

Contents

Preface	xix
Contributors	xxiii
Abbreviations	xxv
1. Surveys and Business Surveys	1
<i>Jacqui Jones, Ger Snijkers, and Gustav Haraldsen</i>	
1.1. The Objective of this Book,	1
1.2. The Statistical Production Process,	2
1.3. Surveys,	4
1.3.1. Definition of Surveys,	4
1.3.2. Survey Constraints, Considerations, and Tradeoffs,	5
1.3.2.1. Survey Errors and the Process Quality Approach,	5
1.3.2.2. Response Burden,	7
1.3.2.3. Trust,	7
1.3.3. A Brief Historical Look at Surveys,	8
1.4. Types of Business Data Outputs,	10
1.4.1. Official Statistics,	10
1.4.1.1. National Accounts,	11
1.4.1.2. Structural Business Statistics,	12
1.4.1.3. Short-Term Statistics,	13
1.4.1.4. International and European Comparisons,	13
1.4.2. Other Types of Business Data Outputs,	14
1.5. Use of Business Data Outputs,	16
1.5.1. National, Regional, and Local Economic Performance,	17
1.5.2. Individual Business Monitoring and Policymaking,	18
1.5.3. Everyday Decisions,	18

- 1.6. Obtaining Business Data, 19
 - 1.6.1. Business Data Collection Methods, 19
- 1.7. Business Surveys, 22
 - 1.7.1. Types of Business Surveys, 22
 - 1.7.2. The Business Survey–Output Production Process, 23
 - 1.7.2.1. Business Survey Constraints, Considerations, and Tradeoffs, 23
 - 1.7.2.2. Unique Features of Business Surveys, 25
 - 1.7.3. Perspectives of the Business Survey Process, 26
 - 1.7.3.1. Survey Organization Perspective, 26
 - 1.7.3.2. Respondent Perspective, 27
 - 1.7.3.3. User Perspective, 28
- 1.8. Overview of the Book, 28
 - 1.8.1. The Audience, 28
 - 1.8.2. Organization of the Book, 29
 - 1.8.3. Chapter Summaries, 29
- Acknowledgments, 33
- Appendix, 33

2. The Business Context and its Implications for the Survey Response Process

39

Diane K. Willimack and Ger Snijkers

- 2.1. The Business Context from the Perspective of the Organizational Sciences, 40
 - 2.1.1. Business Goals and Behaviors and Implications for Survey Response, 40
 - 2.1.2. Dimensions of Social Behavior in Organizations Pertinent to the Survey Response Task, 45
 - 2.1.3. The Response Process Viewed as Work, 49
 - 2.1.3.1. How Work is Accomplished, 49
 - 2.1.3.2. Social Behavioral Dimensions of Work, 49
 - 2.1.3.3. Accomplishing the Work of Survey Response, 50
- 2.2. A Comprehensive Approach Integrating the Business Context and the Survey Response Process, 51
 - 2.2.1. The Decision to Participate, 54
 - 2.2.1.1. External Environment Factors, 54
 - 2.2.1.2. Business/Management Factors, 55
 - 2.2.2. Performing Response Tasks, 60
 - 2.2.2.1. Organizational Context for Performing Response Tasks, 61
 - 2.2.2.2. Organizational Context and Social Behavior, 66

- 2.2.2.3. Organizational Context and the Cognitive Response Process, 69
- 2.2.3. Release of the Questionnaire, 75
- 2.2.4. Role of the Survey Organization in the Business Survey Response Process: Implications for Survey Design, 75
- 2.3. Summary, 79
- Acknowledgments, 82

3. Quality Issues in Business Surveys

83

Gustav Haraldsen

- 3.1. Survey Quality from a User/producer Perspective, 84
 - 3.1.1. Users and User Evaluations of Business Surveys, 86
 - 3.1.2. The Total Survey Error Approach, 88
 - 3.1.2.1. Quality Constraints, 90
 - 3.1.2.2. Survey-Related Effects, 93
- 3.2. Sample-Related Quality Issues, 96
 - 3.2.1. A Glimpse into Transaction Studies, 96
 - 3.2.2. Specifying Observational Units, 97
 - 3.2.3. The Convenience Sample Element, 99
 - 3.2.4. Sampling Error Issues, 101
 - 3.2.5. Reporting Units and Informants, 102
 - 3.2.6. Response Rate Issues, 103
 - 3.2.6.1. The Significance of Legal Obligations, 104
 - 3.2.7. Quality Effects of Postsurvey Adjustments, 106
- 3.3. Measurement-Related Quality Issues, 106
 - 3.3.1. Validity Challenges during Survey Specification, 107
 - 3.3.2. Sources of Measurement Error in Business Surveys, 108
 - 3.3.2.1. The Business Survey Context, 110
 - 3.3.2.2. Question and Questionnaire Elements, 112
 - 3.3.2.3. The Content of Business Questionnaires, 116
 - 3.3.3. Measurement Issues Summarized, 118
- 3.4. Sample and Measurement Issues Combined, 120
- Acknowledgment, 125

4. Planning the Survey

127

Ger Snijkers, Gustav Haraldsen, and Jacqui Jones

- 4.1. Introduction, 127
- 4.2. Business Surveys and Project Management Principles, 128
- 4.3. Specifying and Planning the Survey, 131
 - 4.3.1. Specifying the Survey, 132
 - 4.3.2. Planning the Survey in Detail: The Planning Process, 135

- 4.3.2.1. The Project Plan, 135
 - 4.3.2.2. The Business Survey Production Environment, 138
 - 4.3.3. Planning the Fieldwork, 142
 - 4.3.4. Planning the Designing, Building, and Testing of the Survey Components, 143
 - 4.3.4.1. Planning Mode(s) of Data Collection and Questionnaire Design, 143
 - 4.3.4.2. Planning the Sample Design and Estimation, 146
 - 4.3.4.3. Planning the Survey Communication Strategy Design, 147
 - 4.3.4.4. Planning the Data Collection Process, 148
 - 4.3.4.5. Planning the Data Processing Procedures, 150
 - 4.3.5. Planning the Data Analysis, Dissemination, and Archiving, 151
 - 4.3.6. Planning the Survey Evaluation, 152
 - 4.4. Required Resources, 153
 - 4.5. The Timetable, 153
 - 4.6. Planning Managing, Controlling, Monitoring, and Evaluation of the Survey Project, 154
 - 4.7. Risk Management, 156
 - 4.8. Finalizing the Project Plan and Getting Started, 162
 - 4.9. Summary and Progress Status Overview, 162
- Acknowledgment, 163

5. Sampling and Estimation for Business Surveys

165

Paul Smith

- 5.1. Basic Principles, 165
- 5.2. Registers and Frames, 167
 - 5.2.1. Business Registers, 167
 - 5.2.1.1. Sources for Constructing Registers, 170
 - 5.2.1.2. Classification, 170
 - 5.2.1.3. Frames from Registers, 171
 - 5.2.1.4. Updating Registers, 171
 - 5.2.2. Constructing a Frame (without a Business Register), 174
 - 5.2.3. Register and Frame Quality, 175
 - 5.2.4. Dual-Frame Surveys, 176
- 5.3. Sample Design, 177
 - 5.3.1. Some Basic Ideas, 177
 - 5.3.2. Stratified Sampling, 178
 - 5.3.2.1. Stratification Variables, 179
 - 5.3.2.2. Defining the Strata, 180
 - 5.3.2.3. Sample Allocation, 188

- 5.3.2.4. Extra Details of Allocation, 191
 - 5.3.2.5. Multivariate and Multipurpose Sampling, 193
 - 5.3.2.6. Numerical Methods and Software for Stratification, 194
 - 5.3.2.7. Sample Selection, 194
 - 5.3.3. Probability Proportional to Size (PPS) Sampling, 195
 - 5.3.4. Cutoff Sampling, 196
 - 5.3.5. Sample Rotation and Overlap, 197
 - 5.3.6. Special Sample Designs, 199
 - 5.3.6.1. Product Surveys and Other Detailed Breakdowns of Activity, 199
 - 5.3.6.2. Price Index Surveys, 200
 - 5.3.6.3. Surveys for Rare Characteristics (“Needle in a Haystack” Surveys), 201
 - 5.4. Estimation, 202
 - 5.4.1. Horvitz–Thompson Estimation, 202
 - 5.4.2. Some Basic Ideas, 203
 - 5.4.3. Ratio Estimation, 205
 - 5.4.4. Combined Ratio Estimation, 207
 - 5.4.5. More Complex Estimators, 208
 - 5.4.6. Accuracy of Auxiliary Information, 208
 - 5.4.7. Optimal Uses of Auxiliary Information, 209
 - 5.4.8. Estimating Discontinuities, 209
 - 5.5. Outliers, 210
 - 5.5.1. Inspection and “Surprise Strata”, 211
 - 5.5.2. Winsorization, 212
 - 5.5.3. Other Approaches, 213
 - 5.6. Variance Estimation, 214
 - 5.7. Small Area Estimation, 216
 - 5.8. Summary, 217
- Acknowledgments, 218

6. Understanding and Coping with Response Burden

219

Gustav Haraldsen, Jacqui Jones, Deirdre Giesen, and Li-Chun Zhang

- 6.1. A Cost versus a Cost Benefit Approach, 220
 - 6.1.1. Politicians’ Bird’s-Eye View, 221
 - 6.1.2. Commercial Worries, 222
 - 6.1.3. Perceived Response Burden, 223
- 6.2. Measuring and Monitoring Business Response Burden, 226
 - 6.2.1. Measuring and Calculating Actual Response Burden, 229
 - 6.2.2. Measuring Perceived Response Burden, 232
 - 6.2.3. Calculations, 234

- 6.3. An Analytical Approach to Response Burden, 235
 - 6.3.1. Disentangling Some Sources of Response Burden, 238
 - 6.3.2. Suggesting a Curvilinear Correlation between Response Burden and Response Quality, 239
- 6.4. Measures to Reduce Response Burden, 241
 - 6.4.1. Survey Reduction Measures, 241
 - 6.4.2. Sample Coordination, 243
 - 6.4.2.1. Common Frame and Regime, 244
 - 6.4.2.2. Effects on Perceived Response Burden, 245
 - 6.4.3. Survey Communication Measures, 248
 - 6.4.4. Questionnaire Improvement Measures, 249
 - 6.4.5. Tailored Evaluations of Response Burden Reduction Measures, 251

Acknowledgments, 252

7. Methods for the Development, Testing, and Evaluation of Data Collection Instruments

253

Diane K. Willimack

- 7.1. A Framework for Questionnaire Development, Testing, and Evaluation, 254
 - 7.1.1. Business Survey Response Model and Measurement Error, 256
 - 7.1.2. Constraints and Limitations to Questionnaire Development, Testing, and Evaluation in the Business Survey Context, 258
- 7.2. Developing Content, Measurements, and Survey Questions, 260
 - 7.2.1. The Roles of Subject Area Specialists, Stakeholders, and Data Users, 262
 - 7.2.2. Methods for Content Development and Specifying Measurements, 262
 - 7.2.2.1. Top–Down Theory-Driven Approaches, 263
 - 7.2.2.2. Bottom–Up Data-Driven Approaches, 264
- 7.3. Testing Questions and Questionnaires, 267
 - 7.3.1. The Response Model as a Framework for Testing, 267
 - 7.3.2. Methods, 269
- 7.4. Evaluating Survey Questions and Questionnaires, 276
 - 7.4.1. Methods Used during Data Collection, 276
 - 7.4.2. Methods Used after Data Collection, 278
 - 7.4.3. Methods for Identifying Questionnaire Problems in Recurring Surveys, 280
- 7.5. Development, Testing, and Evaluation of Electronic Data Collection Instruments, 282
 - 7.5.1. Development Strategies for Electronic Instruments, 282

- 7.5.2. Usability Testing, 285
- 7.5.3. Evaluating Web Survey Data Collection Instruments, 286
- 7.6. Analyzing Qualitative Data, 287
 - 7.6.1. Data Capture, 288
 - 7.6.2. Types of Analysis, 288
 - 7.6.3. Data Reduction, 289
 - 7.6.4. Data Display, 290
 - 7.6.5. Drawing Conclusions and Verification, 290
- 7.7. Multimethod Approaches to Development, Testing, and Evaluation, 290
- 7.8. Organization and Logistics, 293
 - 7.8.1. Survey Organizational Structures for Instrument Development, Testing, and Evaluation, 293
 - 7.8.2. Pretesting Logistics, 294
- 7.9. Summary, 295
- Acknowledgments, 298
- Appendix 7.A.1 Example of Conclusions from Qualitative Data Analysis: Public Trust in Statistics: A Conceptual Model of Trust Determinants, 298
- Appendix 7.A.2 Case Study: Logistics of Questionnaire Pretesting for Economic Survey Programs at the US Census Bureau, 299

8. Questionnaire Communication in Business Surveys

303

Gustav Haraldsen

- 8.1. Communication Modes, 303
- 8.2. Elements in Concert, 306
- 8.3. Tailoring for Businesses, 311
 - 8.3.1. Setting the Scene, 313
 - 8.3.1.1. Creating Trust, 314
 - 8.3.1.2. Assigning Tasks, 315
 - 8.3.2. Common Access to Several Web Surveys, 317
 - 8.3.2.1. Simple and Advanced Business Web Portals, 317
 - 8.3.2.2. Visual Design of the Web Portal, 320
 - 8.3.2.3. Data Collection Instruments for Small Companies and Small Questionnaires, 323
 - 8.3.2.4. Mobile Data Collection Instruments in a Mixed-Mode Design, 324
 - 8.3.3. Layout and Functional Tailoring for Internal Data Collection, 325
 - 8.3.3.1. Guiding the Questionnaire to the Right Respondent(s), 325

- 8.3.3.2. Guidelines and Tailoring Tools in Web Questionnaires, 325
- 8.3.3.3. Intercomputer Communication, 331
- 8.4. Phrasing Questions in Business Surveys, 332
 - 8.4.1. From Requirements to Inquiries, 332
 - 8.4.2. Clarifying Terms and Tasks, 335
 - 8.4.3. Listening to Questionnaires, 340
 - 8.4.3.1. How Question Order Affects Comprehension, 340
 - 8.4.3.2. Implicit Expectations, 341
 - 8.4.3.3. Looking for Hints, 341
 - 8.4.3.4. Talking with Web Questionnaires, 345
- 8.5. Minimizing Response Burden, 346
 - 8.5.1. Time Saving Measures, 347
 - 8.5.1.1. IT Tools, 348
 - 8.5.1.2. Presentations, 350
 - 8.5.2. Reducing the Cognitive Burden, 351
 - 8.5.2.1. From Preprinting to Dependent Dialogs, 351
 - 8.5.2.2. Manageable Matrices, 353
 - 8.5.2.3. Computerized Matrices, 355
- 8.6. Concluding Reflections, 357
- Acknowledgments, 357

9. Business Survey Communication

359

Ger Snijkers and Jacqui Jones

- 9.1. Introduction, 359
- 9.2. The Role, Objectives, and Process of Business Survey Communication, 360
 - 9.2.1. Role, 360
 - 9.2.2. Objectives, 361
 - 9.2.3. Process, 362
 - 9.2.3.1. Prefield Survey Communication Stage, 365
 - 9.2.3.2. Field Survey Communication Stage, 368
 - 9.2.3.3. Postfield Survey Communication Stage, 371
- 9.3. Tailoring to the Business Context, 373
 - 9.3.1. Actors and Their Roles in the Response Process, 373
 - 9.3.2. Business Size and Economic Sector, 374
 - 9.3.3. Factors Affecting the Response Process, 375
 - 9.3.4. Questions and Complaints, 377
- 9.4. The Survey Organization Context, 377
 - 9.4.1. Staff in the Communication Process and Their Roles, 377
 - 9.4.2. Survey Organization Policies and Procedures, 383
 - 9.4.2.1. Informed Consent and Confidentiality, 383
 - 9.4.2.2. Mandatory Surveys, 387
 - 9.4.3. Survey Communication in Perspective, 388

- 9.5. Designing an Effective Business Survey Communication Strategy, 389
 - 9.5.1. Planning and Designing the Communication Strategy, 390
 - 9.5.2. Effectiveness of Communication Modes, 398
 - 9.5.3. Effectively Motivating and Facilitating, 400
 - 9.5.3.1. Motivation Strategies, 401
 - 9.5.3.2. Facilitation Strategies, 407
- 9.6. Business Survey Communication Measures, Practices, and Guidelines, 407
 - 9.6.1. Prefield Communication Measures, 408
 - 9.6.1.1. Measures for Increasing the Chances of Establishing Contact, 408
 - 9.6.1.2. Measures for Introducing the Survey and Seeking Cooperation, 410
 - 9.6.1.3. Reducing Response Burden, 412
 - 9.6.2. Field Communication Measures, 412
 - 9.6.2.1. Making Contact, Dispatching the Questionnaire, and Informing the Business about the Survey, 412
 - 9.6.2.2. Measures for Increasing Survey Participation, 414
 - 9.6.2.3. Providing Assistance with Questions and Complaints: Help Desk, Website, Web Care, and Ombudsman, 416
 - 9.6.2.4. Nonresponse Follow-ups and Refusal Conversion, 418
 - 9.6.2.5. Measures for Maintaining a Relationship, 420
 - 9.6.3. Special Cases: Large Businesses and Mixed-Mode Designs, 421
 - 9.6.3.1. Dealing with Large and Multisurveyed Businesses, 421
 - 9.6.3.2. Introducing Web Mixed-Mode Designs, 422
- 9.7. Summary and Example of a Communication Strategy, 426
Acknowledgment, 430

10. Managing the Data Collection

431

Ger Snijkers and Gustav Haraldsen

- 10.1. Introduction, 431
- 10.2. Implementing the Survey, 432
- 10.3. Active Fieldwork Management, 434
- 10.4. Paradata, 436
- 10.5. Monitoring the Quality of the Response, 440
 - 10.5.1. A Classification of Data Collection Outcome Codes, 441
 - 10.5.2. Response and Return Rates at Unit Level, 445
 - 10.5.3. Weights of Businesses, 447

- 10.5.4. Distribution of the Response: Representativeness, 448
- 10.5.5. Quality of the Measurements, 449
- 10.6. Monitoring the Survey Production Process, 451
- 10.7. Survey Evaluation and Quality Report, 454
- 10.8. Summary, 456
- Acknowledgment, 457

11. Capturing, Coding, and Cleaning Survey Data

459

Jacqui Jones and Mike Hidioglou

- 11.1. Introduction, 459
- 11.2. Data Capture, 461
 - 11.2.1. Step One: Initial Data Capture, 461
 - 11.2.2. Minimizing, Measuring, and Monitoring Errors in Initial Data Capture, 462
 - 11.2.3. Step Two: Data Transfer, 464
 - 11.2.4. Step Three: Data Capture Processing, 465
 - 11.2.5. Capturing Data from Paper Questionnaires, 466
 - 11.2.6. Electronic Scanning, 468
 - 11.2.7. Design of Paper Self-Completion Questionnaires for Electronic Scanning, 468
 - 11.2.8. Instructions for Completing a Paper Self-Completion Questionnaire to be Scanned, 471
 - 11.2.9. Minimizing, Measuring, and Monitoring Errors in Data Capture Processing, 473
- 11.3. Data Coding, 475
 - 11.3.1. Coding Descriptions to Classifications, 478
 - 11.3.2. Questionnaire Design Implications, 478
 - 11.3.3. Two Examples of Data Coding Tools, 480
 - 11.3.4. Minimizing, Measuring, and Monitoring Errors in Data Coding, 481
- 11.4. Editing and Imputation, 483
 - 11.4.1. An Overview of Editing and Imputation in Business Surveys, 483
 - 11.4.2. Microediting, 485
 - 11.4.3. Types of Microdata Error, 485
 - 11.4.4. Methods for Identifying Microerrors, 489
 - 11.4.4.1. Data Validation Edits, 490
 - 11.4.4.2. Statistical Edits, 491
 - 11.4.5. Treatment of Microdata Errors, 492
 - 11.4.6. Identifying Errors at the Macroediting Stage, 496
 - 11.4.6.1. Macroediting Methods, 496
 - 11.4.7. Imputation, 498
 - 11.4.7.1. Deterministic Imputation Methods, 499

- 11.4.7.2. Stochastic Imputation Methods, 500
- 11.4.8. Minimizing, Measuring, and Monitoring Errors in Editing and Imputation, 500
 - 11.4.8.1. Editing Quality Process Measures, 501
 - 11.4.8.2. Imputation Quality Process Measures, 502
- 11.4.9. Editing Strategies, 502
- 11.5. Concluding Comments, 503
- Acknowledgments, 504

12. From Survey Data to Statistics

505

Jacqui Jones

- 12.1. Introduction, 505
- 12.2. Analysis, 505
 - 12.2.1. Analysis and Different Types of Statistical Outputs, 507
 - 12.2.2. Analytical Technique Considerations, 510
 - 12.2.2.1. Analyzing Different Types of Data, 510
 - 12.2.2.2. Aggregate and Microlevel Data Analysis, 510
 - 12.2.2.3. Analysis of Time Series Data, 511
 - 12.2.2.4. Analyzing Single- or Multicomponent Series, 511
 - 12.2.2.5. Analyzing Data with Different Sample Designs, 512
 - 12.2.2.6. Pitfalls to Avoid in Statistical Analysis, 512
 - 12.2.3. Analytical Techniques for Improving Statistical Interpretation, 513
 - 12.2.3.1. Seasonal Adjustment, 513
 - 12.2.3.2. Index Numbers, 518
 - 12.2.3.3. Values and Volumes, 521
 - 12.2.3.4. Consumer Price Index (CPI), 524
 - 12.2.3.5. Retail Prices Index (RPI), 525
 - 12.2.3.6. Producer Price Index (PPI), 525
 - 12.2.3.7. Services Producer Price Index (SPPI), 526
 - 12.2.3.8. Import and Export Indices, 526
 - 12.2.3.9. Implied Deflators, 527
- 12.3. Preparing for Dissemination, 527
 - 12.3.1. Preparing Statistical Tables and Datasets, 528
 - 12.3.2. The Importance of Maintaining Confidentiality, 530
 - 12.3.3. Disclosure Control Methods, 532
 - 12.3.3.1. Microdata Disclosure Control Methods, 532
 - 12.3.3.2. Tabular Disclosure Control Methods, 533
 - 12.3.4. Presenting the Statistics, 536
 - 12.3.4.1. Writing Statistical Commentary, 536
 - 12.3.4.2. Identifying the Headline Message, 537
 - 12.3.4.3. Information to Support Disseminated Statistics, 537

12.4.	Dissemination, 539	
12.4.1.	Evaluating Statistical Dissemination, 539	
12.5.	Archiving, 540	
12.6.	Concluding Comments, 542	
	Acknowledgments, 543	

References	545
-------------------	------------

Index	597
--------------	------------