

SIXTH EDITION

BUSINESS RESEARCH METHODS

Donald R. Cooper

Florida Atlantic University

Pamela S. Schindler

Wittenberg University



Irwin/McGraw-Hill

A Division of The McGraw-Hill Companies

BUSINESS RESEARCH METHODS

Copyright © 1998 by the McGraw-Hill Companies, Inc. All rights reserved. Previous edition(s) © 1976, 1980, 1985, 1991, and 1995 by Richard D. Irwin, a Times Mirror Higher Education Group, Inc. company. Printed in the United States of America. Except as permitted under the United States Copyright Act of 1976, no part of this publication may be reproduced or distributed in any form or by any means, or stored in a data base or retrieval system, without the prior written permission of the publisher.

This book is printed on acid-free paper.

234567890 DOC/DOC 909

ISBN 0-256-23952-5

Vice president and editorial director: Michael W. Junior

Publisher: Jeffrey J. Shelstad

Senior sponsoring editor: Scott Isenberg Senior developmental editor: Gail Korosa Marketing manager: Nelson Black

Project manager: Jim Labeots

Production supervisor: Michael McCormick

Senior designer: Crispin Prebys Compositor: Precision Graphics Typeface: 10/12 Times Roman

Printer: R. R. Donnelley & Sons Company

Library of Congress Cataloging-in-Publication Data

Cooper, Donald R.

Business research methods / Donald R. Cooper, Pamela S. Schindler. — 6th ed.

p. cr

Includes bibliographical references and index.

ISBN 0-256-23952-5

1. Industrial management—Research. I. Schindler, Pamela S.

II. Title.

HD30.4.E47 1998

658'.0072-dc21

97-30873

http://www.mhhe.com

PREFACE

Business Research Methods has evolved often since its introduction in 1976. Technology has continued to transform information processing and managerial problem solving. And, as the field of research in organizations grew dramatically during the late 1970s and 1980s then matured during the 1990s, our textbook kept pace with industry changes and stayed on the leading edge of teaching pedagogy. We continue to deliver on those same promises in the sixth edition where Business Research Methods truly comes of age by again responding aggressively to adopter and reviewer suggestions.

We listen to you carefully. The result is greater relevancy for practicing managers, improved coverage of the research process in the business setting, and a textbook that spans the disciplines of business, providing breadth, depth, and serving as a valuable reference for post-course use.

As the leading text in this market, we wanted the sixth edition to exceed instructor expectations and student needs without altering the features you valued in the fifth edition. You'll still find:

 A balanced presentation of practical application and fundamental concepts.

- Timely coverage of news-making issues and concepts—in the cases, Bringing Research to Life vignettes, Close-Ups, and Key Terms.
- An indepth treatment of concepts, not cursory reviews.
- A comprehensive coverage of the field organized to optimize the flow of information to students.
- Appendices that offer extensive reference materials and specialized information for advanced students.
- Compatibility with the Irwin/McGraw-Hill software series.

In this edition, Pamela S. Schindler joins the team. She is a veteran of twenty-three years in the undergraduate classroom and more than two decades of supervising and conducting research for nonprofit, profit-driven, and governmental organizations. She brings a fresh perspective to the topics and a keen understanding of the visual and verbal learning styles of students. As a trusted user and reviewer of this text for the last three editions, I could not have chosen a more compatible partner—one who shares my strong interest in student learning and passion for research methods. Welcome, Pam.

Target Audience

Over the years, we have taught research and data analysis for MBAs, executive MBAs, doctoral students, and public managers. *Business Research Methods* is appropriate for MBA programs, MPA programs, programs with a cross-functional research emphasis, and undergraduate programs where students have a foundation in elementary statistics. The chapter-to-chapter readability consistently accommodates learners at all levels.

Features of the Sixth Edition

As you've come to expect with our revised editions, you'll also find numerous enrichments that enhance the learning experience for the student and the teaching experience for the classroom-focused teacher:

A stronger decision making emphasis

- Cases throughout the text and chapter examples emphasize a variety of management-related scenarios.
- Case discussions integrated into the body of the chapter cement key concepts early.
- Nineteen optional cases can be packaged with the text to assist with quantitative concepts and are identified at the end of appropriate chapters. The Bryant & Smith cases reference a data disk that instructor's may order (ISBN 0-256-15829-0).
- Bringing Research to Life (BRL) vignettes now appear in all chapters with a fuller integration of BRL concepts and issues in the body of each chapter.
- A continuing character in the BRL series has joined MindWriter as a manager who must juggle three different research-related roles: research provider, out-source research coordinator, and client.
- Case and BRL discussion continually emphasize the integrated nature of research methodology—critical for the execution of quality research projects.
- End-of-chapter questions directly address the BRL vignettes providing the professor and stu-

- dent with a lively discussion platform—similar to a mini-case but much richer in detail—as the vignette's characters and the MindWriter body of knowledge builds from chapter to chapter.
- A significantly revised Instructor's Manual offers enriched course design ideas, student projects, in-depth discussion of end-ofchapter exercises, new review questions, and PowerPoint slides.
- Ethical considerations for managers receive early introduction and chapter-level emphasis (Chapter 5) with additional integration within chapters and throughout the BRL vignettes.

Graphically enhanced and fully integrated Research Process Model

- The Research Process Model, along with accompanying tables, provides a practical guide to course and post-course use by students and managers conducting or supervising research. As such, it has received more emphasis as the foundation model of the text (Chapter 3).
- The Research Process Model is revisited throughout the book with newly introduced concepts tied to it both verbally and graphically.
- The Management-Research Question Hierarchy is more fully integrated into the model making the transition from theory to research instrument more understandable (Chapter 3).
- New model-related figures have been added along with improvements to the figures retained from the fifth edition.

Enhanced topical coverage

- Exploratory study applications are expanded in the discussion of research design (Chapter 6).
- Numerous graphical examples appear in the streamlined treatment of measurement (Chapter 7) and scaling (Chapter 8).
- Sampling examples and notation are updated (Chapter 9).
- An exciting new chapter on Secondary Data Sources (Chapter 10) boasts a powerful elec-

- tronic search orientation and timely examples in the chapter Close-Up.
- Appendix A provides alternative search strategies and is duplicated on the text's WWW site with hot links.
- The WWW site offers updated sources and URLs for rapidly changing Internet material.
- A reorganized chapter on Survey Methods (Chapter 11) introduces a graphical model for the selection of data collection approaches so choices are more apparent and this step is more distinctly tied to the Research Process Model.
- A major reorganization of Instruments for Respondent Communication (Chapter 12) helps students recognize and follow a clearly defined instrument design process linking design decisions with issues in prior and subsequent chapters.
- Data warehousing and data mining update the chapter on Data Preparation and Preliminary Analysis (Chapter 15).
- Tables and figures for exploratory data analysis techniques receive new graphics, more cogent explanation, and current data examples (Chapter 15).
- New sections on the graphical techniques for quality control and improvement appear in an expanded chapter on Presenting Results: Written and Oral Reports (Chapter 19).

Acknowledgments

We are grateful to reviewers who helped us prepare the sixth edition. They were: Hamid Falatoon, University of Redlands; Frederick A. Grodecki, Lake Forrest Graduate School of Management; John Hanke, Eastern Washington University; Elizabeth E. Regimbal, Cardinal Stritch College; Randi L. Sims, Nova Southeastern University; and Craig Swenson, University of Phoenix (Utah). Thank you for your insightful contributions.

A few people deserve special thanks. Jay S. Mendell, Florida Atlantic University, continued as the creator of our distinctive BRL vignettes, and contributed Chapter 10 and Appendix A. Many adopters noted the humor and vitality that the vignettes add by breathing "real" life into research. John Hanke, Eastern Washington University, assisted with statistical revisions in several chapters. Paul D. Cooper, a graphic designer from Arizona State University, created a contemporary cover design that reflects the book's direction and focus. C. William Emory leaves with us a legacy of knowledge and dedication to research methods. We will miss you, Bill.

We have the utmost respect for Gail Korosa at Irwin/McGraw-Hill. As Senior Developmental Editor, her knowledge of the market, keen insight into packaging options and features, and coordination skills were essential for keeping this edition on target. She was always there with an uncanny ability to fix things and a word of encouragement. We thank Scott Iscnberg, our Editor, for his valor in fighting unwinnable bureaucratic battles and remaining dignified in defeat. We appreciate the work of the production team in bringing this effort to culmination but particularly Pat Herbst, our copy editor, who brought a new level of clarity to the exposition.

We remain indebted to those who helped with the first five editions of the book: J. K. Bandyopedyay, Phillip Beukema, Alan D. Carey, Francis Connelly, Thomas J. Dudley, William J. Evans, Hamid Falatoon, Robert Fetter, Stewart E. Fleige, Claude McMillan, Ralph J. Melaragno, Hamid Noori, Walter Nord, J. Paul Peter, Harold F. Rahmlow, Elizabeth E. Regimbal, Pamela S. Schindler, Perri J. Stinson, Alexander Voloatta, and Richard A. Wald.

Donald R. Cooper

BRIEF CONTENTS

I A	

INTRODUCTION TO BUSINESS RESEARCH

- 1 Research in Business 2
- 2 Scientific Thinking 24
- 3 The Research Process 54
- 4 The Research Proposal 84
- 5 Ethics in Business Research 106

PART II

THE DESIGN OF RESEARCH

- **6** Design Strategies 128
- 7 Measurement 156
- 8 Scaling Design 182
- 9 Sampling Design 212

PART III

THE SOURCES AND COLLECTION OF DATA

- 10 Secondary Data Sources 254
- 11 Survey Methods: Communicating with Respondents
- 12 Instruments for Respondent Communication 316

- 13 Observational Studies 360
- 14 Experimentation 378

PART IV

ANALYSIS AND PRESENTATION OF DATA

- 15 Data Preparation and Preliminary Analysis 408
- 16 Hypothesis Testing 462
- Measures of Association 512Multivariate Analysis: An Overvie
- Multivariate Analysis: An Overview 556
 Presenting Results: Written and Oral Reports 594

APPENDICES

- A A Guide to Reference and Searching 644
- **B** Decision Theory Problem 652
- C Request for Proposal (RFP): Assessment and Contents 660
- D Sample Student Term Project 666
- **E** Nonparametric Significance Tests 674
- F Selected Statistical Tables 682

Index 693

CONTENTS

PART 1

INTRODUCTION TO BUSINESS RESEARCH

1 Research in Business 2

Why Study Research? 5 The Value of Acquiring Skills 6 What Is Research? 7 What Is the Dilemma Facing the Manager? 10 What Must the Researcher Accomplish? 10 Is Research Always Problem-Solving Based? 13 Business Research Defined 14 How Scientific Is Business Research? 14 What is Good Research? 15 The Manager-Researcher Relationship 18 Manager-Researcher Contributions Manager-Researcher Conflicts 19 Decision-Driven Research 20 Summary 20 Key Terms 21 Discussion Questions 21 Reference Notes 22 Suggested Readings 23

2 Scientific Thinking 24

Styles of Thinking 26 Sources of Knowledge 26 The Thought Process: Reasoning 29 Deduction 30 Induction 31 Combining Induction and Deduction 32 Reflective Thinking and the Scientific Method 33 The Scientific Attitude 34 Understanding Theory: Components and Connections 35 Concepts 35 Constructs 37 Definitions 38 Variables 40 Propositions and Hypotheses 43 Theory 46 Models 48 Summary 49 Key Terms 50 Discussion Questions 50 Reference Notes 51 Suggested Readings 52

3	The Research Process 54	Res	search Objectives 92		
	The December December 56	Lite	erature Review 92		
	The Management Research Question	_	portance/Benefits		
	The Management-Research Question		f the Study 93		
	Hierarchy 58		search Design 93		
	The Management Question 59		ta Analysis 93		
	Exploration 60	Nature and Form of Results			
	Research Process Problems 69	Qua	alifications of Researchers 94		
	The Favored Technique	Buc	dget 94		
	Syndrome 69	Sch	iedule 96		
	Company Database Strip-Mining 70	Fac	ilities and Special Resources 96		
	Unresearchable Questions 70	Pro	ject Management 97		
	Ill-Defined Management Problems 71	Bib	liography 97		
	Politically Motivated Research 71		pendices 97		
	Designing the Study 72		ating the Research Proposal 98		
	Sampling Design 72		ary 102		
	Resource Allocation	Key Te	-		
	and Budgets 73	-	ssion Questions 103		
	Valuing Research Information 73		nce Notes 104		
	Evaluation Methods 74		sted Readings 105		
	The Research Proprosal 75	88			
	Proposal Content 76				
	Pilot Testing 76	5 Ethics i	n Business Research 106		
	Data Collection 77	What A	Are Research Ethics? 108		
	Analysis and Interpretation 78		Treatment of Respondents		
	Reporting the Results 78		d Subjects 108		
	Summary 79		efits 109		
	Key Terms 80		eption 109		
	Discussion Questions 80		ormed Consent 110		
	References Notes 82				
	Suggested Readings 82		oriefing Respondents 110		
			hts to Privacy 111		
			a Collection in Cyberspace 112		
4	The Research Proposal 84		and the Client 113		
	The Purpose of the Research		fidentiality 113		
	Proposal 86		nt to Quality Research 113		
	Sponsor Uses 86		nt's Ethics 114		
	Researcher Benefits 88		chers and Team Members 114		
		Safe	•		
			cal Behavior of Assistants 115		
	Internal Proposals 89		ection of Anonymity 115		
	External Proposals 91		ional Standards 117		
	Structuring the Research		ces for Ethical Awareness 120		
	Proposal 91		ry 120		
	Executive Summary 91 Problem Statement 91	Key Ter			
	FLOOIEII NISIEMENT UT	Cases	171		

Reference Notes 124 Suggested Readings 125

PART II

THE DESIGN OF RESEARCH

6 Design Strategies 128

What Is Research Design? 130 Classification of Designs 130 Exploratory Studies 134 Qualitative Techniques 134 Secondary Data Analysis Experience Survey 136 Focus Groups 137 Two-Stage Design 140 Descriptive Studies 141 Casual Studies 142 The Concept of Cause 142 Causal Relationships 145 Testing Causal Hypotheses 147 Summary 151 Key Terms 152 **Discussion Questions** 153 Reference Notes 154 Suggested Readings 155

7 Measurement 156

The Nature of Measurement 159 What Is Measured? 160 Data Types 160 Nominal Data 161 Ordinal Data 162 Interval Data 164 Ratio Data 164 Sources of Measurement Differences 165 Error Sources 165 The Characteristics of Sound Measurement 166 Validity 166 Reliability 171 Summary 177

Key Terms 178
Discussion Questions 178
Reference Notes 180
Suggested Readings 181

8 Scaling Design 182

The Nature of Scaling 184 Scaling Defined 184 Scale Classification 184 Response Methods 186 Rating Scales 186 Ranking Scales 191 Scale Construction 194 Arbitrary Scales 194 Consensus Scaling 195 Item Analysis 195 Cumulative Scales 197 Factor Scales 198 Advanced Scaling Techniques 201 Summary 205 Key Terms 206 Case 207 Discussion Ouestions 207 Reference Notes 209 Suggested Readings 210

9 Sampling Design 212

The Nature of Sampling Why Sample? 215 What Is a Good Sample? 216 Types of Sample Design Probability Sampling 219 Steps in Sampling Design Sampling Concepts 224 Complex Probability Sampling 237 Systematic Sampling 237 Stratified Sampling 238 Cluster Sampling 240 Double Sampling 242 Nonprobability Sampling 243 Practical Considerations Methods 245

Summary 247
Key Terms 249
Case 250
Discussion Questions 250
Reference Notes 251
Suggested Readings 252

PART III

THE SOURCES AND COLLECTION OF DATA

10 Secondary Data Sources 254

Primary Versus Secondary Data What Are Secondary Data? 256 Uses of Secondary Data 257 Advantages and Disadvantages of Secondary Data 257 Classifying Secondary Data 258 The Library and the Internet 262 The Library: Not Just a Home for Paper 262 The Internet: Not Just a Library Without Walls 263 Searching for Secondary Data 265 A Strategy for Secondary Data 265 Strategy, Step by Step Using Search Engines 271 Keeping Track of Your Research 275 Summary 279 Key Terms 280 Case 280 Discussion Questions 280 Reference Notes 282 Suggested Readings 283

11 Survey Methods: Communicating With Respondents 284

Characteristics of the Communication Approach 287 Applications 287

Personal Interviewing 291 Evaluation of the Personal Interview 291 Interviewing Technique 292 Interview Problems 297 Telephone Interviewing 300 Evaluation of the Telephone Interview 300 Telephone Interview Trends 303 Self-Administered Surveys 303 Mail Surveys 303 Improving Returns 305 Maximizing the Mail Survey 307 Self-Administered Survey Trends 308 Selecting an Optimal Method 309 **Outsourcing Survey Services 310** Summary 311 Key Terms 312 Case 312 Discussion Questions 312 Reference Notes 313 Suggested Readings 315

12 Instruments for Respondent Communication 316

Developing the Instrument Design Strategy: Phase 1 319 Management-Research Question Hierarchy Revisited 319 Type of Data 324 Communication Approach Question Structure 324 **Disguising Objectives** and Sponsors 325 Preliminary Analysis Plan 327 Constructing and Refining the Measurement Questions: Phase 2 327 Question Content 328 Question Wording 332 Response Strategy 336 Response Strategies Illustrated 338 Sources of Existing Questions 342

13

14

What Is Experimentation? 381

Advantages 382

Disadvantages 382

An Evaluation of Experiments 382

Drafting and Refining the Instrument:		Conducting an Experiment 383		
Phase 3 344		Selecting Relevant Variables 383		
Introduction and Respondent		Specifying the Levels of Treatment 384		
Screening 344		Controlling the Experimental		
Measurement Question Sequencing 344		Environment 384		
Instructions 347		Choosing the Experimental Design 385		
Conclusion 348		Selecting and Assigning Subjects 385		
Overcoming Instrument Problems 348		Pilot Testing, Revising, and Testing 386		
The Value of Pretesting 349		Analyzing the Data 386		
Pretesting Options 351		Validity in Experimentation 387		
Summary 353		Internal Validity 388		
Key Terms 354		External Validity 390		
Cases 355		Experimental Research Designs 391		
Discussion Questions 355		Preexperimental Designs 392		
Reference Notes 357		True Experimental		
Suggested Readings 358		Designs 392		
		Extensions of True Experimental		
Observational Studies 360		Designs 394		
Observational Studies 300		Field Experiments: Quasi- or		
The Uses of Observation 362		Semi-Experiments 397		
Nonbehavioral Observation 364		Summary 401		
Behavioral Observation 364		Key Terms 402		
Evaluation of the Observational Method 365		Case 402		
The Observer-Subject Relationship 366		Discussion Questions 402		
Directness of Observation 366		Reference Notes 404		
Concealment 367		Suggested Readings 404		
Participation 367				
Conducting an Observational Study 368				
The Type of Study 368	PART	IV		
Content Specification 369				
Observer Training 369	ANA	LYSIS AND PRESENTATION OF DATA		
Data Collection 370				
Unobtrusive Measures 371	15	Data Danamatian and D. P.		
Summary 375	13	Data Preparation and Preliminary		
Key Terms 375		Analysis 408		
Discussion Questions 376		Introduction 411		
Reference Notes 377		Editing 411		
Suggested Readings 377		Field Editing 412		
		Central Editing 412		
Experimentation 378		Coding 413		
Experimentation 3/0		Coding Rules 413		

Codebook Construction 414

Coding Closed Questions 414

Coding Open Questions 416

Using Content Analysis for

Contents

Open Questions 417 "Don't Know" Responses 419 Data Entry 421 Data Entry Formats 423 Exploring, Displaying, and Examining Data 426 An Exploratory Data Analysis Approach 426 Frequency Tables, Bar Charts, and Pie Charts 430		k Independent Samples Tests 492 k Related Samples Tests 501 Summary 504 Key Terms 505 Cases 505 Discussion Questions 506 Computer Problems 508 Reference Notes 509 Suggested Readings 510
Histograms 431 Stem-and-Leaf Displays 433	17	Measures of Association 512
Boxplots 435		Introduction 515
Transformation 438		Bivariate Correlation Analysis 516
Crosstabulation 441		Pearson's Product Moment
The Use of Percentages 442		Coefficient r 516
Other Table-Based Analysis 443		Scatterplots for Exploring
Data Mining 446		Relationships 518
Evolution of Data Mining 447		The Assumptions of $r = 520$
Management Research Uses 448		Computation and Testing of $r = 521$
Data-Mining Techniques 448		Correlation Matrix 524
Data-Mining Process 451		Interpretation of Correlations 525
Summary 453		Bivariate Linear Regression 526
Key Terms 455		The Basic Model 527
Cases 455		Concept Application 528
Discussion Questions 456		Method of Least Squares 530
Reference Notes 459		Predictions 533
Suggested Readings 461		Testing the Goodness of Fit 535
		Nonparametric Measures of Association 539
Hypothesis Testing 462		Measures for Nominal Data 539
•		Measures for Ordinal Data 544
Introduction 466		Summary 548
Hypothesis Testing 467		Key Terms 550
Testing Approaches 467		Cases 550
Statistical Significance 467		Discussion Questions 550
The Logic of Hypothesis Testing 468		Reference Notes 553
Statistical Testing Procedures 474		Suggested Readings 555
Probability Values (p Values) 476		
Tests of Significance 477 Types of Tests 477	18	Multivariate Analysis: An Overview 556
How to Select a Test 479		
One-Sample Tests 480		Introduction 559
Two Independent Samples		Selecting a Multivariate
Tests 484		Technique 559
Two Related Samples Tests 488		Dependency Techniques 562 Multiple Regression 562

16

Discriminant Analysis 565
MANOVA 567
LISREL 571
Conjoint Analysis 572
Interdependency Techniques 577
Factor Analysis 577
Cluster Analysis 582
Multidimensional Scaling 584
Summary 588
Key Terms 589
Cases 590
Discussion Questions 590
Reference Notes 592
Suggested Readings 592

19 Presenting Results: Written and Oral Reports 594

The Written Research Report 596 Short Reports 596 Long Reports 597 Research Report Components 598 Prefatory Items 599 Introduction 600 Methodology 601 Findings 602 Conclusions 602 Appendices 603 Bibliography 603 Writing the Report 603 Prewriting Concerns 604 Writing the Draft 605 Presentation Considerations 610 Presentation of Statistics 623 Text Presentation 623

Semitabular Presentation 623
Tabular Presentation 623
Graphics 624
Improvement and Control Charts 630
Oral Presentation 635
Preparation 635
Delivery 637
Audiovisuals 638
Summary 639
Key Terms 640
Discussion Questions 640
Reference Notes 641
Suggested Readings 642

APPENDICES

A	A Guid	le ta	Reference	and	Searching	644
---	--------	-------	-----------	-----	-----------	-----

- B Decision Theory Problem 652
- C Request for Proposal (RFP): Assessment and Contents 660
- D Sample Student Term Project 666
- E Nonparametric Significance Tests 674
- F Selected Statistical Tables 682

Index 693

I SUSINESS RESEARCH

CHAPTER

1

RESEARCH IN BUSINESS



CHAPTER NAVIGATION

BRINGING RESEARCH TO LIFE
WHY STUDY RESEARCH?
THE VALUE OF ACQUIRING SKILLS
WHAT IS RESEARCH?

WHAT IS GOOD RESEARCH?
THE MANAGER-RESEARCHER RELATIONSHIP
SUMMARY
KEY TERMS
DISCUSSION QUESTIONS
REFERENCE NOTES
SUGGESTED READINGS



BRINGING RESEARCH TO LIFE

"Jason Henry? I'm Myra Wines."

"Yes, come in, Ms. Wines. We'll meet here in the conference/living room. Watch your step around the cables, though."

The stylish, middle-aged woman found her way among several crates of partially unpacked computer systems, stepped over a strip of duct tape that held several cables securely in place on the carpet, pushed aside a pile of accounting books and tax manuals that had been stacked on the sofa, seated herself as gracefully as she could among the heap of books, electronic gear, and unopened paper boxes, then snapped open a briefcase to produce a miniature cassette recorder, which she clicked on. "If this makes you nervous, I'll turn it off," she said. "I was a TV investigative reporter for fifteen years, and my rule was to run a recording until they told me to turn it off. Old habits die hard . . . especially ones that have gotten you out of a dozen jams."

"Turn it off then," said the younger man, curtly. "It doesn't make me nervous, but I fail to see the need of it. How long have you been out of TV? Were you in TV down here? You must have been on local, not network, because I don't recognize you. As I told you when you called, we're just establishing our Florida office. Of course, you can see that." All this came out in one breath.

Myra picked up the thread of the monologue. "You moved here from Ottawa where you and your wife were employed by the United Nations. Your wife is a doctor in public health. You are an accountant turned business economist and consultant. You both graduated from college in California. You have opened several corporations here in Florida—to do auditing, economic analysis, epidemiological consulting, and diversified business research. I don't know why you need four separate corporations, but that's your business. . . . What have I missed?"

"My wife did a weekly public service TV program for distribution by the United Nations. She speaks four languages."

"I knew that. A TV producer in Toronto who works for United Nations TV alerted me to your move to Florida."

"Then that covers everything, doesn't it," he said with asperity, "except a birthmark above my knee."

"Your right knee," she said positively. Panic flickered in his eyes, and quickly she added, "Just a guess. Fifty-fifty chance of being right, you know."

That broke the tension. He chuckled. "I have a gold filling in one of my teeth. Can you tell me which one?"

Now she laughed. "I never bluff against such high odds as 32-to-1."

They both smiled. Then he killed the merriment by adding, "The odds would be 31-to-1, by the way, not 32-to-1. There would be one right answer and thirty-one wrong. Obviously, that makes the odds 31-to-1."

"How many computers do you have?" she asked, changing the subject.

"Counting the portables, five, plus several dumb terminals. Plus three printers and one fax for incoming and one for outgoing. And a voice-mail system and a pager. I am networking all of this together, as you can see. I have had six phone lines run in here, though I need only four right now. I took two extra, because I don't want the phone company coming in once I am all set up. We don't want the hassle of separate office space so we're locating the office on the main floor of our residence. Most of my clients will never see the office, so you'll have to excuse the mess. As far as my clients in Phoenix, Butte, and Ottawa know, I am working out of the classiest suite in this city's best office building, because faxes and phone calls and electronic mail are all the contact they have with me. I'll rethink the office if we add teleconferencing."

"Well. . . ," she said doubtfully.

"Yes, it's quite a few computers. But I'm your basic unapologetic computer jockey. I believe that you find the truth by crunching the numbers. I believe that. I really do."

"I don't agree. I'm your basic ex-TV reporter turned PR manager. I believe you get the truth by (continued)