

Fundamentals of Cost Accounting

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FUNDAMENTALS OF COST ACCOUNTING, FIFTH EDITION

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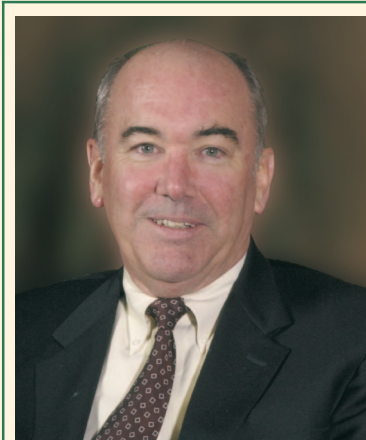
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Dedication

To my wife, Donna, and my children, Cathy and Tom, for encouragement, support, patience, and general good cheer throughout the years.

Bill

I dedicate this book to my husband Randy, my children Evan and David, and my parents, Max and Nina Weems. Your support and example motivate me to improve. Your love and God's grace assure me that it isn't necessary.

Shannon

I dedicate this book to my wife, Kathleen, my children, Krista and Andrea, my stepchildren, Andrew and Emily, and to my extended family, friends, and colleagues who have provided their support and wisdom over the years.

Michael

Step into the Real World

5

Cost Estimation

Chapter Five

LEARNING OBJECTIVES

After reading this chapter, you should be able to:

- LO 5-1** Understand the reasons for estimating fixed and variable costs.
- LO 5-2** Estimate costs using engineering estimates.
- LO 5-3** Estimate costs using account analysis.
- LO 5-4** Estimate costs using statistical analysis.
- LO 5-5** Interpret the results of regression output.
- LO 5-6** Identify potential problems with regression data.
- LO 5-7** Evaluate the advantages and disadvantages of alternative cost estimation methods.

The Decision

“I’ve read several books on cost analysis and worked through decision analysis problems in some of my college classes. Now that I own my own business, I realize that there was one important thing that I always took for granted in doing those problems. We were always given the data. Now I know that doing the analysis once you have the data is the easier part. How are the costs determined? How do I know if they are fixed or variable? I am trying to decide whether to open a new store and I need answers to these questions. I thought about the importance of being able to determine fixed and variable costs after reading an article about, of all things, the costs of text messaging [see the Business Application item “The Variable Cost of a Text Message”]. The article talked about the low variable costs of sending text messages and the implications for pricing services. Although I am in a different industry, the basic principles still apply.”

Charlene Cooper owns Charlene’s Computer Care (3C), a network of computer service centers located throughout the South. Charlene is thinking about opening a new center and has asked you to help her make a decision. She especially wants your help estimating the costs to use in the analysis.

Why Estimate Costs?

When managers make decisions, they need to compare the costs (and benefits) among alternative actions. Therefore, managers need to estimate the costs associated with each alternative. We saw in Chapter 4 that good decisions require good information about costs; the better these estimates, the better the decision managers will make. In this chapter, we discuss how to estimate the cost data required for decision making.

Chapter Opening Vignettes

Do your students sometimes wonder how the course connects with their future? Each chapter opens with *The Decision*, a vignette in which a decision maker needs cost accounting information to make a better decision. This sets the stage for the rest of the chapter and encourages students to think of concepts in a business context.

Business Application The Variable Cost of a Text Message

Text messaging is a common add-on service to mobile phones, but how profitable is it for the phone companies? In September 2008, the chairman of the Senate Antitrust Committee sent letters to four major telecommunications companies asking for information about prices and costs. His interest was prompted by a price increase from \$.10 to \$.20 for the pay-per-use service.

Although the companies did not discuss the costs of text messaging in their responses, the variable cost can be estimated by the engineering method. First, how does a text message use the carriers’ resources?

The message is sent over a wireless network to nearby cell tower where it then enters the wired telephone network. Near the location of the message addressee, the message is changed back into a wireless signal and received at destination device.

How does sending a text message impact the network? Any message is so small relative to the total traffic that its impact is negligible. This means that once the storage equipment is in place in the network, the incremental costs of additional volume is quite small. In other words, the variable costs are close to zero. What are the implications for pricing? With no incremental fixed or variable costs associated with the texting product, carriers profit from offering unlimited messaging at an affordable rate.

Source: Randall Stross, “What Carriers Aren’t Eager to Tell You about Texting,” *The New York Times*, December 28, 2008.

Business Application

Do your students need help connecting theory to application? The *Business Application* examples tie in to *The Decision* chapter-opening vignettes and are drawn from contemporary journals and the authors’ own experiences. They illustrate how to apply cost accounting methods and tools.

“[The Business Application features are] a very helpful piece to help students see how the course material becomes relevant in the professional world.”

—N. Ahadiat
University of California Pomona

Debrief

Do your students understand how to apply the concepts in each chapter to become better decision makers? All chapters end with a Debrief feature that links the topics in the chapter to the decision problem faced by the manager in the opening vignette.

The Debrief

After considering the cost estimates in Exhibit 5.8, Charlene commented:

“This exercise has been very useful for me. First, I learned about different approaches to estimating the cost of a new center. More important, I learned about the advantages and disadvantages of each approach.”

When I look at the numbers in Exhibit 5.8, I have confidence in my decision to open a new center. Although there is a range in the estimates, all of the estimates are below my expected revenues. This means I am not going to spend more time on reconciling the cost estimates because I know that regardless of which estimate I think is best, my decision will be the same.”

SUMMARY

Accurate cost estimation is important to most organizations for decision-making purposes. Although no estimation method is completely accurate, some are better than others. The usefulness of a cost estimation method depends highly on the user's knowledge of the business and the costs being analyzed.

The following summarizes the key ideas tied to the chapter's learning objectives.

“Good illustrations and real-world examples. It has broad and comprehensive topic coverage.”

—Robert Lin
California State University East Bay

All applicable Exercises are included in Connect.  **EXERCISES**

5-28. Methods of Estimating Costs: Engineering Estimates (LO 5-2)
Custom Homebuilders (CH) designs and constructs high-end homes on large lots owned by customers. CH has developed several formulas, which it uses to quote jobs. These include costs for materials, labor, and other costs. These estimates are also dependent on the region of the country a particular customer lives. Below are the cost estimates for one region in the Midwest:

Administrative costs	\$20,000
Building costs – per square foot (basic)	\$ 90
Building costs – per square foot (moderate)	\$ 150
Building costs – per square foot (luxury)	\$ 225
Appliances (basic)	\$15,000
Appliances (moderate)	\$25,000
Appliances (luxury)	\$45,000
Utilities costs (if required)	\$40,000

Required
A customer has expressed interest in having CH build a moderate, 3,000 square-foot home on a vacant lot, which does not have utilities. Based on the engineering estimates above, what will such a house cost to build?

5-29. Methods of Estimating Costs: Engineering Estimates (LO 5-2)
Twain Services offers leadership training for local companies. It employs three levels of seminar leaders, based on experience, education, and management level being targeted: guru, mentor, and helper. When Twain bids on requests for seminars, it estimates the costs using a set of

End-of-Chapter Material

Being able to assign end-of-chapter material with confidence is important. The authors have tested the end-of-chapter material over time to ensure quality and consistency with the chapter content.

“This is an excellent cost accounting book with quality end of chapter materials.”

—Judy Daulton
Piedmont Technical College

“Well written; good end-of-chapter material.”

—R. E. Bryson
University of Alabama in Huntsville



Excel® is essential to contemporary cost accounting practice, and Lanen 5e integrates Excel where appropriate in the text. Several exercises and problems in each chapter can be solved using the Excel spreadsheet templates found in *Connect*. An Excel logo appears in the text next to these problems.

5-33. Methods of Estimating Costs: High-Low

(LO 5-4)

Adriana Corporation manufactures football equipment. In planning for next year, the managers want to understand the relation between activity and overhead costs. Discussions with the plant supervisor suggest that overhead seems to vary with labor-hours, machine-hours, or both. The following data were collected from last year's operations:



Month	Labor-Hours	Machine-Hours	Overhead Costs
1	3,625	6,775	\$513,435
2	3,575	7,035	518,960
3	3,400	7,600	549,575
4	3,700	7,265	541,400
5	3,900	7,955	581,145
6	3,775	7,895	572,320
7	3,700	6,950	535,110
8	3,625	6,530	510,470
9	3,550	7,270	532,195
10	3,975	7,725	565,335
11	3,375	6,490	503,775
12	3,550	8,020	564,210

“Strong end of chapter and test bank materials. Strong inclusion of Excel in the chapters”

—Michael Flores,
Wichita State University

Integrative Cases

Cases can generate classroom discussion or be the basis for good team projects. These integrative cases, which rely on cost accounting principles from previous chapters as well as the current chapter, ask students to apply the different techniques they have learned to a realistic situation.

INTEGRATIVE CASES

10-66. Cost Hierarchies, Cost of Customers, and Pricing

(LO 10-1, 2, 3, 4)

WSM Corporation is considering offering an air shuttle service between Sao Paulo and Rio de Janeiro. It plans to offer four flights every day (excluding certain holidays) for a total of 1,400 flights per year (= 350 days × 4 flights per day). WSM has hired a consultant to determine activity-based costs for this operation. The consultant's report shows the following:



Activity	Activity Measure (cost driver)	Unit Cost (cost per unit of activity)
Flying and maintaining aircraft	Number of flights	\$1,600 per flight
Serving passengers	Number of passengers	\$4 per passenger
Advertising and marketing	Number of promotions	\$60,000 per promotion

WSM estimates the following annual information. With 20 advertising promotions, it will be able to generate demand for 40 passengers per flight at a fare of \$225. The lease of the 60-seat aircraft will cost \$4,000,000. Other equipment costs will be \$2,000,000. Administrative and other marketing costs will be \$1,250,000.

Required

- Based on these estimates, what annual operating income can WSM expect from this new service?
- WSM is considering selling tickets over the Internet to save on commissions and other costs. It is estimated that the cost driver rate for *flights* would decrease by \$100 as a result of Internet sales. Administrative and other marketing costs would increase by \$1 million. WSM estimates that the added convenience would generate a 5 percent increase in

What's New in the Fifth Edition?

Our primary goal in the fifth edition remains the same as in the previous three editions—to offer a cost accounting text that lets the student see the development of cost accounting tools and techniques as a natural response to decision making. We emphasize the intuition behind concepts and work to minimize the need to “memorize.” We believe that students who develop this intuition will, first, develop an appreciation of what cost accounting is about and, second, will have an easier time understanding new developments that arise during their careers. Each chapter clearly establishes learning objectives, highlights numerous real-world examples, and identifies where ethical issues arise and how to think about these issues. Each chapter includes at least one integrative case that illustrates the links among the topics.

We present the material from the perspective of both the preparer of information as well as those who will use the information. We do this so that both accounting majors and those students planning other careers will appreciate the issues in preparing and using the information. The opening vignettes tie to one of the *Business Application* features in the chapter to highlight the relevance of cost accounting to today's business problems. All chapters end with a *Debrief* that links the topics in the chapter to the decision problem faced by the manager in the opening vignette.

The fifth edition has been updated to include new discussion on the links between activity-based cost management and **lean manufacturing** and **lean accounting**, as well as new discussion on **strategy** and **performance**.

The end-of-chapter material has increased by almost 10-25 percent, depending on the chapter and much of the material retained from the fourth edition has been revised. Throughout the revision process, we have retained the clear writing style that is frequently cited as a strength of the text.

1 Cost Accounting: Information for Decision-Making

- New *Business Application* on supply chain.
- Updated link for IMA Ethics
- One new review question.
- Three new critical discussion questions.
- Two new exercises.
- One new problem.

2 Cost Concepts and Behavior

- New *Business Application* on the costs of eBooks vs. paper books.
- Two new review questions and critical thinking questions.

3 Fundamentals of Cost-Volume-Profit Analysis

- New *Business Application* on CVP analysis and on-demand services.
- One new review question.
- Two new critical discussion questions.
- Two new exercises and problems.

4 Fundamentals of Cost Analysis for Decision Making

- Two new review questions.
- One new critical discussion question, exercise and problem.

5 Cost Estimation

- Two new review question.
- One new critical discussion question.
- Three new exercises.
- One new problem.

6 Fundamentals of Product and Service Costing

- Two new review question.
- One new critical discussion question.
- Two new exercises.
- One new problem.

7 Job Costing

- Two new review questions.
- One critical discussion question.
- Two new exercises.

8 Process Costing

- Two new critical review questions.
- Four new exercises.
- One new problem.

9 Activity-Based Costing

- Added a new section on time-driven activity-based costing
- Five new review questions.
- Two new critical discussion questions.
- Four new exercises.
- Two new problems.

10 Fundamentals of Cost Management

- New *Business Application* on customer profitability-revenue and cost.
- One new review question.
- One new critical discussion question.
- Two new exercises and problems.

11 Service Department and Joint Cost Allocation

- Updated decision making with service department costs content.
- Three new review questions.

12 Fundamentals of Management Control Systems

- New *Business Application* on Teacher
- Six new review questions.
- Four new critical discussion questions.

13 Planning and Budgeting

- New *Business Application* using the budget to help manage cash flows.
- Four new review questions.
- One new critical discussion question.
- Two new exercises and problems.

14 Business Unit Performance Measurement

- One new review question and critical discussion question.
- Four new exercises.

15 Transfer Pricing

- Updated *Business Application* on transfer pricing.
- New *Business Application* on tax considerations in transfer pricing.
- Two new review questions.
- One new critical discussion question.
- Two new exercises.
- One new problem.

16 Fundamentals of Variance Analysis

- Two new review questions, critical discussion questions and exercises.

17 Additional Topics in Variance Analysis

- Two new review questions.
- One new critical discussion question.
- Two new exercises.
- One new problems.

18 Performance Measurement to Support Business Strategy

- Eight new critical discussion question.
- One new exercise and problem.

Appendix Capital Investment Decisions: An Overview

- Revised critical discussion questions and problems.



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Required=Results

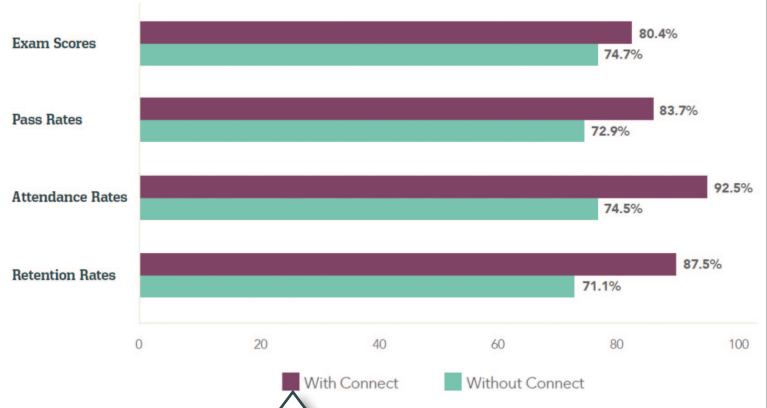


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