
Sustainable consumption
Local sustainability
Green consumption
Green consumers
Sustainability composite indexes

ABSTRACT

Many methodologies have been suggested in the current literature to facilitate scholars and consumers to select environmental friendly products. A basic weakness of such methodologies is the lack of strong sustainability ideas and aspects which are essential for the selection procedures of environmental friendly products. This paper develops an evaluation framework to assist consumers/stakeholders in making rational and effortless evaluation about the sustainability performance of firms/products. Specifically, it provides a quick, clear and comprehensive signal to consumers/stakeholders concerning the extent to which a firm/product contributes to sustainable development. The proposed framework consists of two parts: a) a composite index which (under the triple-bottom-line approach) indicates the allocation of revenues to the different stakeholder groups, and assesses the social and environmental aspects of corporate sustainability performance and b) the transformation of a composite index into a new label which determines the strong or weak sustainability of a product/firm. This framework aims at contributing to the current literature by addressing the weaknesses of previous methodologies which are solely based on either corporate operational or production process labels, as well as on the weak sustainability concept which have made low progress to evaluate the overall sustainable picture of firms/products. Finally, a case study has been carried out to indicate and assess the functionality of the proposed framework.

1. Introduction

Green consumerism has lately gained enormous momentum in western societies mainly as an important means to shift firms from conventional to environmental friendly processes. Environmental awareness might lead consumers to select products with less environmental impacts and force firms to adopt an environmental strategy to cover the needs of consumers (Eriksson, 2004). Some significant issues of green consumerism field are related to the "*willingness of consumers to pay*" for green products (Laroche et al., 2001), to examine psychological and demographic characteristics of green consumers, to identify factors which affect consumers' environmental friendly behavior (Tanner and Kast, 2003; Gerpott and Mahmudova, 2010), and to classify different types of green consumers in order to advance the understanding in this field (Seyfang, 2004).

This field also places emphasis on "*information gap*" or "*information asymmetry*" which refers to the different levels of consumers' knowledge between corporate environmental performance and a product's environmental status. To provide detailed information and fill the gap of consumers' knowledge, a number of labels for products and firms have been suggested which focus on certain environmental characteristics (e.g. wastewater amounts, energy intensity). There are labels designed for certain products (such as fishery products (Iles, 2007),wood products (Veisten, 2007), energy saving products (Mahlia et al., 2002) and labels for all products which provide common environmental criteria such as water consumption, energy use and wastewater discharges (Jackson, 1999).

International Organization for Standardization (ISO) classifies eco-labels in three general types. The first type (Type I)

* Corresponding author.
E-mail address: inikol@env.duth.gr (I.E. Nikolaou).

https://doi.org/10.1016/j.jclepro.2018.02.042
0959-6526/

encompasses labels which are audited and certified by independent bodies for a range of environmental criteria in the overall product life cycle (e.g. European Eco-Flower). The second type (Type II) places emphasis primarily on a single environmental aspect which is self-certified by firms. This type is based on self-claims of firms such as sustainable product and recycled product. The last type (Type III) discloses information either about a wide range of environmental aspects or about a single environmental aspect of products (e.g. carbon footprint) which are certified by independent bodies (Gallastegui, 2002).

A considerable drawback of the current eco-labels is the limited information disclosed for spatial and local impacts on the natural environment (Lenzen and Peters, 2010). Some studies have recently attempted to overcome it by providing input-output maps both to quantify the economic, environmental and social impacts at the different stages of the product life cycle and to identify the consumption pattern of a region (Lenzen and Peters, 2010; Feng et al., 2012). Moreover, current eco-labels have received criticism for their narrow focus on environmental perspective and failure to pay attention to the economic and social aspects of sustainability (Horne, 2009). Two very important aspects not only for achieving tipple-bottom-line sustainability goals but also for helping societies to make progress with economic and social development mainly during this historical period where the severe consequences of a financial crisis are noticeable (Kemper and Martin, 2010).

The responsibility of firms/products for financial and social development is not a new idea. By examining classical institutional documents of international institutions (EU, 2001), corporate economic responsibility consists of two parts: a) within a firm's boundaries (e.g. profitability) and b) beyond its borders to Gross Domestic Products (GDP). In a similar vein, many social facets are suggested to determine the contribution of firms/products to society or key stakeholders (UNEP, 2009; Tsalis et al., 2017). The examination of social and economic impacts of products/firms are also inspired by the theory of defensive locality of consumers (Winter 2003), which is gaining momentum within EU member countries due to the financial crisis and globalization.

One significant question is how consumers are informed about eco-labels and their features. For example, there are eco-labels which provide information regarding the improvement in firms' environmental performance at the operational level of firms (e.g. Environmental Management and Audit Schemes - EMAS)and eco-labels with focus on green attributes of a product (e.g. European Eco-Flower). Despite the repeated argument of an extensive body of literature that such operational-based and product-based eco-labels inform consumers about environmental friendly product/firms (Morrow and Rondinelli, 2002), it is unclear how consumers can be informed about these labels since some of them are not allowed to be mentioned on the products' package due to legal limitations (E.C, 2006). Moreover, arguments regarding the ability of consumers to draw information about the eco-labels either via web-pages of firms (Patten and Crampton, 2004) or via firms' annual environmental reports before purchasing a product is not widely accepted (Yakhou and Dorweiler, 2004).

Consumers are inundated with products which not only have labels with different emphasis, but also have a number of different certifications. Another significant question focuses on the influence of the number of labels on the purchasing decisions of consumers. In other words, how consumers behave when they have to choose a product from a bunch of products which have the same quality and use but they have different number of certification and labels (e.g. ISO 14001, EMAS, European Flower, Energy Star, ISO 26000, and Fair trade).

This paper aims to answer these questions by developing a methodological framework to evaluate the sustainability status of firms/products by gathering data from formal (environmental and economic) corporate annual reports and firms' web sites. More specifically, it provides guidelines to design a novel sustainability label suitable to offer a clear signal to consumers in order to select a product with better spatial (*"strong"* or *"weak"*) sustainability contribution. It consists of two stages: a) a sustainability index and b) a sustainability label. The former stage develops an index by combining financial indicators, current environmental labels and corporate social impacts to evaluate the sustainability performance of a product/firm. The score of this stage is used as an input into the second stage of this methodology in order to develop a new label evaluates the sustainability performance of firms indicating the extent to which a product/firm contributes to "*strong*" and the "*weak*" sustainable development. Finally, the proposed methodology was applied to a sample of chemical companies to test its applicability and effectiveness.

The rest of paper is classified in fifth sections. The following section analyzes the proposed methodological framework utilized to design the sustainability index and the sustainability label. The third section presents the case study whereby strengthens and weaknesses of the proposed framework were identified. The fourth section discusses the implications which arise from this methodology about green consumption and sustainable development literature. The fifth section draws some interesting conclusions discussing some limitations as avenues for future research.

2. Methodology – A framework to evaluate sustainable products/firms

The proposed evaluation framework is based on multi-step measurement performance techniques which provide gradual progress of certain steps to assist in evaluating an organization's performance (Nikolaou and Kazantidis, 2016). The proposed methodology consists of two consecutive stages which include various steps in order to achieve the goal of this paper. The first stage facilitates the construction of a new composite sustainability index to evaluate the basic sustainability features of products/firms, while the second stage provides the mechanism for transforming the sustainability index into a new label. Fig. 1 articulates the various steps of the suggested framework which is analyzed in the following sections.

2.1. Step 1: some thoughts for corporate sustainability definition

The initial step is to highlight some of the fundamental responsibilities of firms. Many efforts have been made to determine the responsibilities of firms either from a financial or social context (Carrol, 1999; Marrewijk, 2003; Carriga and Melé, 2004). Before describing the minimum consensus regarding corporate social responsibility (CSR) and corporate sustainability (CS), an explanation of their origin is necessary. The historical roots of CSR are linked with the first global financial crisis (the 1929 great depression) as a response to society's criticisms of businesses' responsibilities to market failures (Okoye, 2009). Furthermore, the sustainability frenzy of politicians and scholars (as a consequence of high environmental degradation and social problems) has shifted the dialogue of corporate social responsibility to absorb the key features of the sustainability concept.

To make clear the connection between CSR and the sustainability concept it is necessary to analyze the main definitions of them. A popular definition of sustainability describes the development of society as the ability of the current generation to meet their needs by using rationally natural resources in order for future generations to be able to meet their needs (WCED, 1987). Much ink has been spilled regarding the accurate content of sustainability