

3
EDITION

Cost Management

ACCOUNTING AND CONTROL



HANSEN
Cost Management
MOWEN

HANSEN & MOWEN

Cost Management

ACCOUNTING AND CONTROL THIRD EDITION

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To Our Parents
Lindell and Leola Wise and
John L. Myers and Marjorie H. Myers

P R E F A C E

Over the past twenty years, changes in the business environment have profoundly affected cost accounting and cost management. A few examples of these changes are an increased emphasis on providing value to customers, total quality management, time as a competitive element, advances in information and manufacturing technology, globalization of markets, service industry growth, deregulation, and heightened awareness of ethical and environmental business practices. These changes are driven by the need to create and sustain a competitive advantage. For many firms, the information required to create and sustain a competitive advantage no longer can be derived from a traditional cost management information system. The traditional system relies on functional-based costing and control. In a functional-based system, costing and control are centered on organizational functions. Unfortunately, this functional-based approach often fails to provide information that is detailed, accurate, and timely enough to support the requirements of this new environment. This has resulted in the emergence of an activity-based cost management system. Typically, an activity-based cost management system is more detailed and more accurate than a functional-based cost management system and, thus, more costly to operate. Furthermore, the need to add a formal guidance mechanism to the new activity-based system has created a demand for strategic-based cost management. Thus, the new cost management system might be more accurately referred to as an activity- and strategic-based cost management system. The emergence and acceptance of activity- and strategic-based cost management therefore suggests that in many cases the benefits of this more sophisticated system outweigh its costs. On the other hand, the continued existence and reliance on functional-based systems suggests the opposite for other firms.

The coexistence of functional-based systems with activity- and strategic-based cost management systems also implies a need to study both. Studying both systems provides flexibility and depth of understanding. Thus, in creating a text on cost management, we had to decide how to design its structure. We decided that a systems approach provided a convenient and logical framework. Using a systems framework allows us to make a clear distinction between the functional- and activity-based approaches in a way that students can easily grasp. It also avoids any artificial "integration" of the two systems. Integration is achieved by developing a common terminology—a terminology that allows us to define each system and discuss how they differ. We then discuss in separate sections the functional- and activity-based approaches to costing and control. We believe this separation minimizes confusion and allows students to appreciate the differences that exist between functional- and activity-based approaches. It also permits an emphasis on either the functional- or activity-based approach, depending on preferences. However, we did not follow the same pattern for the chapters on decision making. For these chapters, we felt that it would be more useful for students to see how decisions change as the information sets change. For example, how does a make-or-buy decision change as we move from a functional-based, traditional cost management system to the richer, activity-based cost management system?

A U D I E N C E

This text is written primarily for students at the undergraduate level. The text presents a thorough treatment of traditional and contemporary approaches to cost

management, accounting, and control and can be used for a one- or two-semester course. In our opinion, the text also has sufficient depth for graduate-level courses. In fact, we have successfully used the text at the graduate level.

KEY FEATURES

We feel that the text offers a number of distinctive and appealing features—features that should make it much easier to teach students about the emerging themes in today's business world. One of our objectives was to reduce the time and resources expended by instructors so that students can be exposed to today's topics and practices. To help you understand the text's innovative approach, we have provided a detailed description of its key features.

Structure

The text's organization follows a systems framework and is divided into four parts:

1. *Part 1: Foundation Concepts.* Chapters 1 through 3 introduce the basic concepts and tools associated with cost management information systems.
2. *Part 2: Functional-Based Costing and Control.* Chapters 4 through 11 provide thorough coverage of product costing, planning, and control in a functional-based system.
3. *Part 3: Activity-Based Costing.* Chapters 12 through 17 present the key elements of the new cost management approaches. Examples of the topics covered in this section include activity-based costing, strategic cost management, process value analysis, target costing, kaizen costing, quality costing, productivity, environmental cost management, and the Balanced Scorecard.
4. *Part 4: Activity- and Functional-Based Decision Making.* Chapters 18 through 22 bring the functional-based and activity-based costing approaches together in the discussion of decision making.

The book's structure now permits continuous coverage of each system's features. For example, after covering the first three chapters, those wishing to emphasize the activity- and strategic-based approaches may then immediately go to Part 3 and cover the chapters there in sequence. This provides the ability to present the activity- and strategic-based system as a whole rather than in pieces. A similar approach is available for functional-based costing in Part 2.

Contemporary Topics

The emerging themes of cost management are covered in depth. We have provided a framework for comprehensively treating both functional-based and activity-based topics. A common terminology links the two approaches; however, the functional- and activity-based approaches differ enough to warrant separate and comprehensive treatments. The nature and extent of the coverage of contemporary topics is described below. As this summary reveals, there is sufficient coverage of activity- and strategic-based topics to provide a course that strongly emphasizes these themes.

Historical Perspective Chapter 1 provides a brief history of cost accounting. The historical perspective allows students to see why functional-based cost management systems work well in some settings but no longer work for other settings. The forces that are changing cost management practices are described. The changing role of the management accountant is also covered with particular emphasis on why the need to develop a cross-functional expertise is so critical in today's environment.

Value Chain Analysis The provision of value to customers is illustrated by the internal value chain, which is first introduced in Chapter 1 and defined and illustrated more completely in Chapter 2. Chapter 13 provides a detailed discussion of value chain analysis and introduces the industrial value chain. Value chain analysis means that managers must understand and exploit internal and external linkages so that a sustainable competitive advantage can be achieved. Exploitation of these linkages requires a detailed understanding of the costs associated with both internal and external factors. This edition expands the treatment of value chain analysis by introducing, defining, and illustrating activity-based supplier costing and activity-based customer costing. The costing examples developed show how the value chain concepts can be operationalized—a characteristic not clearly described by other treatments. Thus, we believe that the operational examples are a significant feature of the text.

Accounting and Cost Management Systems In Chapter 2, the accounting information system and its different subsystems are defined. Distinctions are made between the financial accounting and the cost management information systems and the differing purposes they serve. The cost management information system is broken down into the cost accounting information system and the operational control system. The differences between functional-based and activity-based cost management systems are defined and illustrated. The criteria for choosing an activity-based system over a functional-based system are also discussed.

In Chapter 2, three methods of cost assignment are delineated: direct tracing, driver tracing, and allocation. Activity drivers are also defined. Once the general cost assignment model is established, the model is used to help students understand the differences between functional-based and activity-based cost management systems. A clear understanding of how the two systems differ is fundamental to the organizational structure that the text follows.

Activity-Based Costing Much has been written on the uses and applications of ABC. This text presents a comprehensive approach to activity-based costing and management. The activity-based product costing model is introduced in Chapter 2 and described in detail in Chapter 12. In Chapter 12, the advantages of ABC over functional-based costing are related. A completed discussion of how to design an ABC system is given. This includes identifying activities, creating an activity dictionary, assigning costs to activities, classifying activities as primary and secondary, and assigning costs to products. The use of homogeneous cost pools to reduce the number of activity rates is also covered.

To fully understand how an ABC system works, students must understand the data needed to support the system. Thus, we show (in Chapter 12) how the general ledger system must be unbundled to provide activity information. We also define and illustrate an ABC relational data base. This unique feature of the text helps the student understand the very practical requirements of an ABC system.

Activity costs change as activity usage changes. Chapter 3 is a comprehensive treatment of cost behavior. First, we define variable, fixed, and mixed activity cost behavior. Then, the activity resource usage model is discussed and the impact of flexible and committed resources on cost is detailed. Finally, methods of breaking out fixed and variable activity costs are described. This text goes further than the typical one in explaining to students how to use the computer spreadsheet programs to perform regression analysis. The chapter on cost behavior analysis is more general than usual chapters that treat the subject. Traditional treatment usually focuses on cost as a function of production volume. We break away from this pattern and focus on cost as a function of changes in activity usage with changes in production activity as a special case.

The activity resource usage model is used to define activity cost behavior (in terms of when resources are acquired) and is defined and discussed in Chapter 3. This resource usage model plays an important role in numerous contemporary applications. It is used in value chain analysis (Chapter 13), activity-based responsibility accounting (Chapter 14), and tactical decision and relevant costing analysis (Chapter 19). The extensive applications of the activity resource usage model represent a unique feature of the text.

Just-in-Time Effects JIT manufacturing and purchasing are defined and their own cost management practices are discussed in Chapters 9, 13, and 22. JIT is compared and contrasted with traditional manufacturing practices. The effects on areas such as cost traceability, inventory management, product costing, and responsibility accounting are carefully delineated.

Life Cycle Cost Management In Chapter 13, we define and contrast three different life cycle viewpoints: production life cycle, marketing life cycle, and consumable life cycle. We then show how these concepts can be used for strategic planning and analysis. In later chapters, we show how life cycle concepts are useful for pricing and profitability analysis (Chapter 20). The use of life cycle costing for environmental cost management is also discussed (Chapter 17). The breadth, depth, and numerous examples illustrating life cycle cost applications allow the student to see the power and scope of this methodology.

Activity- and Strategic-Based Responsibility Accounting There are three types of responsibility accounting systems: functional-based, activity-based, and strategic-based. These three systems are compared and contrasted, and the activity- and strategic-based responsibility accounting systems are discussed in detail. Activity-based responsibility accounting focuses on controlling and managing processes. The mechanism for doing this, process value analysis, is defined and thoroughly discussed in Chapter 14. Numerous examples are given to facilitate understanding. Value-added and nonvalue-added cost reports are described. Activity-based responsibility accounting also covers activity measures of performance and activity-based budgeting, which are thoroughly covered in Chapter 14.

The Balanced Scorecard is equivalent to what we are calling strategic-based responsibility accounting. The basic concepts and methods of the Balanced Scorecard are presented in Chapter 13.

Costs of Quality: Measurement and Control Often, textual treatments simply define quality costs and present cost of quality reports. We go beyond this simple presentation (in Chapter 15) and discuss cost of quality performance reporting. We also describe quality activities in terms of their value-added content. Finally, we introduce and describe ISO 9000, an important quality assurance and reporting system that many firms must now follow.

Productivity: Measurement and Control The new manufacturing environment demands innovative approaches to performance measurement. Productivity is one of these approaches, yet it is either only superficially discussed in most cost and management accounting texts or not treated at all. In Chapter 16, we offer a thorough treatment of the topic, including some new material on how to measure activity and process productivity.

Strategic Cost Management A detailed introduction to strategic cost management is provided in Chapter 13. Understanding strategic cost analysis is a vital part of the new manufacturing environment. Strategic cost management is defined and

illustrated. Strategic positioning is discussed. Structural and executional cost drivers are introduced. Value chain analysis is described with the focus on activity-based supplier and customer costing. The role of target costing in strategic cost management is also emphasized.

Environmental Cost Management Chapter 17 is a new chapter, reflecting the emerging strategic importance of environmental cost management. This chapter introduces and discusses the concept of ecoefficiency. It also defines, classifies, and illustrates the reporting of environmental costs and how to assign those costs to products and processes. The role of life-cycle costing in environmental cost management is detailed. Finally, ways the Balanced Scorecard can be extended to include an environmental perspective are described.

Theory of Constraints We introduce the theory of constraints (TOC) in Chapter 22. A linear programming framework is used to facilitate the description of TOC and provide a setting where students can see the value of linear programming. In fact, our treatment of linear programming is motivated by the need to develop the underlying concepts so that TOC can be presented and discussed. This edition expands the coverage of TOC by adding a discussion of constraint accounting.

Service Sector Focus

The significance of the service sector is recognized in this text through the extensive application of cost management principles to services. The text explains that services are not simply less complicated manufacturing settings but instead have their own characteristics. These characteristics require modification of cost management accounting principles. Sections addressing services appear in a number of chapters, including product costing, pricing, and quality and productivity measurement.

Professional Ethics

Strong professional ethics need to be part of every accountants' personal foundation. We are convinced that students are interested in ethical dimensions of business and can be taught areas in which ethical conflicts occur. Chapter 1 introduces the role of ethics, and reprints the ethical standards developed by the Institute of Management Accountants. To reinforce coverage of ethics, every chapter includes an ethics case for discussion. In addition, many chapters include sections on ethics. For example, Chapter 20, on pricing and revenue analysis, introduces the student to research on community standards of fairness and ethical dimensions of pricing. Chapter 11, on international issues, explores the dilemmas of differing ethical systems throughout the world.

Behavioral Issues

Ethical behavior is just one aspect of human behavior that is affected by cost management systems. The systems used for planning, control, and decision making can affect the way in which people act. Insights from behavioral decision theory are presented in appropriate sections of the text. For example, a discussion of the ways profit measurement can affect people's behavior is included in Chapter 20. Chapter 8, on budgeting, includes a section on the behavioral impact of budgets. We believe that an integration of behavioral issues with accounting issues leads to a more complete understanding of the role of the accountant today.

Real World Examples

Our years of experience in teaching cost and management accounting have convinced us that students like and understand real world applications of accounting concepts. These real world examples make the abstract accounting ideas concrete and provide meaning and color. Besides, they're interesting and fun. Therefore, real world examples are integrated throughout every chapter. Use of color for company names that appear in the chapters and the company index at the end of the text will help you locate these examples. In addition, URLs of companies with home pages on the World Wide Web are provided to give students easy access to the cost management information provided there.

Outstanding Pedagogy

We think of this text as a tool that can help students learn cost accounting and cost management concepts. Of paramount importance is text readability. We have tried to write a very readable text and to provide numerous examples, real world applications, and illustrations of important cost accounting and cost management concepts. Specific "student-friendly" features of the pedagogy include the following:

- Whenever possible, graphical exhibits are provided to illustrate concepts. In our experience, some students need to "see" the concept, so we have attempted to portray key concepts to enhance understanding. Of course, many numerical examples are also provided.
- All chapters (except Chapter 1) include at least one review problem and solution. These problems demonstrate the computational aspects of chapter materials and reinforce the students' understanding of chapter concepts before they undertake end-of-chapter materials.
- A glossary of key terms is included at the end of the text. Key terms lists at the end of each chapter identify text pages for fuller explanation.
- All chapters include comprehensive end-of-chapter materials. These are divided into "Questions for Writing and Discussion" and "Exercises and Problems." The Questions for Writing and Discussion emphasize communication skill development. Exercises and Problems to support every learning objective are included, and the relevant topics and learning objectives are noted in the text margins. The exercises and problems are graduated in difficulty from easy to challenging. CMA exam problems are included to enable the student to practice relevant problem material. Every chapter includes at least one ethics case.
- Spreadsheet template problems are identified in the end-of-chapter materials with an appropriate icon. These problems are designed to help students use spreadsheet applications to solve cost accounting problems.
- At the end of each of the four parts, a comprehensive problem is provided for those instructors who prefer to explore chapter concepts in a more integrated manner. Questions at the end of each comprehensive problem enable the instructor to pick and choose the chapters to be emphasized in the case.



COMPREHENSIVE SUPPLEMENTS PACKAGE

Check Figures. Key figures for solutions to selected problems and cases are provided in the solutions manual as an aid to students as they prepare their answers. Instructors may copy and distribute these as they see fit.

Study Guide (Prepared by Al Chen, North Carolina State University). The study guide provides a detailed review of each chapter and allows students to check their understanding of the material through review questions and exercises.

Specifically, students are provided with a Chapter Review, Review Questions and Exercises, and a "Can You?" Checklist that helps test their knowledge of key concepts in the chapter. Answers are provided for all assignment material.

Instructor's Manual (Prepared by Marvin Bouillon, Iowa State University). The instructor's manual contains a complete set of lecture notes for each chapter, a listing of all exercises and problems with estimated difficulty and time required for solution, and suggestions for using the PowerPoint slides.

Solutions Manual (Prepared by Don Hansen and Maryanne Mowen). The solutions manual contains the solutions for all end-of-chapter questions, exercises, and problems. Solutions have been error-checked to ensure their accuracy and reliability.

Solutions Transparencies. Acetate transparencies for selected solutions are available to adopters of the third edition.

Test Bank (Prepared by Marvin Bouillon, Iowa State University). The test bank offers multiple-choice problems, short problems, and essay problems. Designed to make exam preparation as convenient as possible for the instructor, each test bank chapter contains enough questions and problems to permit the preparation of several exams without repetition of material.

Thomson Learning Testing Tools. The test bank is available in computerized format, allowing instructors to design and edit their own tests.

Spreadsheet Templates (Prepared by Leslie Turner, Northern Kentucky University). Spreadsheet templates using Microsoft Excel and Lotus 1-2-3 provide outlined formats of solutions for selected end-of-chapter exercises and problems. These exercises and problems are identified with a margin symbol. The templates allow students to develop spreadsheet and "what-if" analysis skills.

PowerPoint Slides (Prepared by Marvin Bouillon, Iowa State University). Selected transparencies of key concepts and exhibits from the text are available in PowerPoint presentation software. These slides provide a comprehensive outline of each chapter.

Web Site (hansen.swcollege.com). A web site, designed specifically for *Cost Management, third edition*, provides online and downloadable resources for both instructors and students. The Web site features an online study guide with automatic feedback, prepared by Margaret Gagne of University of Colorado at Colorado Springs.

BusinessLink Videos. A series of five videos illustrates key cost accounting concepts including activity-based costing, product costing, and total quality management. These videos feature companies such as Archway Cookies, World Gym, and Symbios Logic. A student workbook and an instructor's manual are available to accompany the videos.

Cases in Cost Management: A Strategic Emphasis (Written by John K. Shank, Dartmouth College). This set of cases is offered for those instructors who want to augment their cost accounting course with richer, longer "fun" problems. Each case includes specific numerical questions to challenge and help develop the students' calculation skills with cost accounting techniques. Each case also includes broader discussion questions to sharpen the controversial aspects of the calculations and emphasize the managerial issues behind the numbers. Accompanying the book is an instructor's manual, which contains comprehensive teaching commentaries for each case.

Readings and Issues in Cost Management (Edited by James Reeve, University of Tennessee). This text is designed to expose students to the concepts and information they need to become responsive and flexible managers. Articles in the text cover topics such as TQM, employee empowerment, reengineering, continuous improvement, and short-cycle management.

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Don R. Hansen and Maryanne M. Mowen

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BRIEF CONTENTS

1	INTRODUCTION TO COST ACCOUNTING AND COST MANAGEMENT	1
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PART 1

FOUNDATION CONCEPTS

2	BASIC COST MANAGEMENT CONCEPTS	28
3	ACTIVITY COST BEHAVIOR	64
	COMPREHENSIVE CASE 1	107

PART 2

FUNCTIONAL-BASED COSTING AND CONTROL

4	PRODUCT AND SERVICE COSTING: OVERHEAD APPLICATION AND JOB-ORDER SYSTEM	112
5	PRODUCT AND SERVICE COSTING: A PROCESS SYSTEMS APPROACH	161
6	SUPPORT DEPARTMENT COST ALLOCATION	206
7	JOINT PRODUCT AND BY-PRODUCT COSTING	240
8	BUDGETING FOR PLANNING AND CONTROL	266
9	STANDARD COSTING: A FUNCTIONAL-BASED CONTROL APPROACH	313
10	DECENTRALIZATION: RESPONSIBILITY ACCOUNTING, PERFORMANCE EVALUATION, AND TRANSFER PRICING	355
11	INTERNATIONAL ISSUES IN COST MANAGEMENT	397
	COMPREHENSIVE CASE 2	432

PART 3

ACTIVITY-BASED COSTING

12	ACTIVITY-BASED COSTING	438
13	STRATEGIC COST MANAGEMENT	488
14	ACTIVITY- AND STRATEGIC-BASED RESPONSIBILITY ACCOUNTING	542
15	QUALITY COSTING: MEASUREMENT AND CONTROL	597
16	PRODUCTIVITY: MEASUREMENT AND CONTROL	637
17	ENVIRONMENTAL COST MANAGEMENT	665
	COMPREHENSIVE CASE 3	698

PART 4

ACTIVITY- AND FUNCTIONAL-BASED DECISION MAKING

18	COST-VOLUME-PROFIT ANALYSIS	704
19	ACTIVITY RESOURCE USAGE MODEL AND RELEVANT COSTING: TACTICAL DECISION MAKING	753
20	PRICING AND PROFITABILITY ANALYSIS	788
21	CAPITAL INVESTMENT DECISIONS	838
22	INVENTORY MANAGEMENT: ECONOMIC ORDER QUANTITY, JIT, AND THE THEORY OF CONSTRAINTS	884
	COMPREHENSIVE CASE 4	920

CONTENTS

1 INTRODUCTION TO COST ACCOUNTING AND COST MANAGEMENT 1

FINANCIAL ACCOUNTING VERSUS COST MANAGEMENT 2

THE EVOLUTION OF ACCOUNTING 3

Early Accounting Systems 3 Accounting in the Twentieth Century 4

CURRENT FOCUS OF COST MANAGEMENT 5

Global Competition 5 Growth of the Service Industry 6 Advances in Information Technology 6 Advances in the Manufacturing Environment 7 Customer Orientation 8 Total Quality Management 9 Time as a Competitive Element 9 Efficiency 9

A SYSTEMS APPROACH 10

COST MANAGEMENT—A CROSS-FUNCTIONAL PERSPECTIVE 11

The Need for Flexibility 12 Behavioral Impact of Cost Information 12

THE ROLE OF TODAY'S COST AND MANAGEMENT ACCOUNTANT 13

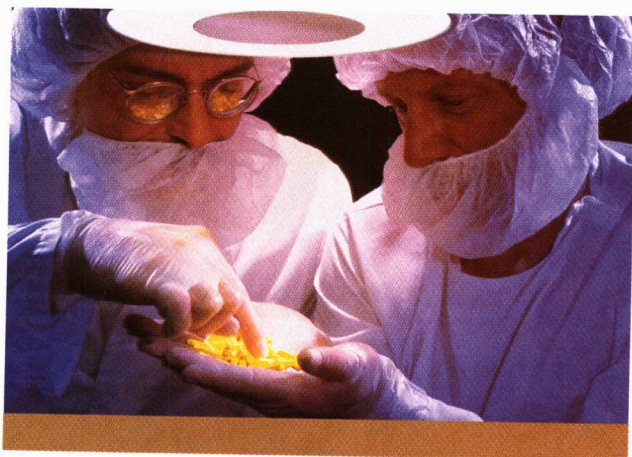
Line and Staff Positions 13 Information for Planning, Controlling, and Decision Making 14

ACCOUNTING AND ETHICAL CONDUCT 15

Ethical Behavior 15 Standards of Ethical Conduct for Management Accountants 16 Ethical Conduct 18

CERTIFICATION 19

The Certificate in Management Accounting 19 The Certificate in Public Accounting 19 The Certificate in Internal Auditing 20



FOUNDATION CONCEPTS

2 BASIC COST MANAGEMENT CONCEPTS 28

A SYSTEMS FRAMEWORK 29

Accounting Information Systems 30 Relationship to Other Operational Systems and Functions 32 Different Systems for Different Purposes 33

COST ASSIGNMENT: DIRECT TRACING, DRIVER TRACING, AND ALLOCATION 35

Cost Objects 35 Accuracy of Assignments 35

PRODUCT AND SERVICE COSTS 39

Different Costs for Different Purposes 39 Product Costs and External Financial Reporting 40

EXTERNAL FINANCIAL STATEMENTS 42

Income Statement: Manufacturing Firm 43 Income Statement: Service Organization 45

FUNCTIONAL-BASED AND ACTIVITY-BASED COST MANAGEMENT SYSTEMS 45

Functional-Based Cost Management Systems: A Brief Overview 45 Activity-Based Cost Management Systems: A Brief Overview 46 Choice of a Cost Management System 48

3 ACTIVITY COST BEHAVIOR 64

BASICS OF COST BEHAVIOR 65

Measures of Activity Output 65 Fixed Costs 66 Variable Costs 67 Linearity Assumption 68 Mixed Costs 70 Time Horizon 71

RESOURCES, ACTIVITIES, AND COST BEHAVIOR 71

Flexible Resources 71 Committed Resources 72 Implications for Control and Decision Making 72 Step-Cost Behavior 73 Activities and Mixed Cost Behavior 75

METHODS FOR SEPARATING MIXED COSTS INTO FIXED AND VARIABLE COMPONENTS 76

The High-Low Method 77 Scatterplot Method 78 The Method of Least Squares 81 Using the Regression Programs 82

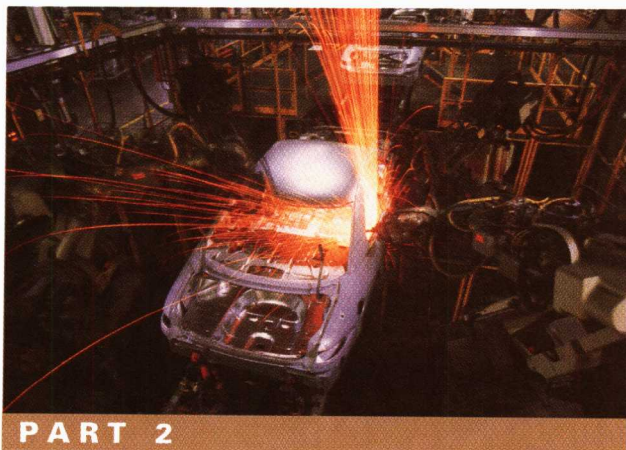
RELIABILITY OF COST FORMULAS 84

Hypothesis Test of Parameters 85 Goodness of Fit Measures 85 Confidence Intervals 87

MULTIPLE REGRESSION 88

MANAGERIAL JUDGMENT 90

COMPREHENSIVE CASE 1 107



FUNCTIONAL-BASED COSTING AND CONTROL

4 PRODUCT AND SERVICE COSTING: OVERHEAD APPLICATION AND JOB-ORDER SYSTEM 112

CHARACTERISTICS OF THE PRODUCTION PROCESS 113
Manufacturing Firms versus Service Firms 113 Unique versus Standardized Products and Services 116

SETTING UP THE COST ACCOUNTING SYSTEM 117
Cost Accumulation 118 Cost Measurement 118 Cost Assignment 120

OVERHEAD APPLICATION: A NORMAL COSTING VIEW 122
Predetermined Overhead Rates 122 Choosing the Activity Base 122 Choosing the Activity Level 124 The Basic Concept of Overhead Application 124 Disposition of Overhead Variances 126

THE JOB-ORDER COSTING SYSTEM: GENERAL DESCRIPTION 128
Overview of the Job-Order Costing System 128 Materials Requisitions 129 Job Time Tickets 130 Overhead Application 131 Unit Cost Calculation 131

JOB-ORDER COSTING: SPECIFIC COST FLOW DESCRIPTION 132
Accounting for Materials 132 Accounting for Direct Labor Cost 133 Accounting for Overhead 134 Accounting for Finished Goods 135 Accounting for Cost of Goods Sold 137 Accounting for Nonmanufacturing Costs 139

SINGLE VERSUS MULTIPLE OVERHEAD RATES 140

APPENDIX: ACCOUNTING FOR SPOILAGE IN A TRADITIONAL JOB ORDER SYSTEM 142

5 PRODUCT AND SERVICE COSTING: A PROCESS SYSTEMS APPROACH 161

PROCESS COSTING AND SYSTEMS: BASIC OPERATIONAL AND COST CONCEPTS 162

Cost Flows 163 The Production Report 165 Unit Costs 165

PROCESS COSTING WITH NO WORK IN PROCESS INVENTORIES 166

Service Organizations 166 JIT Manufacturing Firms 167

PROCESS COSTING WITH ENDING WORK IN PROCESS INVENTORIES 167

Equivalent Units as Output Measures 167 Cost of Production Report Illustrated 168 Nonuniform Application of Productive Inputs 169 Beginning Work in Process Inventories 170

FIFO COSTING METHOD 170

Step 1: Physical Flow Analysis 171 Step 2: Calculation of Equivalent Units 172 Step 3: Computation of Unit Cost 172 Step 4: Valuation of Inventories 172 Step 5: Cost Reconciliation 173 Journal Entries 175

WEIGHTED AVERAGE COSTING METHOD 175

Step 1: Physical Flow Analysis 175 Step 2: Calculation of Equivalent Units 175 Step 3: Computation of Unit Cost 176 Step 4: Valuation of Inventories 177 Step 5: Cost Reconciliation 177 Production Report 177 FIFO Compared with Weighted Average 177

TREATMENT OF TRANSFERRED-IN GOODS 179

Step 1: Physical Flow Schedule 180 Step 2: Calculation of Equivalent Units 181 Step 3: Computation of Unit Costs 181 Step 4: Valuation of Inventories 181

OPERATION COSTING 183

Basics of Operation Costing 183 Operation Costing Example 185

APPENDIX: SPOILED UNITS 186

6 SUPPORT DEPARTMENT COST ALLOCATION 206

AN OVERVIEW OF COST ALLOCATION 207

Types of Departments 207 Types of Allocation Bases 209

OBJECTIVES OF ALLOCATION 210

ALLOCATING ONE DEPARTMENT'S COSTS TO ANOTHER DEPARTMENT 212

A Single Charging Rate 212 Dual Charging Rates 213 Budgeted versus Actual Usage 214 Fixed versus Variable Bases: A Note of Caution 216

CHOOSING A SUPPORT DEPARTMENT COST ALLOCATION METHOD 217

Direct Method of Allocation 218 Sequential Method of Allocation 219 Reciprocal Method of Allocation 221 Comparison of the Three Methods 223

DEPARTMENTAL OVERHEAD RATES AND PRODUCT COSTING 224