

Managerial Accounting



Canadian Second Edition

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VISUAL WALK-THROUGH

A chapter-opening vignette shows why the topics in the chapter are important to companies and businesspeople.


Learning objectives are the important concepts in each chapter. Expressed in everyday language, these LOs are mapped throughout the chapter, end-of-chapter assessment, and MyAccountingLab; this allows students to accurately track their understanding of each learning objective.

The interim results posted for Bombardier Inc.
 in April 2009 showed that even with revenues of \$4.5 billion and a net income of \$158 million, the effects of the recent economic downturn were still affecting the operations of this global aerospace and rail transportation company. These figures were down from the \$4.8 billion in revenues and \$229 million in net income recorded in the first quarter of 2008.

These overall numbers hide the reality that not all of Bombardier's products were suffering from the recession. In fact, the Bombardier Transportation division increased the percentage of its earnings before interest and taxes (EBIT) from 4.9% to 5.6% of sales compared with the same period in the previous year. This shows that although the Aerospace division was experiencing cancellations of orders that expanded new orders, the Transportation division was growing. Pierre Baudoin, president and CEO of Bombardier, stated in a press release issued with the interim financial statements that the company was continuing to invest in Aerospace and Transportation products in order to weather the economic storm at that time.

Bombardier Aerospace, touted by the General Aviation Manufacturers Association as the market leader in terms of revenues and the number of units of business aircraft delivered to customers, is currently developing a new aircraft, the Learjet 85, which is targeted to business wishing to purchase their own corporate jets.

It may appear as though Bombardier continues its operations almost effortlessly. However, an economic downturn can heighten the issues that a company faces, and many decisions need to be made. How much should be spent on research and development of new products when orders for current models are being cancelled? Is the current manufacturing doing working efficiently? Are there cost-cutting measures that can be implemented during times of reduced cash inflow? In this chapter, we talk about many costs that both managers and management accountants must understand to successfully run a business.



Sources: Bombardier Inc. and its subsidiaries

Building Blocks of Managerial Accounting

Learning Objectives

- 1 Distinguish among service, merchandising, and manufacturing companies.
- 2 Describe the value chain and its elements.
- 3 Distinguish between direct and indirect costs.
- 4 Identify the inventoriable product costs and period costs of merchandising and manufacturing firms.
- 5 Prepare financial statements for service, merchandising, and manufacturing companies.
- 6 Describe costs that are relevant and irrelevant for decision making.
- 7 Classify costs as fixed or variable, and calculate total and average costs at different volumes.

So far, we have seen how managerial accounting provides information that managers use to run their businesses more efficiently. Managers must understand basic managerial accounting terms and concepts before they can use the information to make good decisions. This terminology provides the common ground through which managers and accountants communicate. Without a common understanding of these concepts, managers may ask for (and accountants may provide) the wrong information for making decisions. As you will see, different types of costs are useful for different purposes. Both managers and accountants must have a clear understanding of the situation and the types of costs that are relevant to the decision at hand.

NEW!

Sustainability

Sustainability Boxes are integrated into the body of each chapter, providing students with insight on how sustainability applies to accounting concepts. Related questions are included in the end-of-chapter assessment.

Sustainability and Job Costing

Job cost records serve a vital role for manufacturers who embrace sustainability. Since job cost records contain information about the direct materials, direct labour, and manufacturing overhead assigned to each job, they capture the essential resources required to manufacture a product. The summary information on the job cost records can be enhanced to provide management with further information about how the product or production process may affect the environment, employees involved in the manufacturing process, future consumers of the product, and future disposal of the packaging materials and product itself.

For example, the direct materials section of the job cost record can be broken down into subcategories that provide management with useful environmental information. Categories might include the following:

- material inputs that are post-consumer-use or recycled materials
- toxic versus non-toxic materials
- packaging materials that can be recycled or composted versus those that will end up in a landfill
- materials sourced from local suppliers versus those sourced from geographically distant suppliers (thereby increasing the company's carbon footprint)
- materials that will become waste as a result of the production process
- materials sourced from companies that embrace fair-labour practices and environmental sustainability
- materials with heavy fossil-fuel footprints

The job cost record could also reflect the percentage of the end product that can be recycled by the consumer. Companies embracing sustainability will also need more information about the specific resources that are treated as manufacturing overhead costs, especially those that are related to energy and water consumption. To provide better information, the accounting system should contain multiple subsidiary MOH accounts based on the types of MOH incurred. For example, the company could separately track the following:

- the amount (and cost) of water used (reclaimed water versus potable water)
- electricity generated from coal-burning power plants versus wind turbines
- the amount of fossil fuel versus biofuels used to power forklifts and equipment
- costs related to emission control, wastewater, and garbage disposal

Even property taxes, property insurance, and employee training costs may be affected by a company's journey towards sustainability. Only by separately measuring these costs will managers have the information it needs to adequately weigh the costs and benefits associated with environmental and social responsibility initiatives. To provide managers with better information with which to make decisions, job cost records could also contain a section estimating the future environmental costs associated with each job.

For example, many Canadian provinces have already put legislation in place to reduce the amount of potentially dangerous e-waste (electronic waste) in landfills by shifting the end-of-life disposal cost back to the manufacturer. The costs vary by province, so different end-of-life products will bear different costs if a manufacturer sells or ships these products to another province. By bearing the disposal cost, manufacturers should be motivated to design greener products that are repairable, more easily recyclable, and have a longer life-cycle. In response to the differing regulations in each province, an industry association, Electronic Product Stewardship Canada (EPSC), was founded and includes members such as Hewlett-Packard, Microsoft Corporation, and Apple, Inc. The goal of the association is to promote harmonization among provincial electronic waste regulatory programs and strong environmental standards for the treatment of end-of-life electronics in Canada. More information can be found on the EPSC website: www.epsc.ca.

Job Costing 137

See Exercises E3-20A and E3-40B



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EXHIBIT 2-5 Assigning Direct and Indirect Costs to Cost Objects

Costs for Internal Decision Making and External Reporting
Let us look more carefully at how companies determine the costs of one of the most common cost objects: products. As a manager, you will want to focus on the products that are most profitable. But which products are those? To determine a product's profitability, you subtract the cost of the product from its selling price. But how do you calculate the cost of the product? Most companies use two different definitions of cost: (1) **total costs** for internal decision making and (2) **inventoriable product costs** for external reporting. Let us see what they are and how managers use each type of cost.

Total Costs for Internal Decision Making
Total costs include the costs of all resources used throughout the value chain. For Bombardier, the total cost of a particular model, such as the Learjet 85, is the total cost to research, design, manufacture, market, distribute, and service that model before launching a new model. Managers predict the total costs of the model in order to set a selling price that will cover all costs plus a profit. Bombardier also compares each model's sale revenue to its total cost to determine which models are most profitable. Perhaps the Learjet 85 is more profitable than the Q400. Marketing can then focus on advertising and promoting the most profitable models. We will talk more about total costs in Chapter 8, where we discuss many common business decisions. For the next few chapters, we will concentrate primarily on inventoriable product costs.

Inventoriable Product Costs for External Reporting
IFRS and ASPE do not allow companies to use total costs to report inventory balances or cost of goods sold in the financial statements. For external reporting, reporting standards allow only a portion of the total cost to be treated as an inventoriable product cost. IFRS and ASPE specify which costs are inventoriable product costs and which costs are not. Inventoriable product costs (often referred to simply as product costs) include only the costs incurred during the "production or purchase" stages of the value chain (see Exhibit 2-6). Inventoriable product costs are treated as an asset (inventory) until the product is sold. Hence, the term "inventoriable" product cost. When the product is sold, these costs are removed from inventory and expressed as cost of goods sold. Since inventoriable product costs include only costs incurred during the production or purchase stage of the value chain, all costs incurred in the other stages of the value chain must be reported in the period in which they are incurred. Therefore, we refer to R&D, design, marketing, distribution, and customer service costs as **period costs**.

Period costs are often called "operating expenses" or "selling, general, and administrative expenses" (SG&A) on the company's income statement. Period costs are always expensed in the period in which they are incurred and never become part of an inventory account.



Accounting Simplified Videos explain hard-to-understand concepts. Accounting Simplified logos appear throughout the text and direct students to the appropriate section in MyAccountingLab to view the video and study material.

Stop & Think, a question-and-answer section, encourages students to think critically about the application of key concepts.

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EXHIBIT 3-1 Differences between Job and Process Costing

	Job Costing	Process Costing
Cost object:	Job	Process
Outputs:	Single units or small batches with large differences between jobs	Large quantities of identical units
Extent of averaging:	Less averaging—costs are averaged over the small number of units in a job (often 1 unit in a job)	More averaging—costs are averaged over the many identical units that pass through the process

STOP & THINK

Do all manufacturers use job costing or process costing systems?
Answer: Some manufacturers use a hybrid of these two costing systems. Neither "pure" system mirrors their production environment very well. For example, clothing manufacturers often mass produce the same product over and over (dress shirts) but use different materials in different batches (cotton fabric in one batch and silk fabric in another). A hybrid costing system has some elements of a process costing system (averaging labour and manufacturing overhead costs equally across all units) and some elements of a job costing system (tracing different fabric costs to different batches).

How Do Manufacturers Determine a Job's Cost?
As we have just seen, manufacturers use job costing if they produce unique products or relatively small batches of different products. Shaw Group produces each of its products individually, so each unit is a unique job. In this section, we will show you how Shaw Group determines the cost of producing job #013, a single gold crown. Gold is used to make crowns, or "caps," to replace damaged portions of teeth because gold does not tarnish or change and wears down in a similar fashion to natural teeth. As we walk through the process, keep in mind that many companies record the illustrated documents electronically, but the process will be the same.

Overview: Flow of Inventory Through a Manufacturing System
Let's take a quick look at how the physical products, as well as costs, flow through the company. As you learned in Chapter 2, manufacturers such as Shaw Group maintain three separate types of inventory: raw materials, work in process, and finished goods. The cost of each of these inventories is reflected on the company's balance sheet.
As shown in Exhibit 3-2, raw materials (RM) inventory is maintained in a store room within the manufacturing facility until the materials are needed in production. As soon as these materials are transferred to the production area, they are no longer considered raw materials because they have become part of the work in process. Work in process (WIP) inventory consists of all products that are partway through the production process.

Job Costing 121

Each package of Cladhoppers is identical to every other package, so each bears the same average cost: \$2.50. Once managers know the cost of manufacturing each package, they can use that information to help set sales prices and make other business decisions. To generate a profit, the sales price has to be set high enough to cover the \$2.50 per package manufacturing cost, as well as the company's operating costs incurred along other areas of the value chain (marketing, distribution, and so forth) during the period.

We will delve more deeply into process costing in Chapter 5. For now, just remember that any company that mass-produces identical units of product will more likely use process costing to determine the cost of making each unit. The following industries and companies are further examples of companies that use process costing:

- Oil refining—Nanticoke Refinery (Imperial Oil), St. John Refiners (Irving Oil, BP (British Petroleum))
- Food and beverages—McCain Foods Ltd., Kellogg's, Dore Foods Ltd., General Mills, Kraft Canada Inc.
- Consumer toiletries and paper products—Cascades Tissue Group Inc., Colgate-Palmolive Canada Inc., Kruger Products Ltd. (Scotties tissues)

Job Costing
Process costing is used by companies that mass-manufacture identical units, whereas job costing is used by companies that produce unique, custom-ordered products or relatively small batches of different products. Each unique product or batch of units is considered a separate "job."

Different jobs can vary considerably in their use of direct materials, direct labour, and manufacturing overhead costs, so job costing accumulates these costs separately for each individual job. For example, Edge Fitness Holdco Fit Mfg. Inc. manufactures a variety of different exercise machines. Edge Fitness has a limited number of products, but they produce them in small, separate batches for each customer. Each batch of exercise machines produced is considered a separate job. The Shaw Group of Dental Laboratories, as discussed in the opening story, custom manufactures each dental product based on the unique requirements of each patient. Since each unit is unique, Shaw Group treats each unit as an individual job. Job costing would also be used by Bombardier Inc. (airplanes), custom home builders (unique houses), high-end jewelers (unique jewellery), and any other manufacturers that build custom-ordered products.

Job costing is not limited to manufacturers. Professional service providers such as law firms, accounting firms, consulting firms, and marketing firms use job costing to determine the cost of serving each client. People working in trades, such as mechanics, plumbers, and electricians also use job costing to determine the cost of performing separate jobs for clients. In both cases, the job cost is used as a basis for billing the client. In the appendix to this chapter we will study a complete example of how a law firm would use job costing to bill its clients.

In summary, companies use job costing when their products or services vary in terms of materials needed, time required to complete the job, and/or the complexity of the production process. Because the jobs are so different, it would not be reasonable to assign them equal costs. Therefore, the cost of each job is compiled separately. We will spend the rest of this chapter looking at how companies compile, record, and use job costs to make important business decisions. Before moving on, take a look at Exhibit 3-1, which summarizes the key differences between job and process costing.

Why is this important?
Managers need the most accurate cost information they can get in order to make good business decisions. They choose a costing system (usually job costing or process costing) based on which system best fits their operations.

Why Is This Important? highlights the connection of accounting to the business environment so students can better understand the business significance of managerial accounting.

Decision Guidelines

MyAccountingLab Visit MyAccountingLab to access audio versions of these Decision Guidelines that you can listen to right on your computer or download and transfer to your mobile device.

Capital Budgeting

Here are more of the guidelines that Maplewood Equestrian Centre's managers used as they made the major capital budgeting decision to invest in pasture development for grazing.

Decision	Guidelines
Which capital budgeting should we use for this decision?	No one method is best. Each method provides a different perspective on the investment decision.
Why do the NPV and IRR models calculate the present value of an investment's net cash flows?	All of the cash flows must be converted to a common point in time because an investment's cash inflows occur in the future, yet the cash outlay for the investment occurs now. These methods use the present value as the common point in time.
How do we know if investing in a barn for hay and shaving storage will be worthwhile?	Investment in a barn may be worthwhile if the NPV is positive or the IRR exceeds the required rate of return.
How do we compute the net present value (NPV) if the investment has equal annual cash inflows?	Compute the present value of the investment's net cash inflows using Table B: Present Value of an Annuity of \$1 and then subtract the investment's cost.
How do we compute the net present value (NPV) if the investment has unequal annual cash inflows?	Compute the present value of each year's net cash inflows using Table A: Present Value of \$1, sum the present value of the inflows, and then subtract the investment's cost.
How do we compute the internal rate of return (IRR) if the investment has equal annual cash inflows?	Find the interest rate that yields the following annuity PV factor: $\text{Annuity PV factor} = \frac{\text{Investment's cost}}{\text{Amount of each equal net cash inflow}}$
How do we compute the internal rate of return (IRR) if the investment has unequal annual cash inflows?	Use trial and error, a business calculator, or spreadsheet software to find the IRR.

SUMMARY PROBLEM 2

Recall from Summary Problem 1 that Zetamax is considering buying a new bar-coding machine. The investment proposal passed the initial screening tests (payback period and accounting rate of return), so the company now wants to analyze the proposal using the discounted cash flow methods. Recall that the bar-coding machine costs \$48,000, has a 5-year life, and has no residual value. The estimated net cash inflows are \$13,000 per year over its life. The company's hurdle rate is 16%.

Requirements

1. Compute the bar-coding machine's NPV.
2. Find the bar-coding machine's IRR (exact percentage not required).
3. Should Zetamax buy the bar-coding machine? Why or why not?

END OF CHAPTER

Learning Objectives

- 1 Distinguish among service, merchandising, and manufacturing companies.
- 2 Describe the value chain and its elements.
- 3 Distinguish between direct and indirect costs.
- 4 Identify the inventoriable product costs and period costs of merchandising and manufacturing firms.
- 5 Prepare financial statements for service, merchandising, and manufacturing companies.
- 6 Describe costs that are relevant and irrelevant to decision making.
- 7 Classify costs as fixed or variable, and calculate total and average costs at different volumes.

ACCOUNTING VOCABULARY

- Allocate** (p. 48) To assign a portion of an indirect cost to a cost object or cost objects.
- Assign** (p. 48) To attach a cost to a cost object.
- Average Cost** (p. 85) The total cost divided by the number of units.
- Controllable Costs** (p. 42) Costs that can be influenced or changed by management.
- Conversion Costs** (p. 73) The combination of direct labour and manufacturing overhead costs.
- Cost Object** (p. 47) Anything for which managers want a separate measurement of costs.
- Cost of Goods Manufactured** (p. 78) The cost of manufacturing the goods that were finished during the period.
- Customer Service** (p. 42) Support provided for customers after the sale.
- Design** (p. 40) Detailed engineering of products and services and the processes for producing them.
- Differential Cost** (p. 83) The difference in cost between two alternative courses of action.
- Direct Cost** (p. 47) A cost that can be traced to a cost object and is worthwhile to do so after a cost/benefit analysis has assessed the cost of tracing the cost and compared it with the benefits received from the additional accuracy.
- Direct Labour** (p. 71) The cost of compensating employees who physically convert raw materials into the company's products; labour costs that are directly traceable to the cost object.
- Direct Materials** (p. 71) Primary raw materials that become a physical part of a finished product and whose costs are traceable to the cost object.
- Distribution** (p. 65) Delivery of products or services to customers.
- Finished Goods Inventory** (p. 43) Completed goods that have not yet been sold.
- Fixed Costs** (p. 84) Costs that stay constant in total despite changes in volume.
- Indirect Cost** (p. 47) A cost that relates to the cost object but cannot be easily traced to it.
- Indirect Labour** (p. 71) Labour costs that are difficult to trace to specific cost objects.
- Indirect Materials** (p. 71) Materials whose costs are difficult to trace to specific cost objects.
- Inventoriable Product Costs** (p. 49) All costs of a product that FIFO or ASPE require companies to treat as an asset (inventory) for external financial reporting. These costs are not expensed until the product is sold.
- Manufacturing Company** (p. 81) A company that uses labour, plant, and equipment to convert raw materials into new finished products.
- Manufacturing Overhead** (p. 65) All manufacturing costs other than direct materials and direct labour; also called factory overhead or indirect manufacturing cost.
- Marginal Cost** (p. 86) The cost of producing one more unit.
- Marketing** (p. 45) Promotion and advertising of products or services.
- Merchandising Company** (p. 81) A company that resells tangible products previously bought from suppliers.
- Other Indirect Manufacturing Costs** (p. 71) All manufacturing overhead costs aside from indirect materials and indirect labour.
- Period Costs** (p. 49) Cost that are expensed in the period in which they are incurred; often called Operating Expenses, or Selling, General, and Administrative expenses.

Accounting Vocabulary lists all the bolded terms in the chapter with definitions and page references. There is also a complete glossary at the end of the book.

Decision Guidelines summarize key terms, concepts, and formulas in the context of specific business decisions so that students can see how accounting is used to make good business decisions. **Summary Problems** allow students to practice the skills outlined in the decision guidelines.

Quick Check section is a series of questions designed to test student recall of key concepts. Answers are provided in the text.

Almost all questions in the book appear on MyAccountingLab, along with additional interactive resources like videos, animations, and resources to help you master managerial accounting concepts. This provides students with the ability to

re-test assigned questions or attempt alternative versions of the same or similar questions to reinforce learning.

We have included **Group A and Group B Exercises** in the textbook so that instructors can work through the exercises in one of these groups in class and assign the other group as individual work, giving students more practice on these key concepts.



CAPSTONE APPLICATION PROBLEMS

APPLICATION QUESTIONS


A11-47 Collect and analyze division data (Learning Objective 5)
Colgate-Palmolive operates two product segments. Using the company's website, locate segment information in the company's most recent annual report. (Hint: Look under investor relations.) Then, look in the financial statement footnotes.

Requirements

1. What are the two segments (ignore geographical subsets of the one product segment)? Gather data about each segment's net sales, operating income, and identifiable assets.
2. Calculate ROI for each segment.
3. Which segment has the highest ROI? Explain why.
4. If you were on the top management team and could allocate extra funds to only one division, which division would you choose? Why?

APPLICATION CASE

A11-48 Speilher Forest Products



Source: Klier/Alamy.com

"Speilher is an integrated manufacturer of forest products—lumber, pulp, paper and specialty cellulose—serving customers worldwide. Speilher has operations in North America and Europe with some 4,000 employees, is listed on the TSX and has annual sales of approximately \$2 billion.

Speilher manages nearly 25 million acres (10 million hectares) of Canadian forestlands in keeping with responsible forest management practices. And we have earned Forest Stewardship Council® (FSC®) Certification for all our direct-managed forests. These forests ensure Speilher's long-term fiber supply, underlying the consistent quality and availability of everything we make."

Barb Huebert is a CMA consultant who specializes in developing performance evaluation plans for corporations. She had just been contacted by the CEO of Speilher Inc. with a request to look into the creation of a new performance evaluation tool for Speilher based on the new focus toward sustainability. Speilher had just released its Sustainability Report (the first time it had done so) and wanted guidance on how to incorporate this into its overall evaluation process. Barb read the press release for the Sustainability Report, looked at the most recent financial summary for Speilher, and set out to start making notes on how to proceed with the evaluation.

ST. JOHN'S, September 4, 2014 - Speilher today released its 2013 Sustainability Report, a detailed update that centres on the Company's sustainable stewardship of resources.

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Case Assignments appear in chapters 3 through 12. They are designed to test the student's understanding of the concepts in realistic, complex scenarios.

Demo Doc Problems and Solutions appear in chapters 3, 5, 7, and 9. These provide walk-through problems for demonstration and comprehension of the concepts.

Case Appendix (MyAccountingLab) This innovative tool will provide students with direction on case analysis. Associated with the case appendix and found in the MAL are three all NEW **Multi-Chapter Cases**. These situational cases test the student's ability to apply multiple managerial accounting concepts to resolving the scenario. Each scenario is a stand-alone case, allowing instructors to assign only those cases that are applicable to their course.

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- TestGen: This powerful and user-friendly computerized test bank has been thoroughly revised to include more accurate coverage, new Blooms Taxonomy tagging, and increased difficulty level with the inclusion of NEW challenging short answer problems. The test bank includes well over 100 questions per chapter,

with true/false, multiple choice, short answer and essay type questions.

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She gained public accounting experience while working at Arthur Andersen & Co. and accumulated additional business and management accounting experience as corporate controller for Gemini Aviation Inc.

Professor Braun and her husband, Cory, have two daughters, Rachel and Hannah. In her free time she enjoys playing tennis, gardening, skiing, hiking, and music.



Wendy M. Tietz is currently a faculty member in the Department of Accounting in the College of Business Administration at Kent State University, where she has taught since 2000. Prior to Kent State University, she was on the faculty at the University of Akron. She teaches in a variety of formats, including large sections, small sections, and web-based sections. She has received numerous college and university teaching awards while at Kent State University.

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Rhonda Pyper is a professor of accounting at the University of Ottawa. She is a member of the Society of Certified Management Accountants and is the CMA Ontario Fellow for the Telfer School of Management. Professor Pyper is also an entrepreneur. Her research interests are varied and include investigating the impact of expertise and risk-taking on careers, the image of accountants, and the connection between leadership characteristics and the financial results of organizations. Professor Pyper has presented her research internationally and has been published in journals such as the *Canadian Journal of Administrative Sciences* and the Ontario Institute for Studies in Education's *Higher Education Perspectives*.

Professor Pyper has received research grants for her ongoing study on leadership and also as a member of an inter-university team of researchers examining recruiting campaigns by accounting firms. She has been recognized for her volunteering by the Province of Ontario. She has also received an award from the wing commander of Canadian Forces Base North Bay for volunteering as a musician and vocalist for the military band. She has performed with the band for ceremonial functions, military events, and as a representative of Canada at international festivals.

Professor Pyper and her husband have three daughters, and they own and manage an equestrian facility. Most of her spare time is spent with her family on the farm.

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