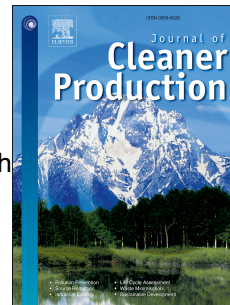


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Eco-innovation determinants in manufacturing SMEs: Systematic review and research directions

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1 **Eco-innovation determinants in manufacturing SMEs: systematic review and research** 2 **directions**

3 **Abstract**

4 The debate on eco-innovation, although recent, is becoming increasingly more relevant in the
5 practical context of business and academic world. The discussion on eco-innovation in the
6 context of manufacturing SMEs is in a less developed stage and deserves attention. Thus, the
7 main objective of this research was to identify, through a systematic review covering the last
8 twenty-four years, the determinants of eco-innovation in manufacturing SMEs, exploring the
9 relationship among them. The study unveils twenty-three determinants, which were classified
10 in seven categories. The critical determinants were also identified, comprising: Governmental
11 policy supporting eco-innovation, Availability of resources (people, technology, knowledge),
12 Perception of the strategic relevance of eco-innovation, Technological advisory oriented to
13 environment, Product and process eco-innovation oriented methods, Cooperation and
14 partnership within supply networks, among others. A systemic model representing the
15 relationship among the determinants and strategic alternatives to overcome some eco-
16 innovation barriers for manufacturing SMEs are also presented and discussed.

17 **Keywords:** Innovation, Eco-innovation; Manufacturing SME; Systematic review.

18 **1. Introduction**

19 Sustainable development and technological innovation are recurring themes in society,
20 academic circles, and enterprises (del Río, Peñascoa and Romero-Jordán, 2016; Levidowa et
21 al., 2015). The first studies on innovation date back to the propositions made by Schumpeter
22 (1908; 1911; 1942). Innovation was first and clearly characterized by Schumpeter in his study
23 “Theory of Economical Development”, first published in 1911 in Austria. However, regarding
24 environmental issues, it was the Eco92 in Rio de Janeiro, which established a historic

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