

Forecast Adjustment in Multicriteria Analysis Using Parameterisable Functions

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Abstract

This investigation proposes improvements to the TODIM multicriteria decision-support method. A new parametrisation of the TODIM phi function is introduced using techniques common in binary-response statistical models, aiming to increase flexibility and better reflect real decision-maker behaviour.

Empirical validation uses preference and weighting data from 20 higher-education students (Leoneti, 2016). Results from the original TODIM are compared with an adapted version (TODIMAdp). Spearman correlation with participants' initial rankings shows that TODIMAdp performs better on average (0.29 vs. 0.20) and correctly predicts the top-ranked alternative in 50% of cases, compared with 37% for the original method.

Assuming MCDM ranking methods can be evaluated by their ability to reproduce initial preferences, the study finds that TODIMAdp's additional parameters increase modelling flexibility and predictive capacity. The results suggest that further exploration of parameter combinations may strengthen TODIM's descriptive and forecasting performance in applied multicriteria decision contexts.

Keywords: *bounded rationality, prospect theory, TODIMAdp, forecast, parameterization*

References

- [1] Leoneti, A. B. (2016). Considerations regarding the choice of ranking multiple criteria decision making methods. *Pesquisa Operacional*, 36, 259-277

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