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Engineering
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BOOK OF ABSTRACTS

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Project portfolio selection for increasing sustainability in supply chains using a multi-criteria approach

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Keywords: Multi-criteria methods (MCDA); project selection; strategy

1 Introduction

Project portfolio is a strategic activity consisting of prioritising the projects to be implemented within an organization according to their alignment with the strategy considering the limited resources of organizations. Portfolio selection is a process where organisations select the most relevant projects in order to provide alignment between project implementation and strategy consecution in order to increase the impact on their competitiveness.

2 Objectives

The purpose of this paper is to propose an approach that aids in the portfolio selection decision by connecting the project selection to the strategic framework of a supply chain. This approach will help enterprises to prioritize projects that have a highest impact on the strategy of the supply chain and their sustainability over time.

3 Methods

The paper proposes a multi-criteria model that introduces sustainability dimensions aligned to a performance framework. Multi-criteria decision analysis (MCDA) techniques have been applied in multiple decision-making problems for project selection using both multi-objective and multi-attribute methods. For example, DEA (Data Envelopment) is used in Gutjahr et al. (2008).

Other multi-attribute techniques such as Promethee and Electre have been also applied for project selection such as Halouani et al. (2009) and Buchanan and Vanderpooten (2007). The Analytic Hierarchy Process (AHP) and Analytic

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Network process (ANP) developed by Saaty (1980) have been also used for project selection, for example in Subramanian and Ramnathan (2012).

4 Results

The model has been applied to a supply chain ranking several projects. The prioritisation provides those key actions that have to be implemented in the short term to gain competitiveness in the supply chain.

5 Conclusion

Several models have been developed in the literature for portfolio prioritization. However, it lacks of an integrated model to align project selection with increasing the sustainability of the supply chain.

This work presents an approach to deal with this problem by using a MCDA model to link project selection to performance framework for a supply chain that integrates all the dimensions of sustainability.

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