



The “economic–finance interface” for eco-innovation projects

Sabina Scarpellini ^{a,*}, Jesús Valero-Gil ^a, Pilar Portillo-Tarragona ^b

^a CIRCE Building - University of Zaragoza Campus Río Ebro. C/ Mariano Esquillor Gómez, 15 50018 Zaragoza, Spain

^b University of Zaragoza, Spain

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Abstract

It is widely accepted that eco-innovation is a feasible direction if we want to progress towards sustainable development. However, in many European countries, eco-innovation projects are currently not common because of the significant barriers to and the negligible culture of including eco-innovation in an organisation's strategy. In this scenario, the analysis of eco-innovation project determinants offers a new strategic approach for industries to manage sustainable innovation initiatives.

A specific methodology has been developed for this purpose to analyse the main characteristics of 44 applied eco-innovation projects. The purpose of the methodology described in this paper is to define the “economic–finance interface” between these projects and the main characteristics of firms in which such eco-innovation has been applied and to provide guidance in the implementation of eco-innovation to align project management with business strategy.

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1. Introduction

Eco-innovation will play a key role in saving resources on a global level, and all public and private parties involved appear to share a common perspective and to agree on the benefits of its implementation (Scarpellini et al., 2012). It is widely accepted that eco-innovation is a feasible direction if we want to progress towards sustainable development in product sustainability terms (Fussler and James, 1998). Nevertheless, in many European countries, eco-innovation projects are not common in industries because of significant barriers and a negligible culture of excluding eco-innovation from an organisation's strategy.

It is currently a priority to analyse the determinant factors of eco-innovation projects to promote their implementation in

industries and particularly in small and medium enterprises (SMEs), which are not commonly involved in typical research and development (R&D) and innovation activity. Factors such as financial structure and constraints, ability to plan environmental performance and related costs, or the organisational capabilities of companies, are subject to analysis to understand eco-innovation in firms.

In this scenario, the main objective of this paper is to analyse the determinants for eco-innovation projects through 44 applied cases in which the different factors intrinsic to eco-innovative measures are classified, including timing, funding, type, purpose and the main results obtained through the projects implementation. We also strive to define the relation between firms' projects and economic–financial structure and stakeholders. Thus, a specific methodology has been designed to define the interface between the projects and the principal characteristics of companies in which those eco-innovations have been conducted.

This paper's main contributions are related to the methodology and the depth of the analysis of the studied cases. The wide range of projects involved in relation to type and

* Corresponding author at: Department of Accounting and Finance, University of Zaragoza, C/ Mariano Esquillor Gómez, 15 – 50.018 Zaragoza, Spain. Tel.: +34 976 761863; fax: +34 976 732078.

E-mail address: sabina@unizar.es (S. Scarpellini).

URL: <http://www.unizar.es>.

technology, and the relation to other firm characteristics is another contribution to the project management literature; a large number of cases are applied in firms of different sizes and sectors.

Considering the context of eco-innovation, project management is here understood as the manner of implementation, expertise, paraphernalia, knowledge and *modus operandi* to an extensive range of activities for the fulfilment of specific project prerequisites (Qureshi et al., 2009).

An extensive review of the literature is summarised in the introduction to identify the gap that underlies this study. After the introduction, in which the main research questions are raised, the applied methodology and the multiple-case analysis are detailed. This detail is followed by the main results section and the conclusions, in which we summarise the limitations of this study and provide future lines of research.

1.1. Literature review

Several eco-innovation initiatives have been launched by the European Union (EU) to promote sustainable development. These initiatives include: the European Lead Market Initiative (LMI)¹; the Eco-Innovation Observatory (EIO)²; the Eco-Innovation Programme,³ which is within the Competitiveness and Innovation Framework Programme (CIP 2007–2013)⁴; Directive 2009/125/EC,⁵ which concerns the ecological design for energy-related products and ecological innovation guidelines⁶; and other initiatives.⁷ Nevertheless, in the EU, there remains a lack of investment in issues that relate to eco-innovation (Bleischwitz, 2009) as well as sustainable manufacturing.

In general terms, a sustainable manufacturing process associated with the creation of entirely new production structures implies eco-innovation (OECD, 2009); this is crucially dependent on a full analysis of environmental risks and effects and of several social and economic aspects. This process makes proficient groundwork arguably more crucial for the environmental management of new product development in business (Pujari, 2006).

Although the literature on the interrelated subjects, eco-innovation, project management, corporate finance, business strategy and stakeholders, is too vast to be cited here, it is important to highlight the principal authors of interest to this field.

The scheme of the different contributions to the theoretical background of this study is outlined in Fig. 1, and it is summarised in the following paragraphs through a brief literature review.

The authors cited for the definition of eco-innovation are detailed in the first group. The researchers cited for the design of the methodology have been specified in the topic methodology and measurement; however, for business strategy and firms' settings, authors have been included due to their results regarding innovation and strategy or stakeholders. The main researchers studied in the management literature on innovation projects have been listed in the principal topic of the Fig. 1.

Several definitions of eco-innovation have been offered with a common base, which emphasises different aspects of the term. Carrillo-Hermosilla et al. (2010) and Andersen (2002) define it as an innovation capable of attracting green returns on the market. Conversely, Kemp and Pearson (2007) define eco-innovation as the production, assimilation or exploitation of a product, production process, service or business method that is novel for the organisation and results in the long-term reduction of environmental risk, pollution and other negative impacts of the intensive use of resources.

Each of these concepts is concerned with the environmental impact as a conceptual basis for a number of approaches to inter-organisational management that supports sustainability. The approaches include industrial ecology, life cycle management, integrated chain management, and green/environmental/sustainable supply chain management (Seuring, 2004).

In this paper, eco-innovation is considered as any innovation that pursues an environmental benefit rather than other alternatives (Horbach et al., 2012) and targets eco-efficiency (Scarpellini et al., 2012). The term innovation is generally understood, as defined by the Oslo Manual (OECD, 2005), whereas eco-efficiency is considered as the ratio between the economic value of a product or service and its environmental impact (Hupples and Ishikawa, 2005).

Growing competitiveness demands that innovation targets cost reduction and supply chain flexibility (Tracey and Neuhaus, 2013). However, this competitiveness also demands clear environmental improvement (EIO, 2011), which often implies the integration of innovation and sustainability in firms (Crespin-Mazet and Dontenwill, 2012; Hong et al., 2009), processes, and products (Cooper, 1988, 2008; Huesemann, 2003), as well as in the organisational aspects (Kurkkio et al., 2011).

It is generally accepted that the potential outputs of eco-innovation projects and investments can be considered relevant for investors and for corporate governance (Ahola et al., 2006). In addition, the alignment of project management and business strategy is the subject of analysis in the strategy framework (Jamieson and Morris, 2004; Srivannaboon and Milosevic, 2006).

This finding provides innovation a significant role to play in business growth (Koen et al., 2001); front-end innovation, as the initial process stage, has been considered an important stage for the product eco-innovation perspective's ultimate performance (Bocken et al., 2014). This finding represents the point of the process in which the decision to continue with innovation is made (Khurana and Rosenthal, 1998; Koen et al., 2001; Kim and Wilemon, 2002).

¹ Available at http://europa.eu/rapid/press-release_IP-08-12_en.htm?locale=en (accessed on October 2015).

² Available at <http://www.eco-innovation.eu/> (accessed on October 2015).

³ Available at <http://ec.europa.eu/environment/etap/ecoinnovation> (accessed on October 2015).

⁴ Available at http://europa.eu/legislation_summaries/energy/european_energy_policy/n26104_en.htm (accessed on October 2015).

⁵ ErP Directive has taken effect since 22 November 2009.

⁶ DOC 82 of 1st April 2008, p. 1.

⁷ COM(2006) 728 final.

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