



PRODUCTION SPECIMEN – NOT A PUBLISHED RESEARCH ARTICLE

SPECIMEN ARTICLE

Evaluating Alternatives Under Multiple Criteria: An Illustrative Decision Model

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ABSTRACT

This article is a production specimen created to demonstrate the conventional journal typography, mathematical composition, tables, figures, citations, and declarations supported by GreyMind Press. A small synthetic multi-criteria decision problem is used solely as neutral content for typesetting. Four alternatives are evaluated against four normalized criteria using a weighted-sum model, followed by a simple sensitivity check. The numerical example is not presented as original research, and the document has not undergone peer review. Its purpose is to allow readers to inspect page hierarchy, visual consistency, cross-references, and scholarly apparatus in a realistic article-length PDF.

Keywords: multi-criteria decision analysis; synthetic data; scholarly typesetting; production specimen

1. Introduction

Scholarly production is easiest to evaluate when a specimen contains the elements that appear in an ordinary research paper. A useful demonstration therefore needs more than placeholder paragraphs: it should exercise headings, continuous prose, equations, tables, figures, references, and declarations while remaining unmistakably non-scholarly in status.

Multi-criteria decision analysis (MCDA) provides a compact setting for such a demonstration because its basic operations can be expressed through matrices, weights, rankings, and sensitivity analysis. MCDA is used when a decision involves several criteria that cannot be reduced naturally to one measurement scale (Belton and Stewart 2002). Classical methods include value-based aggregation, outranking, pairwise-comparison approaches, and distance-based methods (Hwang and Yoon 1981; Saaty 1980).

The example below is intentionally synthetic. Its purpose is to create a coherent article that tests production components rather than to introduce a new decision method or empirical finding.

Key finding

The specimen uses a complete research-paper structure, but every numerical value is synthetic and every result is illustrative.

2. Illustrative Decision Problem

Suppose an organization must compare four alternatives, denoted A_1 through A_4 , against four benefit criteria: quality (C_1), adaptability (C_2), implementation readiness (C_3), and long-term value (C_4). All criterion values are normalized to the interval $[0, 1]$, where larger values are preferred.

Let the normalized decision matrix be

$$\mathbf{X} = \begin{bmatrix} 0.82 & 0.71 & 0.76 & 0.88 \\ 0.74 & 0.89 & 0.81 & 0.79 \\ 0.91 & 0.68 & 0.73 & 0.84 \\ 0.79 & 0.83 & 0.86 & 0.75 \end{bmatrix}. \tag{1}$$

The illustrative criterion-weight vector is

$$\mathbf{w} = (0.30, 0.25, 0.20, 0.25), \quad \sum_{j=1}^4 w_j = 1. \quad (2)$$

Method note

The values in Equations 1 and 2 are invented for layout testing. They do not describe a real organization, survey, expert panel, or decision.

2.1 Weighted aggregation

For alternative A_i , the illustrative score is

$$S_i = \sum_{j=1}^4 w_j x_{ij}, \quad (3)$$

where x_{ij} is the normalized performance of alternative i on criterion j .

Equation 3 is a standard weighted-sum structure. It is used here because the calculation is transparent and allows the specimen to demonstrate equation numbering, symbols, and cross-references without introducing unnecessary methodological complexity.

3. Illustrative Results

Table 1 reports the synthetic inputs and scores. Alternative A_1 obtains the highest composite score under the illustrative weights, although the difference between the first two positions is small.

Table 1 Synthetic criterion values and illustrative weighted scores

Alternative	C_1	C_2	C_3	C_4	S_i
A_1	0.82	0.71	0.76	0.88	0.7955
A_2	0.74	0.89	0.81	0.79	0.8040
A_3	0.91	0.68	0.73	0.84	0.7990
A_4	0.79	0.83	0.86	0.75	0.8040

Because two alternatives share the highest displayed score, the example also demonstrates how a paper should avoid overstating an arbitrary ordering. Under the values shown, A_2 and A_4 are tied at the reported precision.

3.1 Visual comparison

Figure 1 presents the same scores graphically. A figure should complement rather than duplicate a table; here, the duplication is deliberate because the specimen is testing both production components.

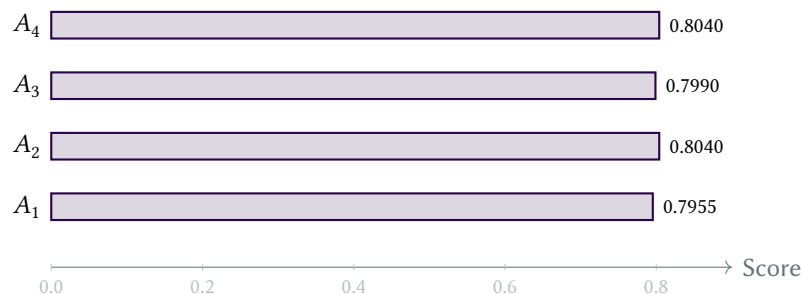


Figure 1 Synthetic weighted scores used to demonstrate vector-figure production.

4. Sensitivity Demonstration

A decision result should not be interpreted independently of the assumptions that generated it. Sensitivity analysis is commonly used to examine how rankings change when weights or performance values vary (Belton and Stewart 2002). For this specimen, the weight of C_1 is increased from 0.30 to 0.40 while the remaining weights are reduced proportionally.

The adjusted weight vector is

$$\mathbf{w}' = (0.40, 0.2143, 0.1714, 0.2143). \quad (4)$$

Table 2 shows the resulting scores. The purpose is not to establish robustness but to demonstrate the production of a second table and the correct interpretation of a changed ranking.

Table 2 Illustrative sensitivity check after increasing the weight of C_1

Alternative	Baseline score	Adjusted score
A_1	0.7955	0.7990
A_2	0.8040	0.7949
A_3	0.7990	0.8149
A_4	0.8040	0.8020

The change illustrates an important general point: a ranking can be conditional on the preference model. Robustness analysis should therefore support interpretation rather than serve as a ceremonial appendix.

•—• 5. Discussion

The synthetic example exercises several elements that are common in quantitative journal articles. Equations introduce notation; tables support exact comparison; figures provide rapid visual interpretation; and citations locate the discussion within established methodological literature. These elements work best when typography and hierarchy remain consistent across pages.

The example also demonstrates restraint. A production specimen should not create false publication signals. Accordingly, this document contains no DOI, ISSN, peer-review dates, or claims of indexing. The metadata shown on the page identifies the document as a specimen rather than as a Version of Record.

From a design perspective, the article uses a single-column measure, compact running heads, restrained purple accents, and black scholarly body text. The page background is white and no decorative perimeter is applied. These choices allow the specimen to demonstrate the core GreyMind Press journal visual language without presenting unreleased production mechanisms.

•—• 6. Conclusion

This specimen demonstrates a complete conventional journal-article workflow in a compact form. The synthetic MCDA example provides enough structure to exercise mathematical notation, tables, a vector figure, citations, cross-references, and declarations while remaining clearly non-empirical and non-novel.

The resulting PDF should therefore be evaluated as a production sample rather than as a research contribution. Its principal evidence is visual and structural: consistency of typography, hierarchy, spacing, navigation, and scholarly apparatus.

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Ethics Statement. Not applicable. The specimen uses no human participants, personal data, animals, or empirical study.

Data Availability. All numerical values in the article are synthetic and are reproduced directly in the document.

Conflicts of Interest. No conflicts of interest are declared for this production specimen.

References

- Belton, V. and T. J. Stewart (2002). *Multiple Criteria Decision Analysis: An Integrated Approach*. Boston: Kluwer Academic Publishers.
- Hwang, C.-L. and K. Yoon (1981). *Multiple Attribute Decision Making: Methods and Applications*. Berlin: Springer.
- Saaty, T. L. (1980). *The Analytic Hierarchy Process*. New York: McGraw-Hill.

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