PICK Integrates Choice Knowledge

Michael Schulte-Mecklenbeck

Invalid Date

Table of contents

Preface

Outline

Preface

- Purpose and audience
- How to use this book
- Interactive elements and exercises
- Acknowledgments

Part I: Foundations of Decision Making

Chapter 1: The Science of Decision Making

- The evolution of decision theory
- Rational choice and its limitations
- Introduction to behavioral economics
- The impact of psychology on economic models
- Interactive element: Decision self-assessment quiz

Chapter 2: How the Mind Decides

- Dual-process theory explained
- System 1: Intuitive and automatic thinking
- System 2: Deliberative and controlled thinking
- Cognitive resources and mental effort
- Interactive element: System 1 vs. System 2 demonstrations

Chapter 3: From Values to Choices

- Preference construction vs. preference revelation
- Utility theory and its assumptions
- Subjective value and reference points
- Cultural influences on preferences
- Interactive element: Personal values mapping exercise

Part II: Biases and Heuristics

Chapter 4: Mental Shortcuts

- The adaptive value of heuristics
- Availability heuristic in daily life
- Representativeness and pattern recognition
- Affect heuristic and emotional decision making
- Interactive element: Heuristic identification tool

Chapter 5: Judgment Under Uncertainty

- Probability assessment and miscalibration
- Overconfidence and its three types
- Anchoring effects in estimation
- Base rate neglect and statistical reasoning
- Interactive element: Calibration training exercises

Chapter 6: The Psychology of Risk

- Risk perception vs. objective risk
- Loss aversion and prospect theory
- Risk attitudes across domains
- Probability weighting functions
- Interactive element: Personal risk attitude assessment

Chapter 7: Time and Decision Making

- Temporal discounting explained
- Present bias and self-control
- Planning fallacy and time management
- Strategies for intertemporal choice

- Interactive element: Discount rate calculator

Part III: Social Dimensions of Decision Making

Chapter 8: The Social Decision Maker

- Social influence mechanisms
- Conformity and informational cascades
- Social learning and imitation
- Reputation and signaling effects
- Interactive element: Social pressure simulation

Chapter 9: Group Decision Processes

- Wisdom and madness of crowds
- Group polarization and groupthink
- Group decision-making structures
- Techniques for effective team decisions
- Interactive element: Virtual group decision exercise

Chapter 10: Cultural Factors in Decision Making

- Cross-cultural variations in decision biases
- Individualism vs. collectivism
- Analytic vs. holistic thinking styles
- Cultural framing of risk and time
- Interactive element: Cultural decision style assessment

Part IV: Improving Decisions

Chapter 11: Choice Architecture

- The ethics and philosophy of nudging
- Default options and their power
- Choice simplification techniques
- Information presentation strategies
- Interactive element: Choice architecture design tool

Chapter 12: Debiasing Techniques

- Cognitive debiasing strategies
- Implementation intentions
- Pre-commitment devices
- Decision hygiene practices
- Interactive element: Personal debiasing checklist

Chapter 13: Decision Tools and Frameworks

- Structured decision processes
- Decision trees and expected value
- Bayesian updating in practice
- Multi-attribute utility analysis
- Interactive element: Interactive decision tree builder

Chapter 14: Habits and Routines

- The neuroscience of habit formation
- Designing effective habit loops
- Breaking unwanted habits
- Environment design for behavior change
- Interactive element: Habit tracking template

Part V: Applications

Chapter 15: Financial Decision Making

- Behavioral finance principles
- Investment biases and pitfalls
- Consumer financial behavior
- Saving and retirement decisions
- Interactive element: Financial decision audit

Chapter 16: Health Decisions

- Medical decision making
- Health behavior change models
- Risk communication in healthcare
- Patient and physician biases

- Interactive element: Health decision framework

Chapter 17: Managerial Decision Making

- Strategic vs. operational decisions
- People analytics for managers
- Decision making under pressure
- Creating decision-friendly organizations
- Interactive element: Management decision simulation

Chapter 18: Policy and Behavioral Insights

- Evidence-based policymaking
- Behaviorally informed regulation
- Ethical considerations in public nudging
- Testing and evaluation frameworks
- Interactive element: Policy intervention design workshop

Part VI: Frontiers of Decision Science

Chapter 19: Technology and Decision Making

- AI-assisted decision processes
- Algorithm aversion and appreciation
- Human-AI collaborative decision making
- Digital choice architecture
- Interactive element: AI decision aid evaluation

Chapter 20: The Future of Decision Science

- Emerging research directions
- Neuroeconomics and decision neuroscience
- Ecological rationality
- Personalized decision support
- Interactive element: Research agenda builder

Appendices

Appendix A: Research Methods in Behavioral Science

- Experimental approaches
- Field studies and natural experiments
- Surveys and psychometric measures
- Big data and behavioral analytics
- Ethical considerations in behavioral research

Appendix B: Statistical Concepts for Decision Science

- Probability fundamentals
- Expected value and expected utility
- Bayesian reasoning
- Regression analysis basics
- Effect sizes and practical significance

Appendix C: R and Python Code for Decision Analysis

- Data visualization for decision problems
- Analyzing choice data
- Building simple decision models
- Simulating decision outcomes
- Behavioral intervention analysis

Appendix D: Exercise Solutions

- Solutions and explanations for chapter exercises
- Extended examples and case analyses
- Additional practice problems

Glossary

- Key terms and concepts
- Cross-referenced with chapters

References

- Comprehensive bibliography
- Recommended further reading

Interactive Features

Code Integration

- R and Python code chunks
- Interactive visualizations using Shiny/Observable
- Downloadable datasets for exercises

Learning Components

- End-of-chapter quizzes
- Interactive decision scenarios
- Downloadable worksheets and templates
- Web-based simulations and tools

Community Elements

- Comment functionality (if platform allows)
- Contribution guidelines for examples and exercises
- Issue tracking and suggestions via GitHub

Technical Implementation Notes

Quarto Project Structure

- One directory per book part
- Separate .qmd files for each chapter
- Shared _common.R for common functions
- Custom CSS for styling
- YAML configuration for output formats

Computational Requirements

- Core R packages: tidyverse, rmarkdown, knitr, bookdown
- Visualization: ggplot2, plotly, viridis
- Interactive elements: shiny, learnr
- Statistical analysis: lme4, brms (optional for advanced content)
- Python integration via reticulate (for Python examples)

Output Formats

- HTML book (primary format)
- PDF version (for downloading)
- EPUB (for e-readers)
- Individual chapter downloads


````
`<!-- quarto-file-metadata: eyJyZXNvdXJjZURpciI6Ii4ifQ== -->`{=html}

```{=html}
<!-- quarto-file-metadata: eyJyZXNvdXJjZURpciI6Ii4iLCJib29rSXRlbVR5cGUiOiJjaGFwdGVyIiwiYm9va
````
````

Introduction

This is a book created from markdown and executable code.

See Knuth (1984) for additional discussion of literate programming.

```
1 + 1
```

```
[1] 2
```

1 Summary

In summary, this book has no content whatsoever.

```
1 + 1
```

```
[1] 2
```

References

Knuth, Donald E. 1984. "Literate Programming." *Comput. J.* 27 (2): 97–111. https://doi.org/10.1093/comjnl/27.2.97.