

7E

WILLIAM G. ZIKMUND

BUSINESS RESEARCH METHODS



Preface xiii
 About the Author xx

PART I INTRODUCTION I

CHAPTER 1 THE ROLE OF BUSINESS RESEARCH 2

Scope of Business Research 5
 Business Research Defined 6
 Basic Research and Applied Research 7
 Managerial Value of Business Research 8
Identifying Problems or Opportunities 8
Diagnosing and Assessing Problems or Opportunities 8
Selecting and Implementing a Course of Action 9
Evaluating the Course of Action 10
 When Is Business Research Needed? 12
Time Constraints 12
Availability of Data 12
Nature of the Decision 12
Benefits versus Costs 12
 Major Topics for Research in Business 14
Cross-Functional Teams 14
 Business Research in the 21st Century 16
Global Business Research 16
Growth of the Internet 16
 Summary 17

CHAPTER 2 INFORMATION SYSTEMS AND KNOWLEDGE MANAGEMENT 20

Data, Information, and Knowledge Management 21
 Global Information Systems 22
 Decision Support Systems 22
Database Systems 23
Software 25
Input Management 26
Computerized Data Archives 26
Networks and Electronic Data Interchange 29
 What Is the Internet? 29
Navigating the World Wide Web 31
Interactive Media and Environmental Scanning 33
Information Technology 36
 Intranets 37
Knowledge from Experts—Experience and Expertise
Databases 37
 Internet2 37
 Summary 38

CHAPTER 3 THEORY BUILDING 40

What Are the Goals of Theory? 41
 The Meaning of Theory 41
 Concepts 41
 Nature of Propositions 43
 The Scientific Method 43
 An Example of a Theory 44
 Verifying Theory 45
 How Are Theories Generated? 46
 Overview of the Scientific Method 47
 Practical Value of Theories 50
 Summary 50

CHAPTER 4 THE RESEARCH PROCESS: AN OVERVIEW 52

Decision Making 53
Certainty 53
Uncertainty 53
Ambiguity 53
 Types of Business Research 54
Exploratory Studies 54
Descriptive Research 55
Causal Research 56
 Influence of Uncertainty on Type of Research 58
 Stages in the Research Process 59
Decision Alternatives in the Research Process 60
Discovering and Defining the Problem 60
Planning the Research Design 65
Sampling 70
Collecting Data 72
Processing and Analyzing Data 72
Drawing Conclusions and Preparing a Report 73
 Research Project Versus Research Program 73
 Summary 74

CHAPTER 5 ETHICAL ISSUES IN BUSINESS RESEARCH 77

Ethical Questions Are Philosophical Questions 78
 General Rights and Obligations of Concerned Parties 78

Rights and Obligations of the Respondent 79
Rights and Obligations of the Researcher 81
Rights and Obligations of the Sponsoring Client (User) 84

A Final Note on Ethics 89
Summary 89

PART 2 BEGINNING STAGES OF THE RESEARCH PROCESS 91

CHAPTER 6 PROBLEM DEFINITION AND THE RESEARCH PROPOSAL 92

The Nature of the Business Problem 93
Importance of Proper Problem Definition 93
The Process of Problem Definition 94
Ascertain the Decision Maker's Objectives 94
Understand the Background of the Problem 96
Isolate and Identify the Problem, Not the Symptoms 96
Determine the Unit of Analysis 96
Determine the Relevant Variables 97
State the Research Questions and Research Objectives 98
How Much Time Should Be Spent Defining the Problem? 102
The Research Proposal 102
Anticipating Outcomes 104
Summary 106

CHAPTER 7 EXPLORATORY RESEARCH AND QUALITATIVE ANALYSIS 109

Exploratory Research: What It Is and What It
Is Not 110
Why Conduct Exploratory Research? 111
Diagnosing a Situation 111
Screening Alternatives 112
Discovering New Ideas 114
Categories of Exploratory Research 114
Experience Surveys 114
Secondary Data Analysis 115

Case Studies 115
Pilot Studies for Qualitative Analysis 117
A Warning 130
Summary 132

CHAPTER 8 SECONDARY DATA 135

What Are Secondary Data? 136
Advantages of Secondary Data 136
Disadvantages of Secondary Data 136
Typical Objectives for Secondary Data Research
Designs 138
Fact Finding 138
Model Building 139
Data Mining 141
Classification of Secondary Data 143
Internal and Proprietary Data 143
Common External Sources of Secondary Data 144
External Data: The Distribution System 151
Focus on Global Research 153
Investigating Global Markets Using Secondary Data:
An Example 154
Summary 154
Appendix 8A: Selected Sources for Secondary
Data 158
Appendix 8B: Database Searching and Retrieving with
Computers 169

PART 3 RESEARCH METHODS FOR COLLECTING PRIMARY DATA 173

CHAPTER 9 SURVEY RESEARCH: AN OVERVIEW 174

The Nature of Surveys 175
Survey Objectives: Type of Information Gathered 175
Advantages of Surveys 175
Errors in Survey Research 176
Random Sampling Error 176
Systematic Error 177
Respondent Error 177
Nonresponse Error 178
Response Bias 178
Administrative Error 184
Data-Processing Error 184
Sample Selection Error 184

Interviewer Error 185
Interviewer Cheating 185
Rule-of-Thumb Estimates for Systematic Error 185
What Can Be Done to Reduce Survey Error? 185
Classifying Survey Research Methods 186
Structured and Disguised Questions 186
Classifying Surveys on a Temporal Basis 186
Total Quality Management and Satisfaction Surveys 188
What Is Quality? 188
Internal and External Customers 189
Implement Total Quality Management 189
Every Organization Can Use Business Research for TQM 192
Summary 195

CHAPTER 10
SURVEY RESEARCH: BASIC METHODS OF
COMMUNICATION WITH RESPONDENTS 197
Media Used to Communicate with Respondents 198
Human Interactive Media and Electronic Interactive Media 198
Noninteractive Media 198

Personal Interviews 199
Advantages of Personal Interviews 199
Door-to-Door Interviews 202
Intercept Interviews in Malls and Other High-Traffic Areas 203
Disadvantages of Personal Interviews 203

Telephone Interviews 207
Central Location Interviewing 207
Computer-Assisted Telephone Interviewing 207
The Strengths and Weaknesses of Telephone Interviews 208
Computerized, Voice-Activated Telephone Interviews 211
Global Considerations 211

Self-Administered Questionnaires 212
Mail Questionnaires 212
Global Considerations 219
Self-Administered Questionnaires That Use Other Forms of
Distribution 219

Selecting the Appropriate Survey Research Design 227
Pretests 229
Ethical Issues in Survey Research 229
Summary 230

CHAPTER 11
OBSERVATION METHODS 234

When Is Observation Scientific? 235
What Can Be Observed? 235

The Nature of Observation Studies 236

Observation of Human Behavior 237

Supplementary Evidence 237

Direct Observation 238
Errors Associated with Direct Observation 239
Response Latency 240
Scientifically Contrived Observation 240

Observing Social Settings 243

What Should Be Observed? 243

Participant Observation 244

Ethical Issues in Human Observation 244

Observation of Physical Objects 245

Content Analysis 248

Mechanical Observation 248

Television Monitoring 248

Monitoring Web Site Traffic 250

Measuring Physiological Reactions 251

Optical Scanners and Bar Codes 253

Summary 253

CHAPTER 12
EXPERIMENTAL RESEARCH 256

The Nature of Experiments 257

An Illustration: A Unit-Pricing Experiment 257

Basic Issues in Experimental Design 260

Manipulation of the Independent Variable 260

Selection and Measurement of the Dependent Variable 261

Selection and Assignment of Test Units 262

Control over Extraneous Variables 264

Demand Characteristics 265

Establishing Control 267

Problems Controlling Extraneous Variables 268

Ethical Issues in Experimentation 268

Fundamental Questions in Experimentation 269

Basic versus Factorial Experimental Designs 269

Field and Laboratory Experiments 270

Issues of Experimental Validity 271

Internal Validity 271

External Validity 273

Classification of Experimental Designs 274

Symbolism for Diagramming Experimental Designs 275

Three Examples of Quasi-Experimental Design 275

Three Good Experimental Designs 277

Time-Series Experimental Designs 280

Complex Experimental Designs 281

Summary 288

PART 4 MEASUREMENT CONCEPTS 291

CHAPTER 13
MEASUREMENT AND SCALING
CONCEPTS 292

What Is to Be Measured? 293

Concepts 294

Operational Definitions 294

Rules of Measurement 295

Types of Scales 296

Nominal Scale 296

Ordinal Scale 297

Interval Scale 298

Ratio Scale 298

Mathematical and Statistical Analysis of Scales 298

Index Measures 299

Three Criteria for Good Measurement 300

Reliability 300

Validity 301
Reliability and Validity 304
Sensitivity 304
Summary 305

CHAPTER 14

ATTITUDE MEASUREMENT 307

Attitude Defined 308
Attitude as a Hypothetical Construct 308
Techniques for Measuring Attitudes 308
Physiological Measures of Attitudes 309
Attitude Rating Scales 310
Simple Attitude Scales 310
Category Scales 311
Summated Ratings Method: The Likert Scale 312
Semantic Differential 314
Numerical Scales 315
Constant-Sum Scale 315
Stapel Scale 317
Graphic Rating Scales 318
Thurstone Equal-Appearing Interval Scale 318
Scales Measuring Behavioral Intentions and Expectations 320
Behavioral Differential 321
Ranking 321
Paired Comparisons 322
Sorting 322
Other Methods of Attitude Measurement 323
Selecting a Measurement Scale: Some Practical Decisions 323
Is a Ranking, Sorting, Rating, or Choice Technique Best? 324
Should a Monadic or a Comparative Scale Be Used? 324
What Type of Category Label, If Any, Will Be Used for the Rating Scale? 324
How Many Scale Categories or Response Positions Are Needed? 324

Should a Balanced or Unbalanced Rating Scale Be Chosen? 325
Should Respondents Be Given a Forced-Choice or a Non-Forced-Choice Scale? 325
Should a Single Measure or an Index Measure Be Used? 326
Summary 326

CHAPTER 15

QUESTIONNAIRE DESIGN 329

A Survey Is Only As Good As the Questions It Asks 330
Questionnaire Design: An Overview of the Major Decisions 330
What Should Be Asked? 330
Questionnaire Relevancy 331
Questionnaire Accuracy 331
Phrasing Questions 331
Open-Ended Response versus Fixed-Alternative Questions 331
Phrasing Questions for Self-Administered, Telephone, and Personal Interview Surveys 335
The Art of Asking Questions 336
Avoid Complexity: Use Simple, Conversational Language 336
Avoid Leading and Loaded Questions 336
Avoid Ambiguity: Be as Specific as Possible 339
Avoid Double-Barreled Items 341
Avoid Making Assumptions 343
Avoid Burdensome Questions That May Tax the Respondent's Memory 343
What Is the Best Question Sequence? 344
What Is the Best Layout? 348
Layout of Traditional Questionnaires 348
Layout of Internet Questionnaires 351
How Much Pretesting and Revising Are Necessary? 359
Designing Questionnaires for Global Research 360
Summary 361

PART 5 SAMPLING AND FIELDWORK 367

CHAPTER 16

SAMPLE DESIGNS AND SAMPLING PROCEDURES 368

Sampling Terminology 369
Why Sample? 369
Pragmatic Reasons 369
Accurate and Reliable Results 369
Destruction of Test Units 371
Practical Sampling Concepts 372
Defining the Target Population 373
The Sampling Frame 373
Sampling Frames for International Business Research 375

Sampling Units 375
Random Sampling Error and Nonsampling Error 376
Less Than Perfectly Representative Samples 379
Probability versus Nonprobability Sampling 379
Nonprobability Sampling 380
Convenience Sampling 380
Quota Sampling 383
Snowball Sampling 384
Probability Sampling 384
Simple Random Sampling 384
Selecting a Simple Random Sample 385

Systematic Sampling 386
Stratified Sampling 386
Proportional versus Disproportional Sampling 388
Cluster Sampling 389
Multistage Area Sampling 389

What Is the Appropriate Sample Design? 390
Degree of Accuracy 391
Resources 394
Time 394

Advance Knowledge of the Population 394
National versus Local Project 394
Need for Statistical Analysis 394

Internet Sampling Is Unique 394
Web Site Visitors 395
Panel Samples 395
Recruited Ad Hoc Samples 397
Opt-In Lists 397
Summary 398

CHAPTER 17
DETERMINATION OF SAMPLE SIZE: A REVIEW
OF STATISTICAL THEORY 401

Reviewing Some Basic Terminology 402
Descriptive and Inferential Statistics 402

Population Parameters and Sample Statistics 402

Making Data Usable 403
Frequency Distributions 403
Proportions 404
Central Tendency 404
Measures of Dispersion 406
The Normal Distribution 411

Population Distribution, Sample Distribution, and
Sampling Distribution 415

Central-Limit Theorem 417

Estimation of Parameters 419

Point Estimates 420
Confidence Intervals 421
Recapitulation 423

Sample Size 423
Random Sampling Error and Sample Size 423
Factors in Determining Sample Size for Questions Involving
Means 424

Estimating Sample Size for Questions Involving Means 425
The Influence of Population Size on Sample Size 426
Factors in Determining Sample Size for Proportions 426
Calculating Sample Size for Sample Proportions 428
Determining Sample Size on the Basis of Judgment 428
Determining Sample Size for Stratified and Other Probability
Samples 430

A Reminder About the Language of Statistics 430
Summary 430

CHAPTER 18
FIELDWORK 434

The Nature of Fieldwork 435

Who Conducts the Fieldwork? 435

In-House Training for Inexperienced Interviewers 437

Making Initial Contact and Securing the Interview 437

Asking the Questions 439

Probing 440

Recording the Responses 441

Terminating the Interview 442

Principles of Good Interviewing 442

The Basics 442

Required Practices 444

Fieldwork Management 445

Briefing Session for Experienced Interviewers 445

Training to Avoid Procedural Errors in Sample Selection 446

Supervision of Fieldworkers 446

Summary 449

PART 6 DATA ANALYSIS AND PRESENTATION 451

CHAPTER 19
EDITING AND CODING: BEGINNING TO
TRANSFORM RAW DATA INTO
INFORMATION 452

An Overview of the Stages of Data Analysis 453

Editing 453

Field Editing 454

In-House Editing 454

Facilitating the Coding Process 456

Pitfalls of Editing 457

Pretesting Edit 457

Coding 457

The Data Matrix 458

Code Construction 458

Precoding Fixed-Alternative Questions 460

Coding Open-Ended Response Questions 461

Devising the Coding Scheme 463

Code Book 465

Production Coding 466

Editing and Coding Combined 467

Computerized Data Processing 467

Recoding 469

Error Checking 470

Summary 470

CHAPTER 20
BASIC DATA ANALYSIS: DESCRIPTIVE
STATISTICS 472

The Nature of Descriptive Analysis 473

Tabulation 474

Percentages 475

Measures of Central Tendency 475

Cross-Tabulation 475

Contingency Table 476

Percentage Cross-Tabulations 477

Elaboration and Refinement 478

How Many Cross-Tabulations? 479

Quadrant Analysis 479

Data Transformation 480

Index Numbers 481

Calculating Rank Order 482

Tabular and Graphic Methods of Displaying Data 483

Computer Programs for Analysis 484

Computer Graphics/Computer Mapping 487

Interpretation 490

Summary 491

CHAPTER 21
UNIVARIATE STATISTICS 498

Stating a Hypothesis 499

What Is a Hypothesis? 499

The Null Hypothesis and the Alternative Hypothesis 499

Hypothesis Testing 499

Hypothesis-Testing Procedure 499

An Example of Hypothesis Testing 501

Type I and Type II Errors 503

Choosing the Appropriate Statistical Technique 504

Type of Question to Be Answered 504

Number of Variables 505

Scale of Measurement 505

Parametric versus Nonparametric Hypothesis Tests 505

t-Distribution 506

Calculating a Confidence Interval Estimate Using the
t-Distribution 508

Univariate Hypothesis Test Using the t-Distribution 509

Chi-Square Test for Goodness of Fit 510

Hypothesis Test of a Proportion 512

Additional Applications of Hypothesis Testing 515

Summary 515

CHAPTER 22
BIVARIATE ANALYSIS: TESTS OF
DIFFERENCES 519

What Is the Appropriate Test of Differences? 520

Cross-Tabulation Tables: The Chi-Square Test for
Goodness of Fit 521

t-Test for Comparing Two Means 524

Z-Test for Comparing Two Proportions 527

Analysis of Variance (ANOVA) 529

F-Test 530

Identifying and Partitioning the Total Variation 530

Calculating the F-Ratio 531

Summary 535

Appendix 22A: Nonparametric Statistics for Tests of
Differences 542

Appendix 22B: ANOVA for Complex Experimental
Designs 546

CHAPTER 23
BIVARIATE ANALYSIS: MEASURES OF
ASSOCIATION 549

The Basics 550

Simple Correlation Coefficient 551

An Example 553

Correlation and Causation 554

Coefficient of Determination 555

Correlation Matrix 555

Regression Analysis 556

Least-Squares Method of Regression Analysis 557

Drawing a Regression Line 561

Test of Statistical Significance 562

Summary 565

Appendix 23A: Nonparametric Measures of Association
570

CHAPTER 24
MULTIVARIATE ANALYSIS 573

The Nature of Multivariate Analysis 574

Classifying Multivariate Techniques 574

Analysis of Dependence 574

Analysis of Interdependence 575

Influence of Measurement Scales 575

Analysis of Dependence 576

Multiple Regression Analysis 576

Discriminant Analysis 579

Canonical Correlation 584

Multivariate Analysis of Variance (MANOVA) 584

Analysis of Interdependence 585

Factor Analysis 585

Cluster Analysis 589

Multidimensional Scaling 590

Chi-Square Automatic Interaction Detection (CHAID) 592

Summary 594

CHAPTER 25

COMMUNICATING RESEARCH RESULTS: REPORT, PRESENTATION, AND FOLLOW-UP 597

Insights from the Communications Model 598

The Report in Context 599

Report Format 600

Tailoring the Format to the Project 601

Parts of the Report 603

Effective Use of Graphic Aids 606

Tables 607

Charts 607

The Oral Presentation 612

Reports on the Internet 616

The Research Follow-Up 616

Summary 618

Appendix 25A: The Writing Process 620

A Final Note on Business Research 627

PART 7 VIDEO CASES

Video Case 1 Polaroid I-Zone 628

Video Case 2 WBRU 629

Video Case 3 Ben & Jerry's 629

Video Case 4 Fossil—A Watch for Every Wrist 630

Video Case 5 IBM: Enterprise Resource Planning 631

Video Case 6 Fisher-Price Rescue Heroes 632

Video Case 7 Upjohn's Rogaine 633

Video Case 8 Trading Cards Focus Group 633

Video Case 9 V8 634

Video Case 10 Furniture.com 634

Video Case 11 The Census Bureau: Census 2000 635

Video Case 12 Burke Inc. 636

Video Case 13 The Walker Information Group 637

PART 8 CRITICAL THINKING CASES

Case 1 The Atlanta Braves 638

Case 2 Harvard Cooperative Society 639

Case 3 Tulsa's Central Business District (A):
Developing a Research Project 640

Case 4 Hamilton Power Tools (A) 642

Case 5 Middlemist Precision Tool Company 646

Case 6 EZPass 646

Case 7 Today's Man 647

Case 8 Behavioral Science Research of Coral Gables,
Florida 648

Case 9 Tulsa's Central Business District (B) 649

Case 10 The Greeting Card Study 653

Case 11 The Evergreen Company 654

Case 12 Tulsa's Central Business District (C) 655

Case 13 The Pretesting Company 656

Case 14 Professional Recruiters 658

Case 15 Hamilton Power Tools (B) 659

Case 16 The Cleveland Clinic Foundation in Jacobs
Field 660

Case 17 Flyaway Airlines 663

Case 18 *Wall Street Journal*/Harris Interactive Business
School Survey 665

Case 19 Omar's Fast Freight 667

Case 20 Canterbury Travels 670

Case 21 United States Postal Service 673

Case 22 Schönbrunn Palace in Vienna 678

Case 23 The Business Forms Industry 680

Case 24 Zagorski Field Services 686

Case 25 The Multiplex Company 687

Case 26 Survey on Americans and Dietary
Supplements 690

Case 27 Old School versus New School Sports
Fans 695

Case 28 Fidelity Investments 696

Case 29 LastDance Health Care Systems 697

Case 30 Sunbelt Energy Corporation 702

Case 31 Employees Federal Credit Union 705

Case 32 Values and the Automobile Market 710

Appendix: Statistical Tables 713

Endnotes and Photo Credits 721

Glossary of Frequently Used Symbols 733

Glossary of Terms 734

Index 744