

Contents

1	Problem Setting	1
1.1	Introduction	1
1.1.1	Marketing Decisions and Role of Consumer Choice	1
1.1.2	A Framework for Understanding Consumer Choice	2
1.2	Origins of Conjoint Analysis	3
1.3	Some Terminology	5
1.4	Principal Types of Conjoint Analysis	5
1.5	Focus of this Book	7
1.6	Industry Uses of Conjoint Analysis	7
1.7	An Illustration of Conjoint Method	9
1.7.1	Application of Choice-Based Conjoint Analysis	16
1.7.2	Implementation of a Conjoint Study	16
1.7.3	Another Illustration	17
1.7.4	Features of Conjoint Analysis	19
1.8	Taxonomy of Conjoint Methods	23
1.9	Overview of Subsequent Chapters	27
	Appendix: A Selection of Applications of Conjoint Analysis	
	in Areas Other than Marketing	30
	References	34
2	Theory and Design of Conjoint Studies (Ratings Based Methods)	37
2.1	Introduction	37
2.2	Designing a Conjoint Study	38
2.3	Types of Attributes and Partworth Functions	40
2.4	Selection of Attributes and Levels	43
2.5	Stimulus Set Construction	44
2.5.1	General Considerations	44
2.5.2	Statistical Designs for Generating Full Profiles	45
2.5.3	Full Factorial Designs	46
2.5.4	Fractional Factorial Designs	46
2.5.5	Orthogonal Main Effects Plans	47

2.5.6	Incomplete Block Designs	52
2.5.7	Random Sampling	55
2.5.8	Generating “Acceptable” Designs	56
2.6	Data Collection Methods	56
2.6.1	Full Profile Approach	57
2.6.2	Trade-off Matrix Method	57
2.6.3	Paired Comparison Methods	59
2.6.4	Self-explication Methods	60
2.6.5	Adaptive Methods	61
2.6.6	Hybrid Methods	63
2.7	Stimulus Presentation	64
2.8	Reliability and Validity	64
2.9	Summary	65
	Appendix 1: Illustration of a Ratings-Based Conjoint Questionnaire	68
	Appendix 2: Measures of Efficiency of an Experimental Design	73
	Appendix 3: Several Orthogonal Plans	74
	References	77
3	Analysis and Utilization of Conjoint Data	
	(Ratings Based Methods)	79
3.1	Introduction	79
3.2	Analysis Models for Ratings Data	81
3.2.1	Notation	81
3.2.2	Additive Utility Model	82
3.2.3	Utility Model with Interactions	83
3.2.4	Coding for Categorical Attributes	84
3.2.5	Model Selection	86
3.3	Level of Analysis	87
3.3.1	Individual Level Analysis (Approaches IA and IB)	88
3.3.2	Subgroup Level Analysis (Approaches IIA and IIB)	89
3.3.3	Pooled Analysis for the Sample as a Whole (Approaches IIIA and IIIB)	89
3.3.4	Some Comparisons	93
3.4	Methods for Simulation	98
3.4.1	Illustration	100
3.5	Estimating the Hybrid Conjoint Model	103
3.5.1	Notation	103
3.5.2	Models Comparison	104
3.6	Individualized Hybrid Conjoint Models	106
3.6.1	Notation	106
3.7	Model for Adaptive Conjoint Analysis	109
3.7.1	Polyhedral estimation	111
3.8	Methods for Ranking and Categorical Response Data	112
3.9	Summary	113

Appendix 1: Computation of Trade-offs from Utility Functions in Attributes	113
Appendix 2: Specification of Utility Functions	115
Appendix 3: Hierarchical Bayesian Method for Ratings-Based Conjoint Analysis	117
Appendix 4: Linear Programming Approach to Ranked Response Data	121
Appendix 5: A Method for Analyzing Categorical Response Data: Categorical Conjoint Analysis	122
References	125
4 Choice Based Conjoint Studies: Design and Analysis	127
4.1 Introduction	127
4.2 The Choice Process	128
4.3 Choice Experiments for Conjoint Analysis: An Illustration	130
4.4 Design of Choice Sets and Data Collection for Choice-Based Conjoint Studies	131
4.4.1 Two Types of Designs	131
4.4.2 Factors to Be Considered in Choice Set Design	132
4.4.3 Examples of Designs Used in Some Past Studies	133
4.4.4 Criteria for Evaluating Designs	136
4.4.5 A Taxonomy of Choice Set Designs	138
4.5 Strategies for Designing Choice Sets	140
4.5.1 Methods Based on Linear Models	140
4.5.2 Methods Based on Nonlinear Models for with Assumed Beta Values	145
4.5.3 Bayesian Methods Based on Nonlinear Model for a Prior Distribution for Betas	147
4.5.4 Other Methods	147
4.5.5 Which Method to Use for Developing Designs?	152
4.6 Incentive-Aligned Methods	152
4.7 Partial Profile Choice Experiments	153
4.8 Analysis Methods for Choice-Based Conjoint Data	154
4.9 Multinomial Logit Model for Choice-Based Conjoint Data	154
4.9.1 Modeling Utility	154
4.9.2 Interpretation of Coefficients	157
4.9.3 Data Structure	158
4.9.4 Model Fit and Test	159
4.9.5 Some Examples of MNL Analyses	160
4.10 Some Alternatives to MNL for Stated Choice Data	162
4.11 Bayesian Methods for Choice-Based Conjoint Analysis	167
4.12 Which Conjoint Approach (Ratings-Based or Choice-Based)? . . .	170
4.13 Software for Design and Analysis	171
4.14 Summary	172
Appendix 1: Illustration of Designing Choice Sets	173

Appendix 2: Design Plans for Pre-specified Holistic Alternatives Using Fractional Factorial Method	174
Appendix 3: Illustration of Design Efficiency in Choice-Based Conjoint Designs	174
Appendix 4: Illustration of Managerial Efficiency	176
Appendix 5: Empirical Illustration of Availability Designs	178
Appendix 6: Weighted Least Squares Method	180
References	181
5 Methods for a Large Number of Attributes	185
5.1 Introduction	185
5.2 Alternative Methods for Massive Number of Attributes	185
5.3 Details of the Methods and Applications	187
5.3.1 Methods of Category A: Profile Methods	187
5.3.2 Methods of Category B: Attribute Simplification Methods	191
5.3.3 Methods of Category C: Self Explicated Methods	195
5.3.4 Category D: Methods Combining Several Approaches	202
5.3.5 Category E: Upgrading Methods	207
5.3.6 Category F: SVM Methods	215
5.4 A Comparison of Methods	217
5.5 Summary	221
References	221
6 Applications for Product and Service Design and Product Line Decisions	225
6.1 Introduction	225
6.2 General Problem of Product and Product Portfolio Design	226
6.3 An Unified Framework for Product Design	227
6.3.1 Role of Choice Simulators	228
6.4 Applications for New Product Design	229
6.4.1 Application 1: Design of a Truck	229
6.4.2 Application 2: Design of a SLR Camera	229
6.4.3 Application 3: Design of a Course at a University	230
6.4.4 Application 4: Design of Microfinance Products	232
6.4.5 Application 4: Design of Dental Benefit Plans	236
6.4.6 Application 5: Design of a Hotel	236
6.4.7 Application 6: Design of Electronic Toll Collection System	242
6.4.8 Optimal Design of a Pharmaceutical Product	246
6.5 Applications for Product Line Decisions	247
6.5.1 Application 1: Redesigning Product Lines at the Sunbeam Appliance Company	249
6.5.2 Application 2: Redesign of Product Lines for an Herbicide Company	252
6.6 Conclusions	255

Appendix 1: A Mathematical Formulation of the Product Design and Positioning Problem	256
Appendix 2: Details on the SIMOPT Model	259
Appendix 3: Description of Algorithms for Product Line Design	263
References	272
7 Applications for Product Positioning and Market Segmentation . . .	275
7.1 Introduction	275
7.2 Methods of Forming Segments with Conjoint Results	276
7.3 Applications for Product Positioning	277
7.3.1 Application: Positioning of an Antidepressant Drug	277
7.4 Market Segmentation Applications	278
7.4.1 Application 1: Segments of Camera Buyers	278
7.4.2 Application 2: Segments of Food Processor Buyers	279
7.4.3 Application 3: Segments of Buyers of an Antifungal Medication	281
7.4.4 Application 4: Segments from a Choice-Based Conjoint Study	284
7.5 Comparison of Different Conjoint Segmentation Approaches . . .	287
7.6 Conclusion	290
References	290
8 Applications for Pricing Decisions	291
8.1 Introduction	291
8.2 Conjoint Method for Determining Price Elasticities (Brand/Price Trade-off)	292
8.3 Conjoint Method for Competitor Reaction Elasticities	294
8.4 Method Based on Reservation Prices	297
8.5 Measurement of Price Effects	300
8.5.1 Using Ratings-Based Approach	300
8.5.2 Using Choice-Based Approach	302
8.6 More Applications	303
8.6.1 Application 1: Bidding for a Contract	303
8.6.2 Application 2: Pricing Digital Content Product Lines	306
8.6.3 Application 3: Multipart Pricing	309
8.7 Summary	313
Appendix 1: Technical Details for Estimating Self- and Cross-Price/Demand Relationships	313
Appendix 2: Estimation of Mean and Variance from Truncated Normal Distribution	315
References	315
9 Applications to a Miscellany of Marketing Problems	317
9.1 Introduction	317
9.2 Competitive Strategy Decisions	317
9.3 Distribution and Personal Selling Decisions	321

9.3.1	Store Location Decisions	321
9.3.2	Setting Sales Quotas	323
9.3.3	Choice of a Distribution Channel	325
9.3.4	Web Page Design	328
9.4	Legal Decisions	330
9.4.1	Measuring Damage Due to Patent Infringement	330
9.4.2	An Application to a Class Action Suit	331
9.5	Resource Allocation Decisions	335
9.5.1	Allocation of Push Marketing Mix Budget for a Brand . . .	336
9.5.2	Market Value of an Attribute Improvement (MVAI) . . .	337
9.6	Measurements for Marketing Strategies	339
9.6.1	Measuring Brand Equity	339
9.6.2	Customer Satisfaction	339
9.7	Summary	342
	References	343
10	Recent Developments and Future Outlook	345
10.1	Introduction	345
10.2	Experimental Designs for Mixture and Mixture-Amount	346
10.3	Conjoint Approaches	347
10.3.1	Barter Conjoint Method	347
10.3.2	Conjoint Poker	350
10.3.3	Best-Worst Scaling	351
10.3.4	Peer Influence Measurement	352
10.3.5	Incorporating Non-compensatory Choice Processes . . .	354
10.3.6	Combining Preference and Choice Data	354
10.4	Applications	354
10.4.1	Self-designed Products	355
10.4.2	Bundle Choice Models	356
10.5	Future Outlook	358
10.6	Summary	360
	References	360
11	Beyond Conjoint Analysis: Advances in Preference Measurement	363
11.1	Introduction: Beyond Conjoint Analysis	363
11.2	Problem	365
11.2.1	Helping Companies	365
11.2.2	Helping Consumers	366
11.2.3	Helping Policy Makers and Health Care Professionals	366
11.2.4	Helping Academic Researchers	366
11.3	Design and Data Collection	367
11.3.1	Optimal Experimental Design: Beyond A-Efficiency and D-Efficiency	367
11.3.2	New Forms of Interactions	368

11.3.3	Dealing with a Large Number of Attributes and Products	369
11.3.4	Combining Multiple Sources of Data	370
11.4	Model Specification, Estimation, and Action	371
11.4.1	Taking Social Interactions into Account	371
11.4.2	Meta-attributes	371
11.4.3	More Flexible Utility Functions	372
11.4.4	Incorporating Behavioral Effects	373
11.4.5	Modeling Learning, Dynamics and Preference Formation	374
11.4.6	Recent Tools for Estimation	374
11.4.7	From Model to Action	375
11.5	In Conclusion. . . “Every Generation Needs a New Revolution” . . .	376
	References	377
	Index	383



<http://www.springer.com/978-3-540-87752-3>

Applied Conjoint Analysis

Rao, V.R.

2014, XV, 389 p. 56 illus., Hardcover

ISBN: 978-3-540-87752-3