

Evaluating Supply Chain Sustainability Risks using Integrated Shannon Entropy, Statistical Variance, and Prospect Theory

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Abstract

Evaluating the impact of risk elements affecting the sustainability of enterprises is now becoming one of the streams of research in the supply chain risk management area. However, previous scientific studies dedicated to improving supply chain sustainability risk assessment approaches seemed to ignore the impact of risk reprioritization criteria weight and risk behaviour of decision-makers. Motivated by this research gap, in this paper, a decision support model to consider the weight of supply chain sustainability risk criteria and decision-makers risk behaviour is proposed using an integration of Shannon Entropy, Statistical Variance, and Prospect Theory. An illustrative example of using the model for practical purposes is presented and which is followed with potential research direction from this initial effort.

Keywords

Supply Chain, Sustainability Risk, Shannon Entropy, Statistical Variance, Prospect Theory.

Biographies

Agung Sutrisno is an Assistant Professor in the Department of Mechanical Engineering at Sam Ratulangi University, Manado, Indonesia. His PhD Degree in Systems Management and Engineering was obtained from Pukyong National University, South Korea in 2012. He has published papers in peer reviewed conferences and journals. His research interests are in Quality and Reliability Management, Supply Chain and Operations Management and Sustainability Engineering.

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