



U N
**RESEARCH
METHODS**

N I N T H E D I T I O N

William G. Zikmund

Barry J. Babin

Max P. Watson Professor of Business
Louisiana Tech University
Head, Department of Marketing & Analysis

Jon C. Carr

M.J. Neeley School of Business
Texas Christian University
Department of Management, Entrepreneurship, & Leadership

Mitch Griffin

Professor of Marketing
Bradley University

* o SOUTH-WESTERN
üo CENGAGE Learning-

CONTENTS ;•••

Preface, xviii

PARJONI **Introduction**

CHAPTER 1

The Role of Business Research, 2

Introduction, 3

Survey This!, 4

The Nature of Business Research, 4

Business Research Defined, 5

Applied and Basic Business Research, 5

The Scientific Method, 6

Managerial Value of Business Research, 7

Identifying Problems or Opportunities, 8

Diagnosing and Assessing Problems or Opportunities, 8

Selecting and Implementing a Course of Action, 8

Evaluating the Course of Action, 9

Research Snapshot Harley-Davidson Goes Abroad, 10

When Is Business Research Needed?, 10

Time Constraints, 10

Availability of Data, 10

Research Snapshot Business Class Success?, 11

Nature of the Decision, 11

Benefits versus Costs, 11

Business Research in the Twenty-First Century, 12

Communication Technologies, 12

Research Snapshot "Jacques" Daniels, 13

Global Business Research, 13

Overview, 14

Summary, 15

Key Terms and Concepts, 16

Questions for Review and Critical Thinking, 16
Research Activities, 16

CHAPTER 2

Information Systems and Knowledge Management, 17

Introduction, 18

Information, Data, and Intelligence, 18

The Characteristics of Valuable Information, 19

Relevance, 19

Survey This!, 20

Quality, 20

Timeliness, 20

Completeness, 20

Research Snapshot RFID Technology Gets Cheaper—Business Knowledge Grows, 21

Knowledge Management, 21

Research Snapshot Are Businesses Clairvoyant?, 22

Global Information Systems, 22

Decision Support Systems, 23

Databases and Data Warehousing, 24

Input Management, 24

Research Snapshot Staying Home at Home Depot, 26

Computerized Data Archives, 27

Networks and Electronic Data Interchange, 29

The Internet and Research, 29

What Exactly Is the Internet?, 29

How Is the Internet Useful in Research?, 30

Navigating the Internet, 31

Interactive Media and Environmental Scanning, 31

Information Technology, 32

Intranets, 33
Internet2, 33

Summary, 34
Key Terms and Concepts, 35
Questions for Review and Critical Thinking, 35
Research Activities, 35

CASE 2.1 *Harvard Cooperative Society*, 36

CHAPTER 3 Theory Building, 37

Introduction, 38
What Is a Theory?, 38
What Are the Goals of Theory?, 38

Survey This!, 39

Research Concepts, Constructs, Propositions, Variables, and Hypotheses, 39

Research Concepts and Constructs, 39

Research Snapshot Social Network Theory, 40
Research Propositions and Hypotheses, 41

Understanding Theory, 42

Verifying Theory, 43
Theory Building, 43

The Scientific Method, 44

Practical Value of Theories, 46

Summary, 46
Key Terms and Concepts, 47
Questions for Review and Critical Thinking, 47
Research Activities, 47

CHAPTER 4 The Business Research Process: An Overview, 48

Introduction, 49
Decision Making, 49
Certainty, 49

Survey This!, 50

Uncertainty, 50
Ambiguity, 50

Types of Business Research, 51

Research Snapshot Cute, Funny, or Sexy? What Makes a Mascot Tick?, 52

Exploratory Research, 52
Descriptive Research, 53

Research Snapshot Taking a Swing at Business Success, 54

Causal Research, 54
Uncertainty Influences the Type of Research, 58

Stages in the Research Process, 59

Alternatives in the Research Process, 60
Defining the Research Objectives, 60
Planning the Research Design, 64

Research Snapshot Rolling Rock, 66
Sampling, 66
Gathering Data, 67
Processing and Analyzing Data, 68
Drawing Conclusions and Preparing a Report, 68

The Research Program Strategy, 68

Summary, 69
Key Terms and Concepts, 70
Questions for Review and Critical Thinking, 70
Research Activities, 71

CASE 4.1 *A New "Joe" on the Block*, 71

CHAPTER 5 The Human Side of Business Research: Organizational and Ethical Issues, 73

Introduction, 74

Survey This!, 76

Organizational Structure of Business Research, 76

Business Research Jobs, 77
The Director of Research as a Manager, 79
Sources of Conflict between Senior Management and Research, 79

Research Snapshot The True Power of Research, 80

Research Snapshot When Your Brain "Trips Up," 81
Reducing the Conflict between Management and Researchers, 82
Cross-Functional Teams, 84

Research Suppliers and Contractors, 85

Syndicated Service, 85
Standardized Research Services, 85

Research Snapshot Finding Häagen-Dazs in China, 86

Limited Research Service Companies and Custom Research, 86
Largest Research Organizations, 86

Ethical Issues in Business Research, 87

Ethical Questions Are Philosophical Questions, 88
General Rights and Obligations of Concerned Parties, 88
Rights and Obligations of the Research Participant, 89

Research Snapshot Crazy Good! Have Fun, Play Games (and Buy Pop-Tarts)!, 92

Rights and Obligations of the Researcher, 93

Research Snapshot Is It Right, or Is It Wrong?, 95

Rights and Obligations of the Client Sponsor (User), 99
Privacy, 100
Privacy on the Internet, 100
A Final Note on Ethics, 100

Summary, 101

Key Terms and Concepts, 102
Questions for Review and Critical Thinking, 102
Research Activities, 103

CASE 5.1 *Global Eating*, 103

CASE 5.2 *Big Brother Is Watching?*, 104

Beginning Stages of the Research Process

CHAPTER 6

Problem Definition: The Foundation of Business Research, 106

Introduction, 107

- Importance of Starting with a Good Problem Definition, 107

Survey This!, 108

- Problem Complexity, 108

Research Snapshot Good Answers, Bad Questions?, 109

The Problem-Definition Process, 111

- Problems Mean Gaps, 111
- The Problem-Definition Process Steps, 111

Research Snapshot Poor Questions Result in Poor Research in Japan!, 112

- Understand the Business Decision, 112

Research Snapshot Opportunity Is a "Fleeting" Thing, 115

- Identifying the Relevant Issues from the Symptoms, 116
- Writing Managerial Decision Statements and Corresponding Research Objectives, 116
- Determine the Unit of Analysis, 118
- Determine Relevant Variables, 118
- Write Research Objectives and Questions, 120

Research Snapshot Pricing Turbulence, 121

Clarity in Research Questions and Hypotheses, 121

How Much Time Should Be Spent on Problem Definition?, 123

The Research Proposal, 123

- The Proposal As a Planning Tool, 123
- The Proposal as a Contract, 125
- Anticipating Outcomes, 126

Summary, 128

- Key Terms and Concepts, 128
- Questions for Review and Critical Thinking, 129
- Research Activities, 129

CASE 6.1 *E-ZPass*, 130

CASE 6.2 *Cane's Goes International*, 130

CASE 6.3 *Deland Trucking*, 130

CHAPTER 7

Qualitative Research Tools, 131

Introduction, 132

What Is Qualitative Research?, 132

- Uses of Qualitative Research, 132

Survey This!, 133

Qualitative "versus" Quantitative Research, 133

Research Snapshot Discoveries at P&G!, 134

- Contrasting Qualitative and Quantitative Methods, 134
- Contrasting Exploratory and Confirmatory Research, 135

Orientations to Qualitative Research, 136

- Phenomenology, 136

Research Snapshot "When Will I Ever Learn?," 137

- Ethnography, 138
- Grounded Theory, 139
- Case Studies, 139

Research Snapshot A Sensory Safari Provides Play Time (and Good Research) for Time Warner Cable, 140

Common Techniques Used in Qualitative Research, 140

- What Is a Focus Group Interview?, 141
- Depth Interviews, 149
- Conversations, 150
- Free-Association/Sentence Completion Method, 151
- Observation, 152
- Collages, 152
- Projective Research Techniques, 152

Exploratory Research in Science and in Practice, 153

- Misuses of Exploratory and Qualitative Research, 153

Summary, 155

- Key Terms and Concepts, 156
- Questions for Review and Critical Thinking, 157
- Research Activities, 157

CASE 7.1 *Disaster and Consumer Value*, 157

CASE 7.2 *Edward Jones*, 158

CHAPTER 8

Secondary Data Research in a Digital Age, 159

Introduction, 160

- Advantages of Secondary Data, 160
- Disadvantages of Secondary Data, 160

Survey This!, 161

Typical Objectives for Secondary Data Research Designs, 162

- Fact-Finding, 162

Research Snapshot Does It Matter?, 165

- Model Building, 165
- Data Mining, 168

Research Snapshot Mining Data from Blogs, 169

- Database Marketing and Customer Relationship Management, 170

Sources of Secondary Data, 170

- Sources of Internal and Proprietary Data, 171
- External Data: The Distribution System, 171
- Information As a Product and Its Distribution Channels, 171

Research Snapshot What's That Buzzing Sound?, 175

Single-Source Data-Integrated Information, 177

Sources for Global Research, 177

Research Snapshot Around the World of Data, 178

Summary, 180

Key Terms and Concepts, 180

Questions for Review and Critical Thinking, 181

Research Activities, 181CASE 8.1 *Demand for Gas Guzzlers*, 182**PARLIHREL****Research Methods for Collecting Primary Data**

CHAPTER 9

Survey Research: An Overview, 184

Introduction, 185

Using Surveys, 185**Survey This!, 186**

Advantages of Surveys, 186

Research Snapshot Intuit Gets Answers to Satisfy Customers, 187**Errors in Survey Research, 187**

Random Sampling Error, 188

Systematic Error, 188

Research Snapshot Overestimating Patient

Satisfaction, 189

Respondent Error, 189

Administrative Error, 193

Rule-of-Thumb Estimates for Systematic Error, 194

What Can Be Done to Reduce Survey Error?, 194

Classifying Survey Research Methods, 194

Structured/Unstructured and Disguised/Undisguised Questionnaires, 194

Research Snapshot The "Mere-Measurement" Effect, 195

Temporal Classification, 195

Total Quality Management and Customer Satisfaction Surveys, 197

What Is Quality?, 198

Internal and External Customers, 198

Implementing Total Quality Management, 198

Summary, 201

Key Terms and Concepts, 202

Questions for Review and Critical Thinking, 203

Research Activities, 203CASE 9.1 *SAT and ACT Writing Tests*, 204CASE 9.2 *The Walker Information Group*, 204

CHAPTER 10

Survey Research: Communicating with Respondents, 205

Introduction, 206

Interviews as Interactive Communication, 206

Noninteractive Media, 206

Personal Interviews, 206

Survey This!, 207

Advantages of Personal Interviews, 207

Research Snapshot The Challenge of Assessing Adult Literacy, 208

Disadvantages of Personal Interviews, 209

Door-to-Door Interviews and Shopping Mall Intercepts, 210

Research Snapshot Being Good Neighbors Means

Learning about Them First, 211

Global Considerations, 212

Telephone Interviews, 212

Mobile Phone Interviews, 213

Phone Interview Characteristics, 213

Central Location Interviewing, 215

Research Snapshot Automated Phone Surveys of Teens, 216

Computer-Assisted Telephone Interviewing, 216

Computerized Voice-Activated Telephone Interview, 216

Global Considerations, 217

Self-Administered Questionnaires, 217

Mail Questionnaires, 217

Response Rates, 219

Increasing Response Rates for Mail Surveys, 220

Global Considerations, 223

Self-Administered Questionnaires Using Other Forms of Distribution, 223

Fax Surveys, 223

E-Mail Surveys, 224

Internet Surveys, 225

Research Snapshot Mixed Mode Data Collection:

The Case of Web and Telephone Surveys, 226

Kiosk Interactive Surveys, 228

Survey Research That Mixes Modes, 229

Text-Message Surveys, 229

Selecting the Appropriate Survey Research Design, 229**Pretesting, 231****Ethical Issues in Survey Research, 231**

Summary, 231

Key Terms and Concepts, 232

Questions for Review and Critical Thinking, 232

Research Activities, 233CASE 10.1 *National Do Not Call Registry*, 233CASE 10.2 *Royal See Electric Fishing Reel*, 234

CHAPTER 11

Observation Methods, 235

Introduction, 236

Observation in Business Research, 236

What Can Be Observed?, 236

Survey This!, 237

The Nature of Observation Studies, 237

Research Snapshot This Trend Brought to You by DDB SignBank, 238

Observation of Human Behavior, 238

- Complementary Evidence, 239
- Direct Observation, 240
- Combining Direct Observation and Interviewing, 241
- Ethical Issues in the Observation of Humans, 241

Observation of Physical Objects, 242

Content Analysis, 243

Mechanical Observation, 244

- Television Monitoring, 244

Research Snapshot ATTI, Inc. Shadows the Fleet, 245

- Monitoring Website Traffic, 246
- Scanner-Based Research, 246
- Measuring Physiological Reactions, 247

Research Snapshot Neuroco Peers into the Consumer's Brain, 248

- Summary, 249
- Key Terms and Concepts, 250
- Questions for Review and Critical Thinking, 250
- Research Activities, 251

- CASE 11.1 *Mazda and Syzygy*, 251
- CASE 11.2 *Texas Instruments and E-Lab*, 252

CHAPTER 12
Experimental Research, 253

Introduction, 254

Creating an Experiment, 254

- An Illustration: Can a Self-Efficacy Intervention Enhance Job Attitude?, 254

Survey This!, 255

Designing an Experiment to Minimize Experimental Error, 257

- Manipulation of the Independent Variable, 257

Research Snapshot Talking While Driving: Are Cell Phone Conversations Different from Passenger Conversations?, 259

- Selection and Measurement of the Dependent Variable, 260
- Selection and Assignment of Test Units, 260

Demand Characteristics, 263

- What Are Demand Characteristics?, 263
- Experimenter Bias and Demand Effects, 263
- Hawthorne Effect, 264
- Reducing Demand Characteristics, 265

Establishing Control, 266

- Problems Controlling Extraneous Variables, 266

Ethical Issues in Experimentation, 267

Practical Experimental Design Issues, 267

- Basic versus Factorial Experimental Designs, 267
- Laboratory Experiments, 267
- Field Experiments, 268

Research Snapshot The Hidden in Hidden Valley Ranch, 269

- Within-Subjects and Between-Subjects Designs, 270

- Issues of Experimental Validity, 271
 - Internal Validity, 271
 - External Validity, 273
 - Trade-offs between Internal and External Validity, 274

Classification of Experimental Designs, 274

- Symbolism for Diagramming Experimental Designs, 274
- Three Examples of Quasiexperimental Designs, 274
- Three Alternative Experimental Designs, 276
- Time Series Designs, 278
- Complex Experimental Designs, 278

- Summary, 282
- Key Terms and Concepts, 283
- Questions for Review and Critical Thinking, 284
- Research Activities, 284

- CASE 12.1 *Tooheys*, 285

Measurement Concepts

CHAPTER 13
Measurement and Scaling Concepts, 288

Introduction, 289

What Do I Measure?, 289

Survey This!, 290

Research Snapshot Peer Pressure and Investing Behavior, 292

- Concepts, 292
- Operational Definitions, 292

Levels of Scale Measurement, 293

- Nominal Scale, 293
- Ordinal Scale, 295
- Interval Scale, 297
- Ratio Scale, 297
- Mathematical and Statistical Analysis of Scales, 298

Index Measures, 299

- Indexes and Composites, 299
- Computing Scale Values, 300

Research Snapshot Recoding Made Easy, 301

Three Criteria for Good Measurement, 301

- Reliability, 301
- Validity, 303
 - Reliability versus Validity, 305
- Sensitivity, 305

- Summary, 306
- Key Terms and Concepts, 306
- Questions for Review and Critical Thinking, 307
- Research Activities, 307

- CASE 13.1 *FlyAway Airways*, 308

CHAPTER14**Attitude Measurement, 310**

Introduction, 311

Attitudes as Hypothetical Constructs, 311

Survey This!, 312

Importance of Measuring Attitudes, 312

Techniques for Measuring Attitudes, 312

Research Snapshot Is It Positive Emotionality, or Is It LOVE?, 313

Attitude Rating Scales, 313

Simple Attitude Scales, 313

Research Snapshot Students Ask—Are You Responsible?, 314

Category Scales, 314

Method of Summated Ratings: The Likert Scale, 315

Semantic Differential, 317

Research Snapshot Measuring Website Usability, 319

Numerical Scales, 319

Stapel Scale, 319

Constant-Sum Scale, 320

Graphic Rating Scales, 321

Research Snapshot How Much Is a Healthy Home Worth?, 322

Thurstone Interval Scale, 322

Measuring Behavioral Intention, 323

Behavioral Differential, 324

Ranking, 324

Paired Comparisons, 324

Sorting, 325

Other Methods of Attitude Measurement, 325

Selecting a Measurement Scale: Some Practical Decisions, 326

Ranking, Sorting, Rating, or Choice Technique?, 326

Monadic or Comparative Scale?, 326

What Type of Category Labels, If Any?, 327

How Many Scale Categories or Response Positions?, 327

Balanced or Unbalanced Rating Scale?, 327

Even or Odd Number of Scale Points?, 328

Use a Scale That Forces a Choice among Predetermined Options?, 328

Single Measure or an Index Measure?, 329

Summary, 329

Key Terms and Concepts, 330

Questions for Review and Critical Thinking, 330

Research Activity, 331

CASE 14.1 *Roeder-Johnson Corporation*, 331CASE 14.2 *Attitudes toward Technology and Lifestyle*, 331**CHAPTER15****Questionnaire Design, 333**

Introduction, 334

Questionnaire Quality and Design: Basic Considerations, 334

What Should Be Asked?, 334

Survey This!, 335

Questionnaire Relevancy, 335

Questionnaire Accuracy, 335

Wording Questions, 336

Open-Ended Response versus Fixed-Alternative Questions, 336

Research Snapshot Corporate Reputations: Consumers Put Johnson & Johnson, Microsoft, and Google on Top, 337

Types of Fixed-Alternative Questions, 338

Phrasing Questions for Self-Administered, Telephone, and Personal Interview Surveys, 340

Guidelines for Constructing Questions, 341

Avoid Complexity: Use Simple, Conversational Language, 341

Avoid Leading and Loaded Questions, 342

Avoid Ambiguity: Be as Specific as Possible, 343

Avoid Double-Barreled Items, 344

Avoid Making Assumptions, 345

Avoid Burdensome Questions That May Tax the Respondent's Memory, 345

Make Certain Questions Generate Variance, 346

What Is the Best Question Sequence?, 347
Research Snapshot What Citizens Think about Climate Change, 348

What Is the Best Layout?, 350

Traditional Questionnaires, 350

Internet Questionnaires, 355

Research Snapshot Pretesting the CAHPS Hospital Survey, 359

How Much Pretesting and Revising Are Necessary?, 360
Designing Questionnaires for Global Markets, 361

Summary, 362

Key Terms and Concepts, 363

Questions for Review and Critical Thinking, 363

Research Activity, 364

CASE 15.1 *Agency for Healthcare Research and Quality*, 364CASE 15.2 *Canterbury Travels*, 369CASE 15.3 *McDonald's Spanish Language Questionnaire*, 371CASE 15.4 *Schönbrunn Palace in Vienna*, 372**APPENDIX 15A****Question Wording and Measurement Scales for Commonly Researched Topics, 373**

Questions about Advertising, 373

Awareness, 373

Unaided Recall/Top of the Mind Recall, 374

Aided Recall, 374

Recognition, 374

- Message Communication/Playback (Sales Point Playback), 374
- Attitude toward the Advertisement, 375
- Attitude toward Advertised Brand (Persuasion), 375
- Readership/Viewership, 375

Questions about Ownership and Product Usage, 376

- Ownership, 376
- Purchase Behavior, 376
- Regulär Usage, 376

Questions about Goods and Services, 376

- Ease of Use, 376
- Uniqueness, 377
- Attribute Ratings/Importance of Characteristics, 377
- Interest, 377
- Like/Dislike, 378
- Preference, 378
- Expectations, 378
- Satisfaction, 378
- Quality, 379
- Problems, 379
- Benefits, 379
- Improvements, 379
- Buying Intentions for Existing Products, 379
- Buying Intentions Based on Product Concept, 380
- Reason for Buying Intention, 380

Questions about Demographics, 380

- Age, 380

Education, 381

- Marital Status, 381
- Children, 381
- Income, 381
- Occupation, 382

Sampling and Fieldwork

**CHAPTER 16
Sampling Designs and
Sampling Procedures, 384**

- Introduction, 385
- Sampling Terminology, 385
- Why Sample?, 385
 - Pragmatic Reasons, 385
- Survey This!, 386**
 - Accurate and Reliable Results, 386
 - Destruction of Test Units, 386
- Research Snapshot** Finding Out about Work Is a Lot of Work!, 387
- Practical Sampling Concepts, 387**
 - Defining the Target Population, 387
 - The Sampling Frame, 388
 - Sampling Units, 390

- Random Sampling and Nonsampling Errors, 390
 - Random Sampling Error, 391
 - Systematic Sampling Error, 391
 - Less Than Perfectly Representative Samples, 391

Probability versus Nonprobability Sampling, 392

- Nonprobability Sampling, 392
 - Convenience Sampling, 393

Research Snapshot How Much Does Your Prescription Cost? It Depends on Who You Buy It From, 393
Judgment Sampling, 393

Research Snapshot American Kennel ClubTries to Keep Pet Owners out of the Doghouse, 394
Quota Sampling, 394
Snowball Sampling, 395

Probability Sampling, 395

- Simple Random Sampling, 396
- Systematic Sampling, 396
- Stratified Sampling, 397
- Proportional versus Disproportional Sampling, 397
- Cluster Sampling, 398

Research Snapshot Who's at Home? Different Ways to Select Respondents, 399
Multistage Area Sampling, 399

What Is the Appropriate Sample Design?, 401

- Degree of Accuracy, 402
- Resources, 402

Research Snapshot New on Campus: Student Adjustmentto College Life, 403
Time, 403
Advance Knowledge of the Population, 403
National versus Local Project, 403

Internet Sampling Is Unique, 404

- Website Visitors, 404
- Panel Samples, 404
- Recruited Ad Hoc Samples, 405
- Opt-in Lists, 405

- Summary, 406
- Key Terms and Concepts, 406
- Questions for Review and Critical Thinking, 407
- Research Activities, 407

-
- CASE 16.1 *Who's Fishing?*, 408
 - CASE 16.2 *Scientific Telephone Samples*, 408

**CHAPTER 17
Determination of Sample Size:
A Review @f Statistical Theory, 409**

- Introduction, 410**
 - Descriptive and Inferential Statistics, 410
 - Sample Statistics and Population Parameters, 410

- Making Data Usable, 411**
 - Frequency Distributions, 411

Survey This!, 412

Proportions, 412

Research Snapshot The Well-Chosen Average, 413

Measures of Central Tendency, 413

Measures of Dispersion, 415

The Normal Distribution, 418

Population Distribution, Sample Distribution, and Sampling Distribution, 422

Central-Limit Theorem, 424

Estimation of Parameters, 427

Point Estimates, 427

Confidence Intervals, 427

Research Snapshot Sampling the World, 428**Sample Size, 430**

Random Error and Sample Size, 430

Research Snapshot Target and Walmart Shoppers Really Are Different, 431

Factors in Determining Sample Size for Questions Involving Means, 431

Estimating Sample Size for Questions Involving Means, 432

The Influence of Population Size on Sample Size, 433

Factors in Determining Sample Size for Proportions, 433

Calculating Sample Size for Sample Proportions, 435

Determining Sample Size on the Basis of Judgment, 436

Determining Sample Size for Stratified and Other

Probability Samples, 437

Determining Level of Precision after Data Collection, 437

A Reminder about Statistics, 437

Summary, 438

Key Terms and Concepts, 438

Questions for Review and Critical Thinking, 439

Research Activities, 440

CASE 17.1 *Pointsec Mobile Technologies*, 440

CHAPTER 18

Fieldwork, 441

Introduction, 442

The Nature of Fieldwork, 442

Who Conducts the Fieldwork?, 442

Survey This!, 443

In-House Training for Inexperienced Interviewers, 443

Making Initial Contact and Securing the Interview, 443

Research Snapshot Interviewing for Horizon Research Services, 444

Asking the Questions, 445

Research Snapshot Why Is "Why" Important?, 446

Probing When No Response Is Given, 446

Recording the Responses, 447

Research Snapshot Probing for Deeper Meaning at Olson Zaltman Associates, 448

Terminating the Interview, 449

Principles of Good Interviewing, 449

The Basics, 449

Required Practices, 450

Fieldwork Management, 451

Briefing Session for Experienced Interviewers, 451

Training to Avoid Procedural Errors in Sample

Selection, 451

Research Snapshot Total Quality Management for Interviewing, 452**Supervision of Fieldworkers, 452**

Sampling Verification, 453

Interviewer Cheating, 453

Verification by Reinterviewing, 454

Summary, 454

Key Terms and Concepts, 455

Questions for Review and Critical Thinking, 455

Research Activity, 456

CASE 18.1 *Thomas and Dorothy Leavey Library*, 456CASE 18.2 *Margaret Murphy O'Hara*, 456**jRARISIX,
Data Analysis and Presentation**

CHAPTER 19

Editing and Coding: Transforming Raw Data into Information, 458

Introduction, 459

Stages of Data Analysis, 459

Survey This!, 460

Editing, 460

Field Editing, 461

In-House Editing, 461

Research Snapshot Do You Have Integrity?, 462

Editing for Completeness, 463

Editing Questions Answered Out of Order, 464

Facilitating the Coding Process, 464

Pitfalls of Editing, 465

Pretesting Edit, 465

Coding, 465

Coding Qualitative Responses, 465

The Data File, 468

Research Snapshot Building a Multipetabyte Data System, 469

Code Construction, 469

Precoding Fixed-Alternative Questions, 470

More on Coding Open-Ended Questions, 471

Devising the Coding Scheme, 472

Code Book, 475

Editing and Coding Combined, 475

Research Snapshot Coding Data "On-the-Go," 476

Computerized Survey Data Processing, 476
Error Checking, 476

Summary, 477

Key Terms and Concepts, 478

Questions for Review and Critical Thinking, 478

Research Activities, 479

CASE 19.1 *U.S. Department of the Interior Heritage Conservation and Recreation Service*, 479

CASE 19.2 *Shampoo 9-10*, 480

CHAPTER 20

Basic Data Analysis: Descriptive Statistics, 483

Introduction, 484

The Nature of Descriptive Analysis, 484

Survey This!, 485

Tabulation, 486

Cross-Tabulation, 486

Contingency Tables, 487

Percentage Cross-Tabulations, 488

Research Snapshot Our Four-Legged Family Members, 489

Elaboration and Refinement, 490

How Many Cross-Tabulations?, 490

Quadrant Analysis, 491

Data Transformation, 491

Simple Transformations, 491

Problems with Data Transformations, 493

Index Numbers, 494

Calculating Rank Order, 494

Research Snapshot Twitter and the ReTweetability Index, 495

Tabular and Graphic Methods of Displaying Data, 496

Computer Programs for Analysis, 497

Statistical Packages, 497

Computer Graphics and Computer Mapping, 498

Interpretation, 500

Summary, 500

Key Terms and Concepts, 501

Questions for Review and Critical Thinking, 501

Research Activities, 503

CASE 20.1 *Bodyon Tap*, 503

CASE 20.2 *Downy-Q Quilt*, 503

CHAPTER 21

Univariate Statistical Analysis, 506

Introduction, 507

Hypothesis Testing, 507

The Hypothesis-Testing Procedure, 507

Survey This!, 508

Research Snapshot The "Freshman 7.8," 509

An Example of Hypothesis Testing, 511

Type I and Type II Errors, 513

Research Snapshot The Law and Type I and Type II Errors, 514

Choosing the Appropriate Statistical Technique, 515

Type of Question to Be Answered, 515

Number of Variables, 515

Level of Scale of Measurement, 515

Research Snapshot Living in a Statistical Web, 516

Parametric versus Nonparametric Hypothesis Tests, 516

The t-Distribution, 517

Calculating a Confidence Interval Estimate Using the f-Distribution, 519

Univariate Hypothesis Test Using the f-Distribution, 520

The Chi-Square Test for Goodness of Fit, 521

Research Snapshot Interested in Retirement? It Often Depends on Your Age, 523

Hypothesis Test of a Proportion, 524

Additional Applications of Hypothesis Testing, 525

Summary, 525

Key Terms and Concepts, 526

Questions for Review and Critical Thinking, 526

Research Activities, 526

CASE 21.1 *Premier Motorcars*, 527

CHAPTER 22

Bivariate Statistical Analysis: Differences Between Two Variables, 528

Introduction, 529

What Is the Appropriate Test of Difference?, 529

Survey This!, 531

Cross-Tabulation Tables: The χ^2 Test for Goodness-of-Fit, 531

Research Snapshot Accurate Information? How About a Chi-Square Test?, 534

The t-Test for Comparing Two Means, 534

Independent Samples f-Test, 534

Research Snapshot Expert "T-eeze," 538

Paired-Samples f-Test, 539

The Z-Test for Comparing Two Proportions, 540

Analysis of Variance (ANOVA), 542

What Is ANOVA?, 542

Simple Illustration of ANOVA, 542

Research Snapshot More Than One-Way, 543

Partitioning Variance in ANOVA, 544
 The F-Test, 546
 Practically Speaking, 547

Summary, 547
 Key Terms and Concepts, 548
 Questions for Review and Critical Thinking, 548
 Research Activities, 551

CASE 22.1 *Old School versus New School Sports Fans*, 551

APPENDIX 22A Manual Calculation of an F-Statistic, 553

APPENDIX 22B ANOVA for Complex Experimental Designs, 556

Factorial Designs, 558
 ANOVA for a Factorial Experiment, 558
 Partitioning the Sum of Squares for a Two-Way ANOVA, 558

CHAPTER 23 Bivariate Statistical Analysis: Measures of Association, 560

Introduction, 561
 The Basics, 561
 Simple Correlation Coefficient, 561

Survey This!, 562
 An Example, 563
 Correlation, Covariance, and Causation, 564
 Coefficient of Determination, 564
 Correlation Matrix, 565

Regression Analysis, 566

Research Snapshot What Makes Attractiveness?, 567
 The Regression Equation, 568
 Parameter Estimate Choices, 568
 Visual Estimation of a Simple Regression Model, 569
 Ordinary Least-Squares (OLS) Method of Regression Analysis, 571

Research Snapshot Size and Weight, 576

Summary, 577
 Key Terms and Concepts, 577
 Questions for Review and Critical Thinking, 578
 Research Activities, 579

CASE 23.1 *International Operations at CarCare Inc.*, 579

APPENDIX 23A Arithmetic Behind OLS, 580

CHAPTER 24 Multivariate Statistical Analysis, 582

Introduction, 583
 What Is Multivariate Data Analysis?, 583
 The "Variate" in Multivariate, 583

Survey This!, 584

Classifying Multivariate Techniques, 584
 Dependence Techniques, 584
 Interdependence Techniques, 584
 Influence of Measurement Scales, 585

Analysis of Dependence, 586
 Multiple Regression Analysis, 586

Research Snapshot Too Much of a Good Thing!, 589
 ANOVA (n-Way) and MANOVA, 591
 Discriminant Analysis, 592

Research Snapshot How to Get MANOVA Results, 593

Analysis of Interdependence, 595
 Factor Analysis, 595

Research Snapshot Getting Factor Results with SAS or SPSS, 597
 Cluster Analysis, 599
 Multidimensional Scaling, 601

Summary, 602
 Key Terms and Concepts, 603
 Questions for Review and Critical Thinking, 603
 Research Activities, 604

CASE 24.1 *The Utah Jazz*, 607
 CASE 24.2 *How Do We Keep Them?*, 609

CHAPTER 25 Communicating Research Results: Report Generation, Oral Presentation, and Follow-Up, 610

Introduction, 611

Insights from the Communications Model, 611

Survey This!, 612

The Report in Context, 613

Report Format, 613
 Tailoring the Format to the Project, 614
 The Parts of the Report, 615

Research Snapshot Research ROI, 617

Research Snapshot How Do We Stack Up? The Value of Sba.gov, 618

Basic Business Research Report, 619

Effective Use of Graphic Aids, 620

Tables, 620

Charts, 622

The Oral Presentation, 628

Research Snapshot The 10/20/30 Rule of PowerPoint, 629

Reports on the Internet or Intranet, 629

The Research Follow-Up, 630

Summary, 630

Key Terms and Concepts, 631

Questions for Review and Critical Thinking, 631

Research Activities, 631

CASE 25.1 *Annenberg Public Policy Center*, 632

**Comprehensive Cases with
Computerized Databases**

CASE 1: *Running the Numbers: Does It Pay?*, 636

CASE 2: *Attiring Situation*, 637

CASE 3: *Values and the Automobile Market*, 638

CASE 4: *TABH, INC., Automotive Consulting*, 641

CASE 5: *The Atlanta Braves*, 642

CASE 6: *Knowing the Way*, 642

Glossary of Frequently Used Symbols, **645**

Glossary, **646**

Endnotes, 659

Index, 666