

**AN INTEGRATED METHODOLOGY FOR SELECTING AND
EVALUATING SUSTAINABLE SUPPLIERS
IN SUPPLY CHAINS**

Pankhuri Agarwal*

*Assistant Professor,
Department of HR & Finance,
Faculty of Commerce, Management & Law
Teerthanker Mahaveer Institute of Management and Technology,
Teerthanker Mahaveer University,
Moradabad, Uttar Pradesh, INDIA
Email Id-pankhuri.management@tmu.ac.in

DOI: 10.5958/2249-7307.2021.00075.X

ABSTRACT

Business companies have highlighted the significance of greening and sustainability in their supply chain via supplier selection as a result of increasing consumer awareness and ecological demands from markets and different stakeholders. As a result, from the viewpoint of an organizational supply chain, a systematic and sustainability-focused assessment methodology for supplier selection is required. This paper offers a framework for evaluating sustainable supplier selection by combining an Analytical Hierarchy Process (AHP) with Vise Kriterijumska Optimizacija I Kompromisno Resenje (VIKOR), a multi-criteria optimization and compromise solution method. Initially, literature and expert views established 22 sustainable supplier selection criteria and three aspects of criteria (economic, environmental, and social). To illustrate the applicability of the suggested framework, a real-world example of an automotive business in India is presented. The top five sustainable supplier selection factors, according to the results, are 'Environmental costs,' 'Quality of product,' 'Price of product,' 'Occupational health and safety systems,' and 'Environmental competences.' Furthermore, among the five sustainable supplier options, supplier number three received the highest ranking. The research provided in this article may assist managers and business professionals in not only identifying key supplier selection criteria, but also in evaluating the most efficient supplier for supply chain sustainability and market competitiveness. To evaluate the proposed framework's resilience, a sensitivity analysis is performed.

KEYWORDS: Sustainable Supplier Selection; Supply Chains; Sustainability; AHP; VIKOR; Indian Automobile Industry.

REFERENCES

1. D. G. dos Santos Pinto Pereira, E. A. Panarelli, L. de Souza Pinheiro, A. V. M. Gonçalves, and L. de Paula Pereira, "Environmental protection areas: The case of the bebedouro stream watershed," *Ambient. e Soc.*, 2017.
2. S. Luthra, K. Govindan, D. Kannan, S. K. Mangla, and C. P. Garg, "An integrated framework for sustainable supplier selection and evaluation in supply chains," *J. Clean.*

Prod., 2017.

3. M. Addaney, E. Boshoff, and M. G. Nyarko, "Protection of environmental assets in urban Africa: Regional and Sub-Regional Human Rights and Practical Environmental Protection Mechanisms," *Aust. J. Hum. Rights*, 2018.
4. X. Liu, Y. He, H. Fu, B. Chen, M. Wang, and Z. Wang, "How environmental protection motivation influences on residents' recycledwater reuse behaviors: A case study in Xi'an city," *Water (Switzerland)*, 2018.
5. H. Peng, "Research on environmental protection of islet in river for sustainable development of tourism resource," in *Advanced Materials Research*, 2012.
6. S. Jafarzadeh Ghouschi, M. Dodkanloi Milan, and M. Jahangoshai Rezaee, "Evaluation and selection of sustainable suppliers in supply chain using new GP-DEA model with imprecise data," *J. Ind. Eng. Int.*, 2018.
7. L. F. S. Wang, C. chuan Hsu, and T. Der Han, "Inter-industry pollution, compensation scheme and environmental protection," in *Economics of Environmental Policy in Oligopolistic Markets*, 2014.
8. D. Kannan, "Role of multiple stakeholders and the critical success factor theory for the sustainable supplier selection process," *Int. J. Prod. Econ.*, 2018.
9. K. Zimmer, M. Fröhling, and F. Schultmann, "Sustainable supplier management - A review of models supporting sustainable supplier selection, monitoring and development," *Int. J. Prod. Res.*, 2016.
10. Z. K. Kaman, A. Ibrahim, Z. Othman, and T. W. Andalib, "A green practice on environmental protection: A case of multinational company," *Adv. Sci. Lett.*, 2016.