National Policies Evaluation of Sustainable Supply Chain of Automobile Industry Using MCDM Models

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Abstract

The sustainable transformation of the automobile industry's supply chain is a critical endeavor for achieving both environmental conservation and long-term economic growth. This research aims to assess and prioritize national policies aimed at fostering a sustainable supply chain within the automobile industry, employing the Multiple Criteria Decision Making (MCDM) model. This study proposes an integrated approach that considers a diverse range of criteria encompassing environmental impact, economic viability, social equity, and technological innovation, ensuring a comprehensive evaluation of policy effectiveness. The methodology comprises three main phases: identification and selection of relevant criteria, collection and validation of data from authoritative sources, and the application of the MCDM model to rank national policies. The Analytic Hierarchy Process (AHP) is employed to determine the relative importance of criteria, and the Technique for Order Preference by Similarity to an Ideal Solution (TOPSIS) is utilized to establish policy rankings based on their alignment with the identified criteria. Sensitivity analysis is conducted to validate the robustness of the outcomes and to explore the impact of varying criteria weights. The outcomes of this study provide a nuanced understanding of the strengths and limitations of prevailing national policies concerning sustainable supply chains within the automobile industry. By offering a systematic framework for policy evaluation, policymakers are empowered to pinpoint areas for enhancement and make well-informed decisions that harmonize with broader sustainability and economic objectives. Furthermore, the proposed MCDM model showcases its efficacy as a valuable instrument for addressing intricate, multidimensional policy challenges not confined to the automobile sector, thereby fostering evidence-based policy formulation and sustainable progress.

Keywords
Multicriteria Decision Making (MCDM) models, Sustainable SCM, Automobile Industry, National Policies

Biographies
Mohammad Hossein Shaverdi is currently 2nd year master's student in public policy at Allameh Tabatabaei University, Tehran, Iran. He has more than 8 years of professional experience as a journalist and public policy analyst in Iranian magazines and newspapers. Currently, he is the head of economics section Donyaye Eghtesad Newspaper (World of Economics) as the Iran's most circulated newspaper. He is mainly interested in public policy and economic evaluation of the automobile and mine industries. He published many reports and economics analyses on different industries in various newspapers and magazines in Iran.

Meysam Shaverdi is currently a 4th year PhD candidate in supply chain and logistics at RMIT University, Melbourne, Australia. He also has more than 10 years of professional experience in various industries such as banking and finance,

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