# COST ACCOUNTING

## A MANAGERIAL EMPHASIS

HORNGREN DATAR RAJAN BEAUBIEN GRAHAM

SEVENTH CANADIAN EDITION

# COST ACCOUNTING

## A MANAGERIAL EMPHASIS

**HORNGREN**
Stanford University

**DATAR**
Harvard University

**RAJAN**
Stanford University

**BEAUBIEN**
Dalhousie University

**GRAHAM**
University of Victoria

SEVENTH CANADIAN EDITION

PEARSON
Toronto

Editor-in-Chief for Arts, Business and Economics: Claudine O'Donnell
Acquisition Editor: Megan Farrell
Senior Marketing Manager: Loula March
Manager of Content Development: Suzanne Schaan
Developmental Editor: Suzanne Simpson Millar
Program Manager: Patricia Ciardullo
Project Manager: Sarah Gallagher
Production Editor: Vastavikta Sharma, Cenveo® Publisher Services
Copy Editor: Laurel Sparrow
Proofreader: Marg Bukta
Full Service Vendor: Cenveo Publisher Services
Permissions Project Manager: Joanne Tang
Photo Researcher: Aptara
Permissions Researcher: Aptara
Cover Designer: Anthony Leung
Interior Designer: Anthony Leung
Cover Image: J. A. Kraulis/Masterfile

Credits and acknowledgments for the material borrowed from other sources and reproduced, with permission, in this textbook appear on the appropriate page within the text.



10 9 8 7 6 5 4 3 2 1 [CKV]

**Library and Archives Canada Cataloguing in Publication**

Horngren, Charles T., 1926-, author Cost accounting : a managerial emphasis / Charles T. Horngren, Srikant M. Datar, Madhav V. Rajan, Louis Beaubien, Chris Graham.—7th Canadian edition.

Includes index.Revision of: Cost accounting : a managerial emphasis / Charles T. Horngren ... [et al.].—6th Canadian ed. —Don Mills, Ont. : Pearson Canada, 2012.ISBN 978-0-13-313844-3 (hbk.)

1. Cost accounting—Textbooks. I. Title.

HF5686.C8H59 2015 658.15'11 C2014-904869-6

PEARSON

ISBN 978-0-13-313844-3

To Our Families
The Horngren Family (CH)
Swati, Radhika, Gayatri, Sidharth (SD)
Gayathri, Sanjana, Anupama (MVR)

This effort is dedicated to Ian, Megan, Evan, Lucy, Alec and Molly (and Charlie, too).
*-Louis Beaubien*

To Professor Howard Teal (a previous Canadian author of Horngren et al.) who, along with Professor Rick Robertson, first got me excited about accounting. And to my wife Joan and daughter Adrienne, who put up with/supported me during my “creative” process!
*-Chris Graham*

*This page intentionally left blank*

# Brief Contents

# Table of Contents

# Preface

Success in any business—big or small—requires the use of cost and management accounting concepts to inform decision making. Cost accounting provides key data to managers for planning and control, as well as providing techniques for costing products and services and for measuring performance. This book focuses on how cost accounting helps managers make better decisions by using financial and nonfinancial information better. In order to build these skills, we focus on the basic concepts and analytical techniques that make cost accounting an essential part of business strategy.

## Hallmark Features of *Cost Accounting*

- Exceptionally strong emphasis on managerial uses of cost information
- Clarity and understandability of the text
- Excellent balance in integrating modern topics with traditional coverage
- Emphasis on human behaviour aspects
- Extensive use of real-world examples
- Ability to teach chapters in different sequences
- Excellent quantity, quality, and range of assignment material

The first 13 chapters provide the essence of a one-term (quarter or semester) course. There is ample text and assignment material in the book's 22 chapters for a two-term course. This book can be used immediately after the student has had an introductory course in financial accounting. Alternatively, this book can build on an introductory course in managerial accounting.

Deciding on the sequence of chapters in a textbook is a challenge. Since every instructor has a unique way of organizing his or her course, we utilize a modular, flexible organization that permits a course to be custom tailored. *This organization facilitates diverse approaches to teaching and learning*.

As an example of the book's flexibility, consider our treatment of process costing. Process costing is described in Chapter 17. Instructors interested in filling out a student's perspective of costing systems can move directly from job costing described in Chapter 4 to Chapter 17 without interruption in the flow of material. Other instructors may want their students to delve into activity-based costing and budgeting and more decision-oriented topics early in the course. These instructors may prefer to postpone discussion of process costing.

## New to This Edition

### Deeper Consideration of Global Issues

Businesses today have no choice but to integrate into an increasingly global ecosystem. Virtually all aspects of business—including supply chains, product markets, and the market for managerial talent—have become increasingly international in their outlook. To do this, we have focused on examples in **Vignette Boxes** and **Concepts in Action** which focus on the global context of businesses in the production, merchandising, and service sectors. We have also developed examples and discussions in the chapter material that focus on the importance of transfer pricing as a technique to manage tax strategy (Chapter 21), the different nature of process flows in inventory management (Chapter 19), and capital budgeting (Chapter 20).

We have expanded the discussion through the text on the role of accounting systems in fostering and supporting innovation and developing organizational strategy. We have also added ideas based on current research in areas of the balanced scorecard, performance management, and enterprise resource planning systems and information technology.

## Streamlined Presentation and Chapter-by-Chapter Changes

We continue to simplify and streamline our presentation to make it as easy as possible for students to learn the concepts, frameworks, and tools. We have attempted to balance this against the desire to provide comprehensive explanations reflecting current research and modern organizational practice, as well as to offer a complete set of problems for students to practise these concepts. There have been some major changes in the Seventh Canadian Edition of *Cost Accounting*. To ease your transition from the Sixth Canadian Edition, we highlight the following changes, by chapter.

Chapter 1 has been rewritten to include expanded discussions of ethics and sustainability. The chapter also reflects the shifting landscape of professional accounting in Canada, as we discuss the changes that are emerging with the creation of Chartered Professional Accountants (CPA) of Canada from the legacy designations: the Chartered Accountants of Canada, the Society of Certified Management Accountants of Canada, and the Certified General Accountants of Canada.

Chapters 2 and 3 have been revised to make it easier for students to understand core concepts in accounting and to provide the grounding for the decision-making framework to be used throughout *Cost Accounting*. The content also reflects real decision-making processes in real companies from the Canadian and global contexts.

Chapters 4 and 5 have been updated to include a substantial amount of new material to enhance the coverage of manufacturing overhead allocation and manufacturing overhead control. The material also highlights the process of developing cost allocation pools from standard accounting classifications. These changes are intended to advance the understanding of how costing systems such as activity-based costing can effectively be implemented.

Chapter 6 frames the budgeting process as a decision-making activity. The financial figures in the budget schedules and cash flow budget are now internally consistent. A list of commonly used budget techniques has been added. The discussion on sensitivity, kaizen, and activity-based costing budgets now appears in the appendix to the chapter.

Chapter 7 presents the levels of variance analysis in a more consistent manner. The discussion on Level 4 variances (substitutable inputs) now appears in the appendix to the chapter. The section on not-for-profit benchmarks has been rewritten to include a list of characteristics for good NFP benchmarks.

Chapter 8 has new calculations showing the importance of fixed overheads and break-even issues for the firm. Some of the discussions have been shortened to improve readability.

Chapter 9 has been updated to reflect ASPE/IFRS with regard to capacity decisions for external reporting. The sections on throughput costing and the impact of capacity decisions on break-even analysis have been moved to an appendix.

Chapters 10 and 11 are a practical guide to various cost estimation techniques and the determination of the relevance of costs. Chapter 19 from the Sixth Canadian Edition of *Cost Accounting* has been eliminated and the content redistributed to several chapters in the Seventh Canadian Edition—most significantly to Chapters 10 and 11. So, along with familiar discussions of regression analysis and enhanced topics on correlation versus causation, the chapter has new content such as the costs of quality and the impact of time on the costing and decision-making process.

Chapter 12 focuses on pricing decisions in the long- and short-term contexts, and builds on material in Chapters 10 and 11 to expand the understanding of opportunity and relevant costs in how a pricing decision is made.

Chapter 13 reflects the diverse applicability of the balanced scorecard as an evaluative, communication, and strategy formulation tool in decision making. Emphasis is placed on understanding its application in financial, operational, and sustainability decision making.

Chapter 14 contains new exhibits for the support cost allocation methods that combine a graphic presentation with the calculations. A summary chart comparing the advantages and disadvantages of the three methods has been added. References to matrix algebra and the appendix have been removed from the narrative.

Chapter 15 has been updated to reflect ASPE/IFRS with regard to joint cost allocations. The section and exhibits showing the production and sales method for byproduct accounting have been changed to eliminate the issues with rounding.

Chapter 16 discusses revenue allocation methods and customer profitability. The exhibits for revenue allocation have been summarized to allow for easier comparison of the various methods. The discussion around revenue variance analysis is now focused on the contribution margin approach.

In Chapters 17 and 18, a discussion of when to use process costing has been added to the narrative. A number of the exhibits were changed slightly to make them more consistent across the two chapters and to ensure numerical consistency.

Chapter 19 (formerly Chapter 20) builds on the efforts to streamline content in Chapters 10, 11, 17, and 18 and provides revised content to examine traditional and just-in-time purchasing. The focus remains on developing an effective costing strategy for inventory management.

Chapter 20 (formerly Chapters 21 and 22) represents one of the most significant changes for *Cost Accounting*. Previously, the discussion on capital budgeting spanned two chapters. The material has now been streamlined and consolidated to focus on the decision-making process of capital acquisitions, including the impact of tax in the Canadian context.

Chapter 21 (formerly Chapter 23) has been revised to address the use of transfer payments as a tax minimization strategy. The updated content focuses on real-world examples and broader strategic concepts including decentralization.

Chapter 22 (formerly Chapter 24) has been revised to focus on the increasing responsibility of the executives and boards of directors for corporate governance. This chapter reviews the most recent legislation in Canada, the United States, and the European Union and how it impacts both executive compensation and corporate governance. A new summary chart compares the four common performance measurement tools (ROS, ROI, RI, and EVA).

## MyAccountingLab

MyAccountingLab delivers proven results in helping individual students succeed. It provides engaging experiences that personalize, stimulate, and measure learning for each student, including a personalized study plan, mini cases, and videos. MyAccountingLab is the portal to an array of learning tools for all learning styles—algorithmic practice questions with guided solutions are only the beginning!

The following features are **NEW** to MyAccountingLab for the Seventh Canadian Edition:

### For Students

- **Adapative Assessment—**Integrated directly into the MyAccountingLab Study Plan, Pearson's adaptive assessment is the latest technology for individualized learning and mastery. As students work through each question, they are provided with a custom learning path tailored specifically to the concepts they need to practise and master.
- **Enhanced Pearson eText—**End-of-chapter MyAccountingLab assessments are now linked directly to the eText, providing students with a seamless reading and practising experience.
- **Dynamic Study Modules—**Canadian study modules allow students to work through groups of questions and check their understanding of foundational accounting topics. As students work through questions, the Dynamic Study Modules assess their knowledge and only show questions that still require practice. Dynamic Study Modules can be completed online using a computer, tablet, or mobile device.

## For Instructors

- **Learning Catalytics**—This "bring your own device" student engagement, assessment, and classroom intelligence system allows instructors to engage students in class with a variety of question types designed to gauge student understanding.
- **Chartered Professional Accountant Competency Mapping and AACSB Learning Outcome Mapping**—Instructors can now view MyAccountingLab assessments by CPA Competencies and select questions based on the specific competencies that they'd like to test. Instructors can also sort questions by AACSB Learning Outcomes.

# Additional Resources

The following resources are available for Instructors at the Instructor's Resource Centre on the catalogue, at www.pearsoncanada.ca/highered.

- **Instructor's Solutions Manual** provides instructors with a complete set of solutions to all the end-of-chapter material in this text. Available in both Word and PDF formats.
- Pearson **TestGen,** the test bank for *Cost Accounting*, offers a comprehensive suite of tools for testing and assessment. TestGen allows educators to easily create and distribute tests for their courses, either by printing and distributing through traditional methods or by online delivery. The more than 2,200 items are linked to the Learning Objectives, and ranked by difficulty.
- **Test Item File.** All the test questions from the TestGen testbank are also available in Microsoft Word format, available within MyStatLab or at www.pearsoncanada.ca/highered.
- **Instructor's Teaching Tips Digital eText Resource** Instructors can easily locate useful teaching tips and resources throughout the eText, annotated by apple icons throughout the chapters. This eText is located in MyAccountingLab.
- **PowerPoint Presentations** prepared for each chapter of the text. The interactive presentation offers helpful graphics that illustrate key figures and concepts from the text, chapter outlines, and additional examples. In addition, instructors can custom-create their own using a combination of these supplied slides and the Image Library of exhibits.
- **Image Library** includes the exhibits and illustrations from the text.

## Pearson Custom Library

For enrolments of at least 25 students, you can create your own textbook by choosing the chapters that best suit your own course needs. To begin building your custom text, visit www.pearsoncustomlibrary.com. You may also work with a dedicated Pearson Custom editor to create your ideal text—publishing your own original content or mixing and matching Pearson content. Contact your local Pearson representative to get started.

## CourseSmart for Instructors

CourseSmart goes beyond traditional expectations, providing instant, online access to the textbooks and course materials you need at a lower cost for students. And even as students save money, you can save time and hassle with a digital eTextbook that allows you to search for the most relevant content at the very moment you need it. Whether it's evaluating textbooks orcreating lecture notes to help students with difficult concepts, CourseSmart can make life a little easier. See how when you visit www.coursesmart.com/instructors.

## CourseSmart for Students

CourseSmart goes beyond traditional expectations, providing instant, online access to the textbooks and course materials you need at an average savings of 60 percent. With instant access from any computer and the ability to search your text, you'll find the content you need quickly, no matter where you are. And with online tools like highlighting and note-taking, you can save time and study efficiently. See all the benefits at www.coursesmart.com/students.

## Learning Solutions Consultants

Pearson's Learning Solutions consultants work with faculty and campus course designers to ensure that Pearson products, assessment tools, and online course materials are tailored to meet your specific needs. This highly qualified team is dedicated to helping schools take full advantage of a wide range of educational resources by assisting in the integration of a variety of instructional materials and media formats. Your local Pearson Education sales representative can provide you with more details on this service program.

# ACKNOWLEDGMENTS

*Cost Accounting*, Seventh Canadian Edition, is the product of a rigorous research process that included multiple reviews at various stages of its development to ensure the revision meets the needs of Canadian students and instructors. The extensive feedback helped shape this edition into a clearer, more readable, and fully streamlined textbook—in both the chapter content and the assignment material.

We are indebted to those who provided their time, support, and feedback throughout this process:

Gillian Bubb
*University of the Fraser Valley*

Lynn Carty
*University of Guelph*

Ann-Marie Cederholm
*Capilano University*

Heather Cornish
*Northern Alberta Institute of Technology*
Susan Ferris,
*CGA Canada*

Majidul Islam
*Concordia University*

Mandy Kendall
*University of Northern British Columbia*

Elin Maher
*University of New Brunswick*

Winston J. Marcellin
*George Brown College*

John Parkinson
*York University*

Humayun Qadri
*MacEwan University*

Daphne Rixon
*Saint Mary's University*

John Shepherd
*Kwantlen Polytechnic University*

Glen Stanger
*Douglas College*

Helen Vallee
*Kwantlen Polytechnic University*

Judith Watson
*Capilano University*

We also want to thank our colleagues who helped us greatly by accuracy checking the text and supplements.

We thank the people at Pearson Canada for their hard work and dedication, including Megan Farrell who put together an awesome team. We extend special thanks to Suzanne Simpson Millar, Queen Bee at Simpson Editorial Services, who was the developmental editor on this edition. Suzanne took charge of this project, found the resources where none seemed to exist, and directed the project successfully across the finish line. Suzanne accomplished the impossible with grace, expertise, unceasing encouragement, and extraordinary skill. This book would not have been possible without her dedication and diplomacy. Laurel Sparrow added her substantive and copyediting talents to the quality, consistency, and accuracy of this edition. Vastavikta Sharma and others expertly managed the production aspects of all the manuscript preparation with superb skill and tremendous dedication. We are deeply appreciative of their good spirits, loyalty, and ability to stay calm in the most hectic of times.

Appreciation also goes to the Chartered Professional Accountants of Canada, Certified General Accountants Association of Canada, the Society of Management Accountants of Canada, and many other publishers and companies for their generous permission to quote from their publications.

We are grateful to the professors who contributed assignment material for this edition. Their names are indicated in parentheses at the start of their specific problems. We are also grateful for the development of Excel program material.

Our task is to serve the learning needs of students and teaching needs of instructors as they surmount the challenge of the impossible—creating, managing, and controlling the profitability of future outcomes. We welcome your comments and suggestions on how to serve you better.

Louis Beaubien
Chris Graham

# About the Authors

**LOUIS BEAUBIEN—**Louis Beaubien is a Chartered Professional Accountant and holds a PhD from the Ivey School of Business at the University of Western Ontario. Dr. Beaubien's professional experience includes the financial services, information technology and healthcare industry. He is an Associate Professor of Accounting at the Rowe School of Business, Dalhousie University and the Department of Community Health and Epidemiology in the Faculty of Medicine at Dalhousie University. His research is focused on the effective, efficient and equitable delivery of healthcare.

**CHRIS GRAHAM—**Chris Graham joined the Gustavson School of Business at the University of Victoria on a full-time basis in 2003. He instructs accounting and finance in both the bachelor and master programs. His main areas of interest are revenue-pricing models for both profit and non-profit organizations, and First Nations economic development activities. Of course, these interests now come after his wife Joan and daughter Adrienne. He also tries to find time to sail and fix old sports cars.

Chris has an undergraduate degree in economics from Queen's University at Kingston. He also has a master of business administration from the Ivey School of Business, University of Western Ontario. Most recently, he earned his professional accountant's designation from the Chartered Professional Accountants of BC.

# 1 The Accountant's Vital Role in Decision Making

Paul Sakuma/AP Images

## iTunes Variable Pricing: Downloads Are Down, but Profits Are Up[1]

Can selling less of something be more profitable than selling more of it? In 2009, Apple changed the pricing structure for songs sold through iTunes from a flat fee of \$0.99 to a three-tier price point system of \$0.69, \$0.99, and \$1.29. The top 200 songs in any given week make up more than one-sixth of digital music sales. Apple began charging the highest price (\$1.29) for these songs—songs by artists like Adele and Carly Rae Jepsen.

Six months after Apple implemented the new pricing model, the downloads of the top 200 tracks were down by about 6%. But although the number of downloads dropped, the higher prices generated more revenue than the old pricing structure. Because Apple's iTunes costs—wholesale song costs, network and transaction fees, and other operating costs—do not vary based on the price of each download, the profits from the 30% price increase more than made up for the losses from the 6% decrease in volume. Apple has also applied this new pricing structure to movies available through iTunes, which range from \$14.99 for new releases to \$9.99 for most other films.

To increase profits beyond those created by higher prices, Apple also began to manage the costs inherent in iTunes. Transaction costs (what Apple pays credit-card processors like Visa and MasterCard) have decreased, and Apple has also reduced the number of people working in the iTunes store.

By studying cost accounting, you will learn how successful managers and accountants run their businesses and prepare yourself for leadership roles in the firms you work for. Many large companies, including Nike and the Pittsburgh Steelers, have senior executives with accounting backgrounds.

### Learning Objectives

1. Explain how management accounting data are essential to the process of rational operating and strategic decision making.
2. Explain how business functions help management accountants organize accounting information.
3. Identify the five steps of decision making and the role of relevant accounting information.
4. Describe key guidelines management accountants follow and roles they assume to support management decisions.
5. Distinguish among corporate governance, professional codes of conduct, ethics, and corporate social responsibility.

---

[1] *Sources*: Apple, Inc. Frequently asked questions (FAQ) for purchased movies; Anthony Bruno and Glenn Peoples. 2009. Variable iTunes pricing a moneymaker for artists. Reuters, June 21; The long tale? 2009. *Billboard*, November 14. http://www.reuters.com/article/idUSTRE55K0DJ20090621; Nekesa Mumbi Moody. 2012. Adele, Carly Rae Jepsen top iTunes' year-end sales. *Billboard*, December 13; Eric Savitz. 2007. Apple turns out, iTunes makes money, Pacific Crest says; subscription service seems inevitable. *Barron's* "Tech Trader Daily" blog, April 23. http://blogs.barrons.com/techtraderdaily/2007/04/23/apple-turns-out-itunes-makes-money-pacific-crest-says-subscription-service-seems-inevitable/.

## Accounting Systems: Financial and Management Accounting

► **LO 1**

Explain how management accounting data are essential to the process of rational operating and strategic decision making.

Accounting systems are used to record economic events and transactions, such as sales and materials purchases, and process the data into information helpful to managers, sales representatives, production supervisors, and others. Processing any economic transaction means collecting, categorizing, summarizing, and analyzing. For example, costs are collected by category, such as materials, labour, and shipping. These costs are then summarized to determine a firm's total costs by month, quarter, or year. Accountants analyze the results and together with managers evaluate the organization (e.g., cost and revenue changes from one period to the next). Accounting systems also provide the information found in a firm's statement of comprehensive income, statement of financial position, statement of cash flows, and performance reports, such as the cost of serving customers or running an advertising campaign. Managers use this information to make decisions about the activities, businesses, or functional areas they oversee. For example, a report that shows an increase in sales of laptops and iPads at an Apple store may prompt Apple to hire more salespeople at that location. Understanding accounting information is essential for managers in doing their jobs.

Costs and other data are part of the **management information system (MIS)**. The MIS database stores information in a way that allows sales, distribution, and production managers to access the information they need. Many companies build their own comprehensive database, called an **enterprise resource planning (ERP) system**. The ERP software integrates data and provides managers with reports that highlight the interdependence of different business activities.

**Cost accounting** measures and reports financial and nonfinancial information related to the costs of acquiring and using resources. Cost accounting reports show how costs accumulate as corporations use resources to produce and sell their products and services. Costs are recovered when customers purchase products and services. **Cost management** includes the activities of identifying, reporting, and analyzing all costs of operations. Management decisions range from the quantity and quality of materials used to whether to shut down an entire company. As part of cost management, managers often deliberately incur additional costs in the short run—for example, in advertising and product modifications—to enhance revenues and profits in the long run.

**Financial accounting** focuses on reporting to external parties such as investors, government agencies, banks, and suppliers. The goal is to present fairly to external parties how the business activities during a specific time period affected the economic health of a company. This is called **economic substance**, which is the financial outcome of all the different types of business transactions that happened. Financial accountants report financial outcomes based on generally accepted accounting principles (GAAP) and standards.[2] Reports formatted in a way similar to statements of financial position, statements of comprehensive income, and statements of cash flows are common to both management accounting and financial accounting.

**Management accounting** measures, analyzes, and reports financial and nonfinancial information to internal managers. The goal is to use past performance to predict the future. The internal reports should plainly inform managers of the financial results of actual operations. The reports should also show how activities can be changed to affect and improve what will happen in the future. **Management accountants** reorganize and analyze financial and non-financial data using rigorous methods. The rigour of management accounting methods is intended to support managers in their efforts to decide on changes that will improve future financial success. The distinction between management accounting and cost accounting is not clear-cut, and we often use these terms interchangeably in the book.

Exhibit 1-1 summarizes the major differences between management accounting and financial accounting. Note, however, that reports such as statements of financial position,

---

[2] Generally Accepted Accounting Principles (i.e., GAAP) is a generic term referring to the practices and rules of accounting consistent with laws and regulations. In Canada, depending on the nature of the organization, GAAP refers to either International Financial Reporting Standards (IFRS) or Accounting Standards for Private Enterprises (ASPE).

**Exhibit 1-1** Major Differences Between Management Accounting and Financial Accounting

| | Management Accounting | Financial Accounting |
|---|---|---|
| **Purpose of information** | To help managers make decisions to fulfill an organization's goals | To communicate the organization's financial position to investors, banks, regulators, and other outside parties |
| **Primary users** | Managers of the organization | External users such as investors, banks, regulators, and suppliers |
| **Focus and emphasis** | Future-oriented (budget for 2015 prepared in 2014) | Past-oriented (reports on 2014 performance prepared in 2015) |
| **Rules of measurement and reporting** | Internal measures and reports do not have to follow IFRS/ASPE but are based on cost–benefit analysis | Financial statements must be prepared in accordance with IFRS/ASPE and be attested to by independent auditors |
| **Time span and types of reports** | Varies from hourly information to 15 to 20 years, with financial and nonfinancial reports on products, departments, territories, and strategies | Annual and quarterly financial reports, primarily on the company as a whole, and presented as consolidated financial statements |
| **Behavioural implications** | Designed to influence the behaviour of managers and other employees | Primarily reports economic events but also influences behaviour because managers' compensation is often based on reported financial results |

statements of comprehensive income, and statements of cash flows are common to both management accounting and financial accounting.

Business operations are complex sets of activities, and to maximize profit considerable information, analysis, and decision making is required in advance of actual action. Nevertheless, once a plan is implemented most operations run with little intervention from managers. Operating decisions are needed when exceptions arise, such as supplies of a raw material fail to be delivered, workers go on strike, or machines break down. Decisions are needed when there are real alternatives that managers can choose from to deal with operating problems. Without high-quality information, business could not be conducted.

## Strategic Decisions and Management Accounting

**Strategy** specifies how an organization matches its own capabilities with the opportunities in the marketplace. One of two strategies is available: either cost leadership or value leadership by means of product (service) differentiation.[3] Companies such as LG generate growth and profits by providing the right combination of generic product features—quality and low price (cost leadership). Companies such as Apple Inc. generate growth and profits by offering unique, innovative products or services (value leadership). Customers who believe the features are valuable will pay a higher price for this type of product. Both LG and Apple Inc. understand that their customers are willing to spend their scarce resources on products where there is a value-added component—whether that's low price or innovation (or both). Pursuing the most appropriate strategy sustains competitive advantage for each type of company.

Deciding between these strategies is a critical part of what managers do. Management accountants work closely with managers in formulating strategy by providing information and helping them answer questions such as:

- Who are our most important customers, and how do we deliver value to them?
- What substitute products exist in the marketplace, and how do we attract customers to purchase our product instead of others?
- What are we particularly competent at doing? Innovating? Applying technology? Production? Multiple factors such as price, quality, and timely delivery drive the customer's perception of value. How do we decide to create that value in an affordable way?

[3] Michael Porter (Harvard University) presented strategy as an interplay of internal and external factors. He distinguished the two generic strategies of differentiation and cost leadership.

- Will adequate cash be available to fund the strategy? If not, how can we acquire these additional funds?

The best-designed strategies and the best-developed capabilities are of no value unless they are executed well. In the next section, we describe a common framework within which managers take action to create value for their customers and how management accountants help them do it.

## Value-Chain and Supply-Chain Analysis and Key Success Factors

▶ **LO 2**

Explain how business functions help management accountants organize accounting information.

Customers demand more than a low price from companies. They expect a useful, quality product or service delivered in a timely way. These factors influence how customers experience their consumption of a product or service and assess its value-in-use. The more positive their experience, the higher is their perceived value added.

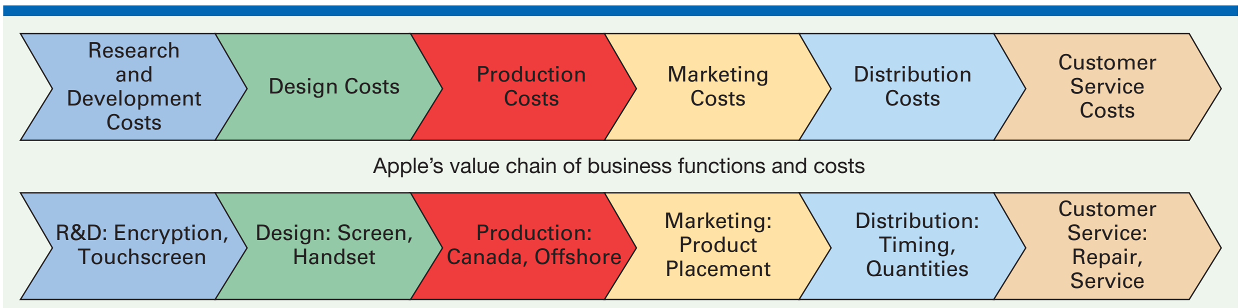
### Value-Chain Analysis

The **value chain** is the sequence of business functions in which customer usefulness is added to products or services. The flow of costs incurred in a corporation can be classified into the value-adding activities of research and development (R&D), design, production, marketing, distribution, and customer service. From innovation through to verifying customer satisfaction, these costs accumulate and cannot be recovered, plus some reasonable profit, unless customers are willing to pay.

Exhibit 1-2 illustrates these functions using Apple's iPhone division as an example. The business functions are coordinated to make sure that the money being spent on R&D, for example, will provide features of a product that will satisfy customers and for which they will pay. Cost, quality, and the speed with which new products are developed require teamwork among managers across the business functions. For example, it may be worthwhile to increase spending on product design if it saves more on costs related to customer service.

1. **Research and development (R&D)**—Generating and experimenting with ideas related to new products, services, or processes. At Apple, this function includes research on backup systems to ensure reliable access to its communications system.
2. **Design of products, services, or processes**—Detailed planning and engineering of products, services, or processes. Design at Apple, includes determining the number of component parts in a smartphone model and the effect of alternative product designs on quality and manufacturing costs.
3. **Production**—Acquiring, coordinating, and assembling resources to produce a product or deliver a service. Production of an iPhone includes the acquisition and assembly of the electronic parts, the handset, and the packaging used for shipping.
4. **Marketing**—Promoting and selling products or services to customers or prospective customers. Apple markets its iPhones through the internet, trade shows, and advertisements in newspapers and magazines.

**Exhibit 1-2** The Value Chain of Business Functions and Costs



5. **Distribution—**Delivering products or services to customers. Apple distribution systems to deliver iPhones include shipping globally to mobile telecommunications providers, governments, retail outlets, and direct sales via the internet.
6. **Customer service—**Providing after-sale support to customers. Apple provides customers both telephone and online help to set up and troubleshoot its smartphones.

## Supply-Chain Analysis

Supply-chain analysis is one way companies can implement strategy, cut costs, and create value. The term **supply chain** describes the flow of goods, services, and information from their initial sources to the delivery of products and services to consumers, regardless of whether those activities occur in one or more organizations. Consider Apple. Many companies play a role in bringing its iPhone products to consumers. Exhibit 1-3 presents an overview of Apple's supply chain with various global suppliers.

Cost management emphasizes integrating and coordinating activities across all companies in the supply chain, as well as across each business function in an individual company's value chain, to reduce costs. For example, Apple arranges for frequent delivery of small quantities of expensive materials like microchips directly to the production floor of its assembling companies around the world. This strategy reduces materials-handling costs from inventories held inside the factory.

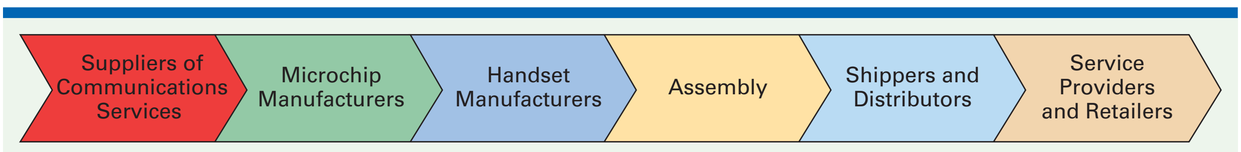
**Note** Customer relationship management (CRM) refers to a strategy that integrates people and technology across all business functions and enhances relationships with customers, suppliers, and other stakeholders.

## Key Success Factors (KSF)

Customers continue to demand that companies use the value chain and supply chain to deliver ever-improving levels of performance. **Key success factors** are those activities that are essential to successful corporate performance and include:

- **Cost and efficiency—**Companies such as IKEA set a target price and operating profit for a product first. Then, working together, managers and management accountants achieve the target cost by minimizing necessary activities and tasks in all value-chain business functions, from R&D through to customer service.
- **Quality—**Customers expect high levels of quality. Total quality management (TQM) directs attention toward simultaneously improving all operations throughout the value chain to deliver products and services that exceed customer expectations. TQM includes:
  - Designing products or services to meet the needs and wants of customers.
  - Producing products with zero (or minimal) defects and waste.
  - Maintaining low inventories.
- **Time—**Every value-chain activity takes time. The increasing pace of technological innovation has led to the need for companies to bring new products out faster because of shorter product life cycles. Customer response time continues to increase in importance. Companies compete to meet or exceed customers' expectations of responsiveness in production, delivery, and after-sales service.
- **Innovation—**Constant flows of innovative products in response to customer demand result in ongoing growth and success. Management accountants help managers evaluate alternative investment decisions and R&D decisions.

**Exhibit 1-3** Supply Chain for Apple



Management accountants help managers track and compare a company's performance on key success factors relative to their competitors. Tracking what is happening in other companies serves as a benchmark and alerts managers to the changes in the industry. The goal is for a company to continuously improve its critical operations—for example, on-time arrival for WestJet, customer access for online auctions at eBay, and cost reduction at Sumitomo Electric. Sometimes more fundamental changes in operations—such as redesigning a manufacturing process to reduce costs—may be necessary.

Strategy requires careful analyses of information and a decision about the most appropriate alternative to assure long-term success. However, successful strategy implementation requires more than value-chain and supply-chain analysis and execution of key success factors. Central to success is a rigorous decision-making process. Managers can use a well-known framework to assist them in improving the quality of their decisions. The framework encourages objective analyses of evidence in a logical and disciplined process.

## Concepts in Action

## Management Accounting Beyond the Numbers

To people outside the profession, it may seem like accountants are just "numbers people." It is true that most accountants are adept financial managers, yet their skills do not stop there. The successful management accountant possesses several skills and characteristics that reach well beyond basic analytical abilities.

*Management accountants must work well in cross-functional teams and as business partners.* In addition to being technically competent, the best management accountants work well in teams, learn about business issues, understand the motivations of different individuals, respect the views of their colleagues, and show empathy and trust.

*Management accountants must promote fact-based analysis and make tough-minded, critical judgments without being adversarial.* Management accountants must raise tough questions for managers to consider, especially when preparing budgets. They must do so thoughtfully and with the intent of improving plans and decisions. Before the investment bank JP Morgan lost more than $6 billion on "exotic" financial investments (credit-default swaps) in 2012, controllers should have raised questions about these risky investments and the fact that the firm was essentially betting that improving economic conditions abroad would earn it a large profit.

*They must lead and motivate people to change and be innovative.* Implementing new ideas, however good they may be, is difficult. When the United States Department of Defense (DoD) began consolidating more than 320 finance and accounting systems into a common platform, the accounting services director and his team of management accountants held meetings to make sure everyone in the agency understood the goal for such a change. Ultimately, the DoD aligned each individual's performance with the transformative change and introduced incentive pay to encourage personnel to adopt the platform and drive innovation within this new framework.

*They must communicate clearly, openly, and candidly.* Communicating information is a large part of a management accountant's job. When premium car companies such as Rolls Royce and Porsche design new models, management accountants work closely with engineers to ensure that each new car supports a carefully defined balance of commercial, engineering, and financial criteria. These efforts are successful because management accountants clearly communicate the information that multi-disciplinary teams need to deliver new innovations profitably.

*They must have a strong sense of integrity.* Management accountants must never succumb to pressure from managers to manipulate financial information. They must always remember that their primary commitment is to the organization and its shareholders. In 2012, Hewlett-Packard wrote down $8.8 billion on the value of British software maker Autonomy, which it acquired in 2010, due to serious accounting problems. Hewlett-Packard has accused senior managers at Autonomy of "serious accounting improprieties" and "outright misrepresentations" by mischaracterizing some sales of low-margin hardware as software and recognizing some deals with partners as revenue, even when a customer never bought the product. These actions inflated Autonomy's revenue and profitability, which made the company a more attractive acquisition target.

*Sources*: United States Senate Permanent Subcommittee on Investigations. *JPMorgan Chase Whale Trades: A Case History of Derivatives Risks and Abuses*. Washington, DC: Government Printing Office, March 15, 2013; Wendy Garling, Winning the Transformation Battle at the Defense Finance and Accounting Service. Balanced Scorecard Report, May–June 2007; Bill Nixon, John Burns, and Mostafa Jazayeri. The role of management accounting in new product design and development decisions. Volume 9, Issue 1. London: Chartered Institute of Management Accountants, November 2011; and Ben Worthen, "H-P Says It Was Duped, Takes $8.8 Billion Charge," *The Wall Street Journal* (November 12, 2012).

# Decision Making, Planning, and Control: The Five-Step Decision-Making Process

We will apply and explain the five-step decision-making process using *Best News*, a fictional national newspaper, as an example. The five-step process is a robust and versatile framework within which to decide the best way to address a wide variety of operating and strategic challenges.

A key challenge for Nicole Simpson, the manager of *Best News*, was to increase revenues. To achieve this goal, Nicole worked through the five-step decision-making process.

▶ **LO 3**

Identify the five steps of decision making and the role of relevant accounting information.

**1. Identify the problem and uncertainties** Nicole's MIS reported a steady decline in revenue and Nicole and her team agreed that they must increase revenue without a disproportionate increase in costs.

**2. Obtain information** Decisions cannot be reasonably made without relevant and reliable information to help managers understand the uncertainties. Nicole asked her marketing manager to talk to some representative readers to gauge how they might react to an increase in the newspaper's selling price. She asked her advertising sales manager to talk to current and potential advertisers to get a better understanding of the advertising market. She also reviewed the effect that past price increases had on readership. Ramon Sandoval, the management accountant at *Best News*, provided information about past increases or decreases in advertising rates and the subsequent changes in advertising revenues. He also collected and analyzed information on advertising rates charged by competing media outlets, including other newspapers.

**Note** What is happening in step 2 is called *benchmarking.*

**3. Make predictions about the future** On the basis of the information she obtained, Nicole can improve her predictions about the future. Her analysis of the marketing information indicates that readers would be quite upset if she increased prices. One result would be a significant drop in readership volume, which would make Nicole's problem worse, not better. But in contrast, after analyzing the information on advertising rates, it is clear Nicole would not lose any advertisers nor would the pages of advertising space sold decrease if she increased the rates. Ramon's information indicated a likely market-wide increase in all media advertising rates. None of Nicole's predictions are certain, but she is confident enough to decide to raise advertising rates and not subscription prices.

**4. Decide on one of the available alternatives** Nicole communicated her decision to the sales department to increase advertising rates to $5,200 per page starting March 1, 2016—a 4% increase.

Steps 1 through 4 can be considered planning. **Planning** is a purposeful analysis of information to select and rank in importance the goals of an organization. Rigorous analyses are how managers make reasonable predictions about the best alternative set of actions to take to achieve goals. Management accountants are partners in these planning activities because they can explain and interpret financial and nonfinancial information to team members. Together, the team identifies activities that create value and the key success factors.

The most important planning tool is a budget. A **budget** is the quantitative expression of management's proposed plan of action; it is an aid to coordinating what must be done and when to implement a successful plan.

**5. Implement the decision, evaluate performance, and learn** Managers at *Best News* take actions to implement the March 2016 budget. Management accountants collect information to follow through on how actual performance compares to planned or budgeted performance (also referred to as scorekeeping). The comparison

**Exhibit 1-4** Performance Report of Advertising Revenues at *Best News* for March 2016

| | Actual Result (1) | Budgeted Amount (2) | Difference: (Actual Result – Budgeted Amount) (3) = (1) – (2) | Difference as a Percentage of Budgeted Amount (4) = (3) ÷ (2) |
|---|---|---|---|---|
| Advertising pages sold | 760 pages | 800 pages | 40 pages Unfavourable | 5.0% Unfavourable |
| Average rate per page | $5,080 | $5,200 | $120 Unfavourable | 2.3% Unfavourable |
| Advertising revenues | $3,860,800 | $4,160,000 | $299,200 Unfavourable | 7.2% Unfavourable |

of actual performance to budgeted performance is the control or post-decision role of information.

When exercising **control**, managers compare actual and targeted nonfinancial measures as well as financial measures and take corrective actions. Performance measures tell managers if subunits are performing as predicted. Rewards linked to achievement motivate managers, and rewards are both intrinsic (self-satisfaction for a job well done) and extrinsic (salary, bonuses, and promotions). A budget serves as both a control and a planning tool since it is a comparison benchmark against actual performance.

Consider performance evaluation at *Best News*. During March 2016, the newspaper sold advertising, issued invoices, and received payments that were all recorded in the accounting system. Exhibit 1-4 shows *Best News's* performance report of advertising revenues for March 2016. This report indicates that 760 pages of advertising (40 pages fewer than the budgeted 800 pages) were sold. The average rate per page was $5,080, compared with the budgeted $5,200 rate, yielding actual advertising revenues of $3,860,800. The actual advertising revenues were $299,200 less than the budgeted $4,160,000. The performance report in Exhibit 1-4 spurs investigation and learning.

The data in this performance report would prompt the management accountant to raise several questions about the implementation of the plan. This is not about laying blame, but rather is an opportunity to ask questions and learn.

Management accountants might consider questions such as:

- Is the strategy of differentiating *Best News* from other newspapers attracting more readers?
- In implementing the new advertising rates, did the marketing and sales department make sufficient efforts to convince advertisers that, even with the higher rate of $5,200 per page, advertising in *Best News* was a good buy?
- Why was the actual average rate per page $5,080 instead of the budgeted rate of $5,200?
- Did some sales representatives offer rate discounts?
- Did economic conditions cause the decline in advertising revenues?
- Did technological changes create alternative business processes or models, making previous ones less effective?
- Are revenues falling because editorial and production standards have declined?

Answers to these questions could prompt the newspaper's publisher to take subsequent actions, including, for example, adding more sales personnel or making changes in editorial policy. Good implementation requires the marketing, editorial, and production departments to work together and coordinate their actions and develop action plans.

The left side of Exhibit 1-5 provides an overview of the decision-making processes at *Best News*. The right side of the exhibit highlights how the management accounting system aids in decision making.

Action plans often include targets for market share, quality, new-product development, and employee satisfaction, but managers should understand that plans must be flexible because the future and outcomes are always uncertain. Unforeseeable outcomes often arise, and flexibility ensures that managers can seize unforeseen opportunities and remedy unforeseen threats to success. The plan is not a guarantee of any outcome.

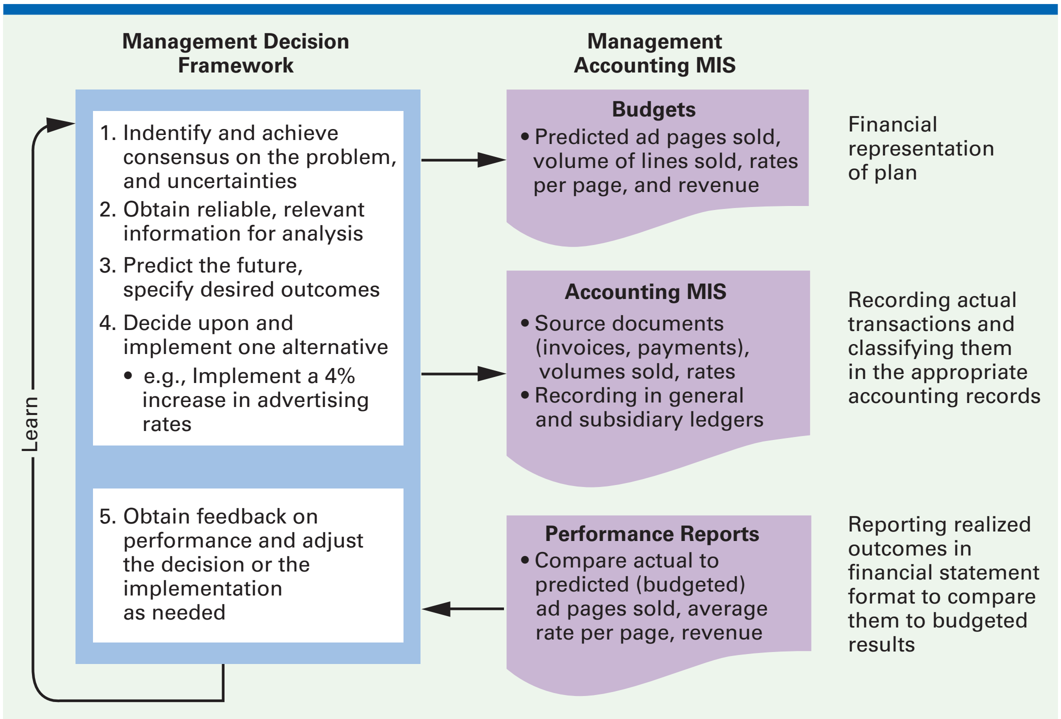



**Exhibit 1-5** How Accounting Aids Decision Making, Planning, and Control at *Best News*

## Key Management Accounting Guidelines and Organization Structure

▶ **LO 4**
Describe key guidelines management accountants follow and roles they assume to support management decisions.

Three guidelines help management accountants provide the most value to their companies in strategic and operational decision making:

- Use a cost–benefit approach.
- Recognize both behavioural and technical considerations.
- Use different costs for different purposes.

### Cost–Benefit Approach

The **cost–benefit approach** (risk/return, downside risk/upside potential) is used to make resource allocations such that the expected benefits exceed the expected costs. The cost-benefit approach should be used to make resource-allocation decisions, such as whether to purchase a new software package or hire a new employee. This approach requires explicit comparisons of the financial costs and benefits of different alternatives. Often good ideas provide too little **upside potential** or benefit for the predicted costs that will be incurred. At other times the upside potential may be quite high, but the **downside risk** of failure is also quite high. When forecasting costs and benefits, managers should take uncertainty into consideration when they combine the two factors of risk and return in calculating the benefits.

### Behavioural and Technical Considerations

Consider the human (or behavioural) side of why budgeting is used. **Behavioural considerations** motivate managers and other employees to try to achieve the goals of the organization. Budgets improve decisions within an organization because of better collaboration, planning, and motivation. The **technical considerations** help managers make wise economic decisions. Technical data (e.g., costs in various value-chain categories) in