

# **Recent Decision Analysis Applications in the Operations Research Literature**

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## Overview

Provides guide to decision analysis applications published in major English Language operations research and closely related journals from 1990-1999.

Sequel to Corner and Kirkwood (*Operations Research*, 1991) covering 1970-1989.

Classifies 57 applications articles by area of application and provides brief summary of each article.

Includes list of those devoting significant attention to classes of methodological and implementation issues.

Provides references for recently developed useful DA methods not yet included in introductory textbooks.

## Potential Usefulness of Applications Survey

Demonstrates DA methods are alive and well and are widely used in practice.

Legitimate area for application, research, teaching.

Provides useful summary of state-of-the art published DA applications.

Convenient general reference.

For practitioners:

Source of information about “who else is doing what”.

Source of “templates” for someone wishing to get started on a particular type of decision problem.

For teachers and textbook authors:

Examples of applications.

Case material.

Perspective on what methods are used in practice.

## **Ground Rules for Selecting DA Applications**

Is an application a “decision analysis” application?

Include if it explicitly analyzes alternatives using judgmental probabilities and/or subjectively assessed utility/value functions.

Include if it, on balance, uses a DA approach.

Is it an “application”?

Include if it represents a case history of the use of DA to address a specific decision problem.

Include if it describes an analysis performed to provide background for policy making.

Include for reference if material is clearly of direct interest for applications, even if an explicit application is not included.

## **Journals**

Journals included, with number of DA applications articles in ( )'s.

*Decision Sciences* (1)

*European Journal of Operational Research* (0)

*IEEE Transactions on Systems, Man, and Cybernetics* (1)

*Interfaces* (31)

*Journal of Multi-Criteria Decision Analysis* (4)\*

*Journal of the Operational Research Society* (1)

*Management Science* (3)

*Military Operations Research* (3)\*

*Omega, The International Journal of Management Science* (1)

*Operations Research* (10)

*Operations Research Letters* (0)

*Risk Analysis* (2)

\* Denotes new journal added to list included for 1970-1989 survey.

## **Classification by Application Area**

Each application article classified into exactly one application area and, where appropriate, a subarea.

Numerous judgment calls required; “reasonable people may disagree.”

Application areas used, with number of DA application articles in ( )’s.

### Energy

- Bidding and Pricing (3)
- Environmental Risk (2)
- Product and Project Selection (5)
- Strategy (3)
- Technology Choice (4)
- Miscellaneous (2)

### Manufacturing and Services

- Finance (2)
- Product Planning (2)
- R&D Project Selection (5)
- Strategy (5)
- Miscellaneous (1)

Medical (5)

Military (9)

Public Policy (6)

General (3)

## **Classification by Methodological and Implementation Issues**

Application article included in this classification only if it provides significant details about the issue in question.

Article may appear in multiple categories.

Most articles deal with nearly all categories shown to some extent.

Again, reasonable people may disagree with classifications.

Methodological/Implementation areas used, with number of DA application articles in ( )'s.

Strategy and/or objectives generation (28)

Problem structuring/formulation (27)

Probability assessment (15)

Utility/value assessment (20)

Sensitivity analysis (14)

Communication/facilitation (21)

Group issues (7)

Implementation (18)

## **Concluding Remarks**

Decision analysis is alive and well as evidenced by applications published in the OR literature over the last decade.

Significant numbers of DA applications are published outside the OR literature.

Overall, only a small fraction of real-world applications of DA are written up and published.

It would benefit our field if more practitioners and consultants could be persuaded to publish applications in one form or another.