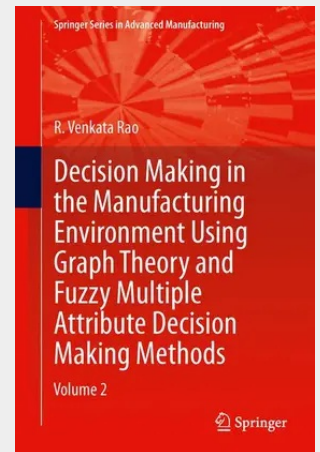


Decision Making in Manufacturing Environment Using Graph Theory and Fuzzy Multiple Attribute Decision Making Methods

Volume 2

Decision Making in Manufacturing Environment Using Graph Theory and Fuzzy Multiple Attribute Decision Making Methods presents the concepts and details of applications of MADM methods. A range of methods are covered including Analytic Hierarchy Process (AHP), Technique for Order Preference by Similarity to Ideal Solution (TOPSIS), Višekriterijumsko KOMpromisno Rangiranje (VIKOR), Data Envelopment Analysis (DEA), Preference Ranking METHod for Enrichment Evaluations (PROMETHEE), ELimination Et Choix Traduisant la Réalité (ELECTRE), COMplex PROportional ASsessment (COPRAS), Grey Relational Analysis (GRA), UTility Additive (UTA), and Ordered Weighted Averaging (OWA). The existing MADM methods are improved upon and three novel multiple attribute decision making methods for solving the decision making problems of the manufacturing environment are proposed. The concept of integrated weights is introduced in the proposed subjective and objective integrated weights (SOW) method and the weighted Euclidean distance based approach (WEDBA) to consider both the decision maker's subjective preferences as well as the distribution of the attributes data of the decision matrix. These methods, which use fuzzy logic to convert the qualitative attributes into the quantitative attributes, are supported by various real-world application examples. Also, computer codes for AHP, TOPSIS, DEA, PROMETHEE, ELECTRE, COPRAS, and SOW methods are included. This comprehensive coverage makes Decision Making in Manufacturing Environment Using Graph Theory and Fuzzy Multiple Attribute Decision Making Methods a key reference for the designers, manufacturing engineers, practitioners, managers, institutes involved in both design and manufacturing related projects. It is also an ideal study resource for applied research workers, academicians, and students in mechanical and industrial engineering.

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**160,49 €**

149,99 € (zzgl. MwSt.)

Lieferfrist: bis zu 10 Tage

Artikelnummer: 9781447143741**Medium:** Buch**ISBN:** 978-1-4471-4374-1**Verlag:** Springer**Erscheinungstermin:** 26.08.2012**Sprache(n):** Englisch**Auflage:** 2013**Serie:** Springer Series in Advanced Manufacturing**Produktform:** Gebunden**Gewicht:** 629 g**Seiten:** 294**Format (B x H):** 160 x 241 mm