

FEMM - Working Paper Series - 2024

› FEMM-Antrag (https://www.fww.ovgu.de/fww_media/femm/FEMM.pdf)

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24002

Thomas Spengler, Sebastian Herzog, Kim Michelle Siegling

› Unscharfe Regelsysteme im Strategischen Management

(https://www.fww.ovgu.de/fww_media/femm/femm_2024/2024_02.pdf)

Abstract:

Im Kontext des Strategischen Managements der Unternehmung sind Bündel abstrakter Maßnahmen zur Steuerung und Führung von und in Systemen zu entwickeln sowie anzuwenden, die erst zu späteren Zeitpunkten konkretisiert und ausdifferenziert werden. Solche Maßnahmenbündel nennen wir Strategie. Strategien müssen logisch fundiert und formuliert werden, es sind also aus wahren Prämissen die richtigen Schlüsse zu ziehen und Fehlschlüsse zu vermeiden. Zu deren Generierung, Evaluierung und Selektion benötigt man Regelsysteme, die entweder univok oder ambig konstruiert sein können. Unscharfen Regelsystemen im Strategischen Management ist die vorliegende Arbeit gewidmet.

In the context of the strategic management of the company, bundles of abstract measures for the control and management of and in systems are to be developed and applied, which are only concretized and differentiated at later points in time. We call such bundles of measures strategies. Strategies must be logically founded and formulated, i.e. the correct conclusions must be drawn from true premises and false conclusions must be avoided. To generate, evaluate and select them, rule systems are required that can be constructed either univocally or ambiguously. This paper is dedicated to fuzzy rule systems in strategic management.

JEL: A10, A22, A23, C60, C67, M20, M21

Keywords: Strategisches Management, (Unscharfe) Regelsysteme, Fuzzy-Logik, Szenariomanagement

24001

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› Dynamic multi-period recycling collection routing with uncertain material quality

(https://www.fww.ovgu.de/fww_media/femm/femm_2024/2024_01.pdf)

Abstract:

We consider a problem of collecting and processing waste material. At a production facility, every period a known amount of inventory is required for production (e.g., paper). Instead of new material, the facility relies on collected and processed waste material (e.g., paper waste). This material is collected from regional waste collection locations. The amount of waste material per location is uncertain, as is the quality of the collected waste, i.e., the resulting inventory when processing the material. If the inventory at the end of a period is insufficient, costly new material has to be bought. Each period, decisions are made about how much waste material to collect from which location and how to route the collection vehicle accordingly. Ideally, inventory is built to hedge against quality uncertainty and to ensure efficient routing operations in future periods. We propose a stochastic lookahead method that samples a set of scenarios and solves a simplified two-stage stochastic program in every period. We show the value of our method for two case studies, one based on real-world data from Sachsen-Anhalt, Germany, and one from the literature with data from the United Kingdom. We further conduct a detailed analysis of our method at the problem characteristics.

JEL:

Keywords: Routing, Circular Economy, Sequential Decision Process, Stochastic Lookahead

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