

A Dominance-Based Rough Set Approach of Mathematical Programming for
Inducing National Competitiveness

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Abstract

The dominance-based rough set approach is a powerful technology to approximate ranking classes. Analysis of large real-life data sets shows, however, decision rules induced from lower approximations are weak, that is supported by few entities only. For enhancing the DRSA, the mathematical programming is applied to support the lower approximations with entities as more as possible. The mathematical coding such as dominance sets, rough ap-proximations, and quality of approximation is implemented in Lingo 12. Its application on the 2010 World Competitiveness Yearbook of International Institute for Management De-velopment (WCY-IMD) shows that the top 10 nations outranked the others by dominance criteria and boundaries.

Keyword : dominance-based rough set approach (DRSA), mathematical programming (MP), national competitiveness