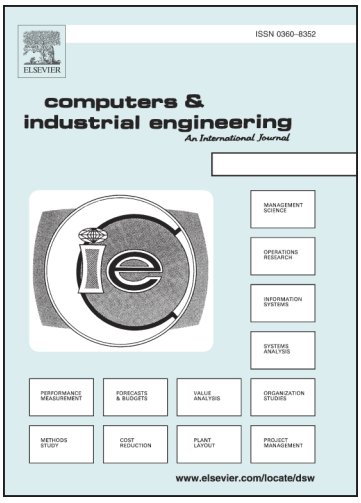

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Supply Chain Performance Measurement and Evaluation: A Mixed Sustainability and Resilience Approach

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Abstract

In recent years, governments and social bodies have imposed mandates to tackle environmental and social issues. Furthermore, responding effectively to supply chain disruptions prevented many businesses from bankruptcy and complete shutdown. Therefore, adopting sustainability and resilience concepts at an operational level have recently become an inevitable necessity for business supply chains in order to survive in the tough rapid-changing competitive market environment. This paper proposes a novel dynamic network data envelopment analysis framework as a comprehensive performance management system to dynamically assess a supply chain's performance from both sustainability and resilience viewpoints over the course of time. The proposed model is also associated with a hybrid method using Quality Function Deployment (QFD) together with Decision Making Trial and Evaluation Laboratory (DEMATEL) to systematically select the best sustainability and resilience factors, which are then used in the data envelopment analysis model. The proposed framework is applied to an automotive manufacturing sector to demonstrate its capabilities and effectiveness.

Keywords: Supply chain performance management; Sustainability; Supply chain resilience; Dynamic network data envelopment analysis; QFD; DEMATEL.

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