

# HORNGREN'S COST ACCOUNTING

## A MANAGERIAL EMPHASIS

HORNGREN  
DATAR  
RAJAN  
MAGUIRE  
TAN



3RD EDITION

Sample

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**COST ACCOUNTING**  
A MANAGERIAL EMPHASIS

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3RD EDITION

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# Preface

Studying management accounting is one of the best business investments a student can make, because managers of all organisations—whether profit-seeking (ranging from a small corner store in Darwin to a large multinational corporation like BHP Billiton) or not-for profit—need to use management accounting concepts, information and practices. Management accounting provides key data to managers that enable them to plan, control and estimate the costs of outputs (products and services) and other cost objects like customers. We focus on how management accounting helps managers to make better decisions because management accountants are integral members of their organisations’ decision-making teams. This textbook provides a decision-making framework and demonstrates how the analytical tools that students will learn prepare them to contribute to an organisation’s success. As future management accountants and informed managers, they will provide data, perform analyses and estimate the effects on revenue and costs.

Notwithstanding his contributions to other areas, Charles T. (Chuck) Horngren’s biggest imprint was on management accounting.<sup>1</sup> Before the 1960s, cost accounting textbooks had placed primary emphasis on calculating the cost of inventory for financial reporting, with little emphasis on managers’ uses of accounting information. Credited with ‘pioneering modern-day management accounting’ and described as ‘a champion of innovation and change’, Horngren published his own *Cost accounting: a managerial emphasis* in 1962. This broke with traditional texts of the time and almost on its own changed the emphasis of the discipline. Horngren’s objective was to demonstrate to university teachers and students alike ‘how the most important role of accounting within an organization was as a management tool for making wiser decisions. The book soon became one of the most respected and widely used textbooks in the field, used throughout the world.’ The sixteenth US (global) edition is in press at the time of writing and continues to focus on management accounting information that informs managers and managers’ decisions in changing organisations within a changing environment. Although Horngren himself moved from cost accounting to the broader ambit of management accounting, the title of his original text has been retained because it is firmly connected with his work in this area.

Among other major issues, an organisation’s successful strategy, development and implementation depend on sound decisions. By focusing on basic concepts, analyses, uses and procedures instead of procedures alone, we recognise management accounting as a managerial tool for business strategy and implementation. Increasingly, organisations are concerned with the social and environmental impacts of their decisions, and the management accountant has a role to play in recognising and measuring those impacts. Rapidly changing social, environmental and economic conditions present opportunities and threats. To be economically sustainable, organisations must recognise and manage the interrelationships between social, environmental and economic performance.

The first Australian edition was a response to feedback from Australian academics who called for a book to which their students could relate and with which they could readily engage. The second edition improved on this theme, and the third edition continues in the same vein, presenting the best of both worlds. The authors are among world leaders in the development of contemporary management accounting and illustrate their ideas with Australian examples that

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<sup>1</sup> This paragraph is based largely on Castillo, C. 2011, ‘The Stanford GSB Experience School news & history: Charles T. Horngren, Management Accounting Pioneer: 1926–2011’, <<https://www.gsb.stanford.edu/stanford-gsb-experience/news-history/charles-t-horngren-management-accounting-pioneer-1926-2011>>; the quoted material is extracted from that piece.

make the textbook come alive for students. Every chapter features stories about Australian and international organisations, including their efforts to improve sustainability to demonstrate the connection between sustainability and cost and management accounting concepts.

The third Australian edition largely maintains the structure and emphasis of the two previous editions. In preparing the current edition, we have noted the comments of reviewers and users of the second Australian edition, the fifteenth and sixteenth US editions and our own experience of teaching management accounting. While responding to the need for a strong Australian context, we recognise that many organisations operate in a global context and that many of our students are from other countries. The third edition accordingly maintains an Australian flavour within a global context.

### **Hallmark features of Horngren's Cost accounting: a managerial emphasis**

- Exceptionally strong emphasis on managerial uses of cost information.
- Clarity and understandability.
- Aimed at preparing students for the rewards and challenges they might face in the professional management accounting world of today and tomorrow, through the development of analytical skills and the values and behaviours that make management accountants effective in the workplace.
- Excellent integration of cutting-edge and well-established topics.
- Emphasis on and integration of sustainability: from its introduction in chapter 1, through illustrating its connection with management accounting via real-world features drawn from various organisations and contexts throughout the book, to comprehensive coverage in chapter 21, the final chapter of the book.
- Emphasis on behavioural implications.
- Extensive use of real-world examples, both Australian and international.
- Ability to teach chapters in different sequences.
- Excellent quantity, quality and range of assignment material.
- Streamlined presentation.
- *Try It* interactive questions to give students the opportunity to apply a concept they have just learned.

### **Features retained from the first two Australian editions**

- The five-step guide to decisions, which appears throughout.
- The modular, flexible organisation that permits a unit to be custom-tailored and to facilitate diverse approaches to teaching and learning.
- Vignettes that open each chapter.
- *Concepts in action* features.
- *Sustainability in action* features.
- As in the second edition, 'Determining how costs behave' (chapter 3) precedes 'Cost–volume–profit analysis' (chapter 4) to provide a foundation for cost behaviour before dealing with it.

## Revised chapter sequence

- Chapters 5–9 present a cohesive focus on managing processes, activities and capacity and estimating costs and prices for outputs (whether services or products) and other cost objects, as well as activity-based costing.
- Chapters 11–13 similarly focus on management control, responsibility accounting, budgeting, standard costing and variance analysis.
- Chapters 15–20 extend management control to strategic control and performance evaluation.
- Chapter 21 (previously chapter 14) consolidates the *Sustainability in action* features and provides a basis for evaluating social and environmental issues in the context of strategic and operational dimensions addressed throughout the text. This material appears at the end of the text to facilitate the holistic approach described above. In response to feedback, the chapter also focuses more tightly on management accounting issues.
- Chapter 10, ‘Decision making and relevant information’, has again been moved in the current edition—so that pricing is added to students’ knowledge acquired from earlier chapters and is available to students to apply to decisions in chapter 10.
- ‘Allocation of support-department costs, common costs and revenues’ (chapter 14; previously chapter 13) has been moved to facilitate the flow of earlier chapters.

## Revised chapter content

We have introduced many new vignettes and *Concepts in action* features while retaining the best of the rest.

- New end-of-chapter questions, exercises and problems have been added to all chapters and most of those that have been retained have been revised.
- Chapter 1 has been broadened and extended to the examination of strategic issues.
- Absorption costing and its impact on reported profit have been moved from chapter 2 in the second edition to the latter part of chapter 6. Students are likely to assimilate this topic more readily at that point, after an in-depth examination of costing issues in chapter 5 and in earlier sections of chapter 6.
- A new chapter (chapter 5) has been added on estimating the costs of services, extending the emphasis on services introduced in the second edition. It includes the purposes of and criteria for allocating costs, and the symptoms of a failing costing system, which had appeared in chapter 6 of the second edition (now chapter 8). The material presented in chapter 5 also applies to chapter 6 and serves as an appropriate lead-in to chapter 8.
- Chapter 6 itself has been extended to include estimation of the cost of inventory and profit earned.
- Chapters 7 and 8 have both been restructured and rewritten, with extensive revision of the language of activity-based costing.

There is ample text and assignment material in the textbook’s 21 chapters for a two-semester course, while the first 13 chapters provide the essence of a one-semester course with the opportunity to add chapters as required. This textbook can be used immediately after a student has completed an introductory course in financial accounting, or it can build on an introductory course in managerial accounting.



## Different costs for different purposes

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What does the word cost mean to you? Is it the price you pay for something of value, like a bottle? A cost, of course, like monthly rent? Something that affects profitability, like salaries? Organizations, like individuals, deal with different types of cost. They go to great lengths to generate revenues, but when times get tough, companies may find that they are unable to pay costs fast enough, leading to bankruptcy. This was the case with surf-wear company Quiksilver in the USA.

### LEARNING OBJECTIVES

- 1 Define and illustrate a cost object
- 2 Distinguish between direct costs and indirect costs
- 3 Explain variable costs and fixed costs
- 4 Interpret unit costs with caution
- 5 Distinguish between inventoriable costs and period costs
- 6 Explain why product costs are calculated in different ways for different purposes
- 7 Describe a framework for cost accounting and activity management

### HIGH FIXED COSTS BANKRUPT QUIKSILVER

Cost cutting is a term that is mentioned in the media a lot. It is especially prominent in times of credit crunching and economic downturns. In Australia, the wealth management sector is one of those being paralyzed by high fixed costs (such as from office leases, parking companies) to cut costs. Recently, Morgan Stanley undertook a major overhaul of its Australian operations, targeting millions of dollars of fixed-cost savings to achieve a sustainable position.

In 2010, surf-wear company Quiksilver announced that it had filed for Chapter 11 bankruptcy in the USA (excluding its European and Asia-Pacific operations). The company's high fixed costs—costs that did not decrease as the number of boardshorts and hoodies sold declined—had crippled the company. In the 1990s and early 2000s, Quiksilver rode the wave of young shoppers amassing the cool lifestyle of surfers, skateboarders and snowboarders to financial success and opened hundreds of retail stores worldwide, many in expensive areas such as Times Square in New York. This exposure saddled the company with a huge amount of debt. When sales rapidly declined in 2009, the company collapsed under the weight of its high fixed operating costs—like long-term leases and salaries—and massive debt-servicing payments. After declaring bankruptcy, Quiksilver began rapidly selling off its non-core brands and closing many retail stores.

The car industry, which has high fixed costs, cannot be easily changed. In a market where the competitiveness of companies such as General Motors in the Australian car market is drastically affected by the fixed costs—costs that do not change with the number of cars made. Holden, Toyota and Ford will all cease manufacturing in Australia due to the high costs and low levels of local car sales.



Photo: iStockphoto.com/Chris Wood

Source: Khanna, A. 2011. 'Quiksilver Files for Chapter 11 Bankruptcy in USA'. *Law Insights*. 19 September. <http://www.insights.lawinsights.com/insights/quiksilver-bankruptcy-2010.html>, accessed 19 September 2016. Kaplan, D. 2011. 'Quiksilver Files for Chapter 11 Bankruptcy in Australia'. *Law Insights*. 19 September. <http://www.insights.lawinsights.com/insights/quiksilver-bankruptcy-2010.html>, accessed 19 September 2016. Whelan, A. 2010. 'Quiksilver Files for Chapter 11 Bankruptcy in USA'. *Law Insights*. 19 September. <http://www.insights.lawinsights.com/insights/quiksilver-bankruptcy-2010.html>, accessed 19 September 2016. Whelan, A. 2010. 'Quiksilver Files for Chapter 11 Bankruptcy in USA'. *Law Insights*. 19 September. <http://www.insights.lawinsights.com/insights/quiksilver-bankruptcy-2010.html>, accessed 19 September 2016.

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Real company vignettes open each chapter. The vignettes engage the reader in a business situation, or a dilemma, illustrating why and how the concepts in the chapter are relevant in business.

**Concepts in action** features cover real-world cost accounting issues across a variety of industries in Australia and internationally.

### CONCEPTS IN ACTION

#### Variance analysis and standard costing help Sandoz manage its overhead costs

Consider a global leader in the rapidly growing generic medicine industry. Sandoz operates, part of the Novartis Group. Market pricing pressure means that Sandoz, like many other generic manufacturers, operates on razor-thin margins. To cope, along with an intricate analysis of direct cost variances, Sandoz must also tackle the challenge of accounting for overhead costs variances. Sandoz (specifically Sandoz US) uses variance analysis and standard costing to manage its overhead costs.

Each year, Sandoz prepares an overhead budget based on a detailed production plan, planned overhead spending and other factors, including inflation, efficiency initiatives and anticipated capital expenditures and depreciation. Sandoz then uses activity-based costing techniques to assign budgeted overhead costs to different work centres (e.g. mixing, blending, tabletting, testing and packaging). Finally, overhead costs are assigned to production based on the activity levels required by each product at each work centre. The resulting standard product cost is used in product profitability analysis and for pricing decisions. The two main focal points in Sandoz's performance analysis are overhead absorption analysis and manufacturing overhead variance analysis.

Each month, Sandoz uses absorption analysis to compare actual production and actual costs to the standard costs of processed inventory. The monthly analysis evaluates two key items:

1. Are costs in line with the budget? If not, the reasons are examined and the accountable managers notified.
2. Are production volume and product mix conforming to plan? If not, Sandoz reviews and adjusts machine capacities and the absorption trend is deemed to be permanent.

Plant management uses absorption analysis as a compass to determine whether they are on budget and have an appropriate capacity level to satisfy the needs of their customers efficiently.

Manufacturing overhead variances are examined at the work centre level. These variances help determine when equipment is not running as expected, which leads to repair or replacement. Variance also helps in identifying inefficiencies in processing and set-up and cleaning times, which leads to more efficient ways to use equipment. Similarly, manufacturing overhead variance analysis leads to the review and improvement of the standards themselves—a critical element in planning the level of plant capacity. Management reviews current and future capacity on an on-going basis, using standard hours created into the Enterprise Resource Planning system. The standards are a useful tool in identifying capacity constraints and future capital needs.

At the US plant controller remarked: 'Standard costing at Sandoz produces costs that are not only understood by management accountants and industrial engineers, but by division leaders in marketing and on the production floor. Management accountants at Sandoz achieve this by having a high degree of process understanding and involvement. The result is better pricing and product decisions, lower waste, process improvements and efficient capacity choices. All contributing to overall profitability. With sustained price pressures on generic pharmaceuticals, Sandoz's focus on overhead cost variances will continue to maintain profitability and growth.'

Source: Cost Accounting, 10th Edition, prepared by Eric Ewert and Erik Eitel (US) on 20 March 2016 and 20 May 2016. Content written, and document prepared by John McInnes (pharmaceutical consultant) on 18 August 2007.

### 44 HORMGREN'S COST ACCOUNTING

feature on page 43 describes how a car-sharing service offers companies the opportunity to convert the fixed costs of owning corporate cars into variable costs while simultaneously reducing their environmental impact.

A particular cost item can be variable with respect to one level of activity and fixed with respect to another. Consider annual registration and licence costs for a fleet of planes owned by an airline company. Registration and licence costs would be a variable cost with respect to the number of planes owned. But registration and licence costs for a particular plane are fixed with respect to the kilometres flown by that plane during a year.

Some costs have both fixed and variable elements and are called *mixed* or *semi-variable* costs. For example, a company's telephone costs may have a fixed monthly payment and a charge per phone-minute used. We discuss mixed costs and techniques to separate out their fixed and variable components in chapter 7.

### DECISION POINT 3

How do managers decide what is a variable or fixed cost?

### TRY IT!

- 2.1 **Required**
- TypoCo Beverages uses trucks to transport bottles from the warehouse to different retail outlets. This problem focuses on the cost of operating a truck. Fuel costs are \$0.15 per kilometre driven. Insurance costs are \$6,000 per year.
- Calculate the total costs and the cost per kilometre for fuel and insurance if the truck is driven (a) 20,000 kilometres per year or (b) 30,000 kilometres per year.

### Cost drivers

A **cost driver** is a variable, such as the level of activity or volume, that causally affects costs over a given time span. That is, there is a cause-and-effect relationship between a change in the level of activity or volume and a change in the level of total costs. For example, if product design costs change with the number of parts in a product, the number of parts is a cost driver of product design costs. Similarly, kilometres driven is often a cost driver of distribution costs.

The cost driver of a variable cost is the level of activity or volume for which change causes proportionate changes in the variable cost. For example, the number of vehicles assembled is the cost driver of the total cost of tyres. If set-up workers are paid an hourly wage, the number of set-up hours is the cost driver of total (variable) set-up costs.

Costs that are fixed in the short run have no cost driver in the short run but may have a cost driver in the long run. Consider the costs of testing, say, 0.2% of the colour printers at Hewlett-Packard. These costs consist of Testing Department equipment and staff costs that are difficult to change and, hence, are fixed in the short run with respect to changes in the volume of production. In the long run, however, Hewlett-Packard will increase or decrease the Testing Department's equipment and staff to the levels needed to support future production volumes. In the long run, volume of production is a cost driver of testing costs.

Costing systems that identify the cost of each activity, such as testing, design, or set-up, are called **activity-based costing systems**.

### Relevant range

**Relevant range** is the band of normal activity level or volume in which there is a specific relationship between the level of activity or volume and the cost in question. For example, a fixed cost is fixed only in relation to a given wide range of total activity or volume (at which the company is expected to operate) and only for a given time span (usually a particular budget period). Suppose that BMY's contracts with Luflex Logistics (LL) to transport X6s to dealers. LL rents two trucks for annual fixed rental costs of \$40,000 each. The maximum annual usage of each truck is 120,000 kilometres. In the current year (2018), the produced combined total handling of the two trucks is 170,000 kilometres.

Figure 2.1 shows how annual fixed costs behave at different levels of kilometres of handling. Up to 120,000 kilometres, LL can operate with one truck. From 120,001 to 240,000 kilometres, it operates with two trucks. From 240,001 to 360,000 kilometres, it operates with three trucks.

Found throughout each chapter, **Try it** interactive questions give students the opportunity to apply a concept they have just learned. Solutions are given at the end of each chapter.

### TRY IT! 13.2

Sanjina Company makes watches. For 2018, the company expected fixed overhead costs of \$640,000. Sanjina uses direct labour-hours to allocate fixed overhead and anticipates 21,000 hours during the year for an expected output of 540,000 units. An equal number of units are budgeted for each month.

During October, 48,000 watches were produced and \$32,000 was spent on fixed overhead.

### Required

- Calculate the following:
- a. the fixed overhead rate for 2018
  - b. the fixed overhead spending variance for October
  - c. the production-volume variance for October.

### CHAPTER 2 DIFFERENT COSTS FOR DIFFERENT PURPOSES 43

capacity. Supervisors on the X6 line could have supervised the production of 40,000 X6s but will supervise only 55,000 X6s because of the lower demand. However, BMY must pay for the unused line supervision supervision capacity cannot be reduced in the short run. If demand is even lower—say only 50,000 X6s—line supervision costs will not change; they will continue to be \$1,000,000 and idle capacity will increase.

Unlike variable costs, fixed costs of resources (such as full-line supervision) cannot be quickly and easily changed to match the resources needed or used. Over time, however, managers can take actions to reduce fixed costs. For example, if the X6 line needs to be run for fewer hours because of low demand for X6s, BMY may lay off supervisors or move them to another production line. Companies may also choose to rent their software from a service provider rather than buying it to reduce fixed costs, as shown in the *Concepts in action* feature opposite.

Do not assume that individual cost items are inherently variable or inherently fixed. Consider labour costs. Labour costs can be purely variable with respect to units produced when workers are paid on a unit basis; for example, some garment workers are paid on a per-garment-sewed basis. In contrast, the labour costs at a plant in the coming year are sometimes appropriately classified as fixed. For instance, a labour union agreement might set annual salaries and conditions, contain a no-lay-off clause and severely restrict a company's flexibility to assign workers to any other plant that has demand for labour. Japanese companies have, for a long time, had a policy of lifetime employment for their workers. Although such a policy entails high fixed costs, particularly in economic downturns, the benefits are increased loyalty and dedication to the company and higher productivity. The *Sustainability in action*

### SUSTAINABILITY IN ACTION

#### How car sharing is helping reduce business transportation costs

Long-term trends, high insurance costs and hefty parking fees have forced many businesses to reconsider the ownership of company cars. In the USA, Uber and Lyft are disrupting the car-sharing business. In Florida, GoCar, CarShare and Charter Drive have emerged as attractive alternatives. These businesses provide on-demand options for city businesses and individuals to rent a car by the day or even the hour. Bookable members make a reservation by telephone or internet, go to where the car is located (usually on foot or by public transport), swipe an electronic card over a sensor that unlocks the door, and then just climb in and drive away. Rental fees usually entail fuel, insurance, maintenance and depreciation.

Car sharing offers an environmentally friendly, low-cost and flexible alternative for companies. Many small businesses own a company car or two for getting to meetings, making deliveries and other errands. Similarly, large companies own a fleet of cars to handle visiting executives and clients and fourth from appointments, business lunches and the airport. Traditionally, companies had no other option but to own these cars, which involves very high fixed costs, including buying the asset (and) the costs of maintenance and insurance for multiple drivers. Now, companies can use car-sharing businesses for on-demand transportation while reducing their

transportation, overhead and fringe benefits costs. This has resulted in lower or no net expenses for private companies using car-sharing services. In the USA, Twitter managers use Zipcar's fleet of Mini Coopers and Toyota Priuses to meet various capacities and purposes in Silicon Valley or when travelling far away from its headquarters. In 2015, research found that Zipcar's business program eliminated the need for roughly 33,000 cars across North America.

From a business perspective, car sharing allows companies to convert the fixed costs of owning a company car to variable costs. If business slows, or a car isn't required, car-sharing customers are not burdened with the fixed costs of car ownership. Such an arrangement is also attractive to those who are reducing carbon emissions or companies with core values of employing sustainable practices, as research has shown that one car-sharing vehicle can replace up to 10 privately owned cars on the road. Several councils are putting their support behind car sharing by providing dedicated car-sharing parking spaces.

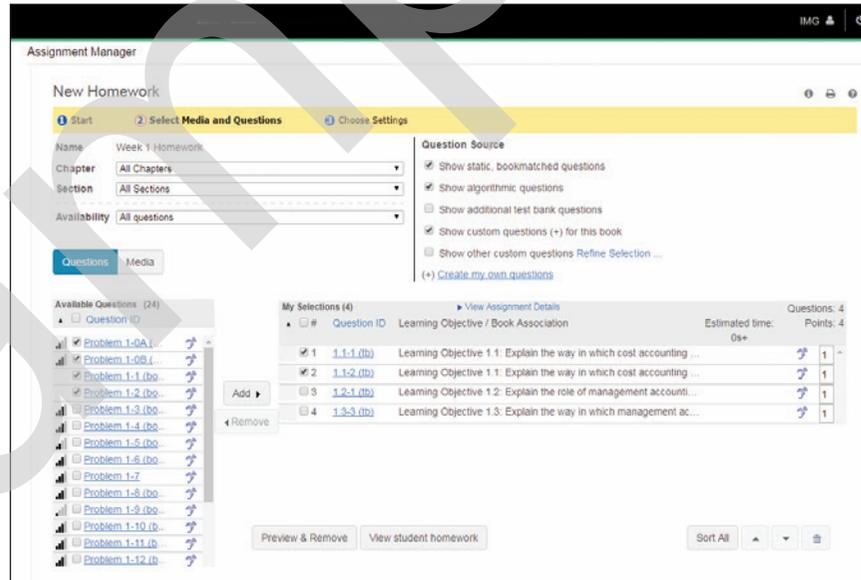
Car sharing is a practical and creative concept that helps solve the problem of companies on major city roads. In addition, car-sharing businesses that are concerned about multiple drivers. Now, companies can use car-sharing businesses for on-demand transportation while reducing their

Source: Avon, 2008. 'There's a real right competitor', *Avon* (Boston: Harvard), 20 May 2008. 'What's changing—Creating companies car share and expanded fleet services', *Business Source*, 19 May 2016. 'Uber', *Uber* (San Francisco, CA: Uber), 2016. 'GoCar', *GoCar* (San Francisco, CA: GoCar), 2016. 'CarShare', *CarShare* (San Francisco, CA: CarShare), 2016. 'Charter Drive', *Charter Drive* (San Francisco, CA: Charter Drive), 2016. 'Zipcar', *Zipcar* (Boston, MA: Zipcar), 2016. 'Uber', *Uber* (San Francisco, CA: Uber), 2016. 'GoCar', *GoCar* (San Francisco, CA: GoCar), 2016. 'CarShare', *CarShare* (San Francisco, CA: CarShare), 2016. 'Charter Drive', *Charter Drive* (San Francisco, CA: Charter Drive), 2016. 'Zipcar', *Zipcar* (Boston, MA: Zipcar), 2016. 'Uber', *Uber* (San Francisco, CA: Uber), 2016. 'GoCar', *GoCar* (San Francisco, CA: GoCar), 2016. 'CarShare', *CarShare* (San Francisco, CA: CarShare), 2016. 'Charter Drive', *Charter Drive* (San Francisco, CA: Charter Drive), 2016. 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## MyLab Accounting for Horngren's Cost accounting: a managerial emphasis, 3e A guided tour for students and educators

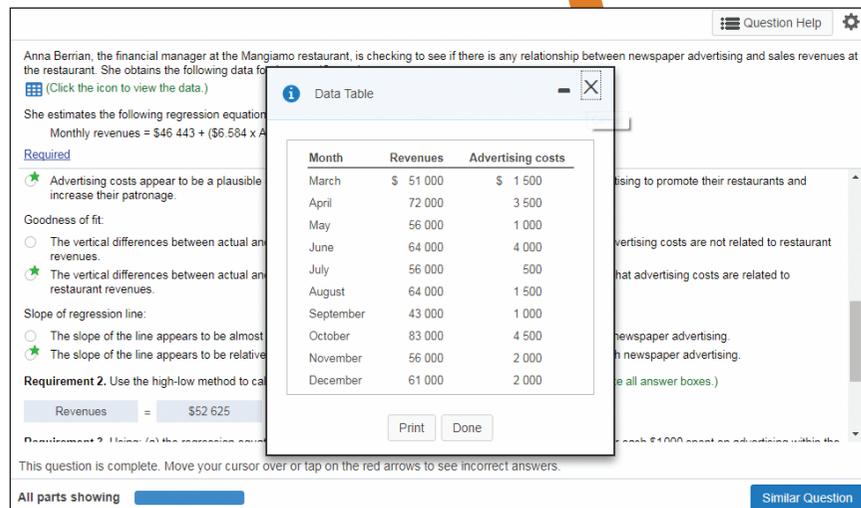
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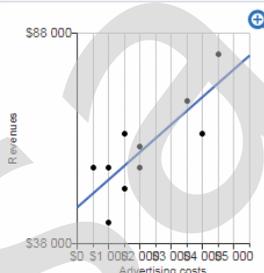


# MyLab Accounting [www.pearsonmylabandmastering.com](http://www.pearsonmylabandmastering.com)

Anna Berrian, the financial manager at the Mangiamo restaurant, is checking to see if newspaper advertising and sales revenues at the restaurant. She obtains the following data. (Click the icon to view the data.)

She estimates the following regression equation:  
 Monthly revenues = \$46,443 + (\$6,584 x Advertising costs)

**Required**



Evaluate the regression line using the criteria of economic plausibility, goodness of fit and slope of the regression line by choosing the correct statement to go with each of the evaluation criteria listed below.

Question Help

- Help Me Solve This
- eText Pages
- Calculator
- Print
- Ask the Publisher
- Add Instructor Tip

## Learning resources:

To further reinforce understanding, Study Plan and Homework problems link to additional learning resources:

- Step-by-step guided solutions
- Graphing tool
- eText linked to sections for Study Plan questions.

### Study Plan

Recommendations Progress All Chapters

Practice the sections, then take a Quiz Me to prove mastery and earn mastery points (MP).

**Recommended sections**

1.1 Management accounting and its role	▶	Practice	Quiz Me
1.2 The supply chain, value chain & key success factors	▶	Practice	Quiz Me
1.3 Planning, control and making decisions	▶	Practice	Quiz Me
1.4 Strategy, the organisation and its environment	▶	Practice	Quiz Me
1.5 The five-step guide to decisions	▶	Practice	Quiz Me

## Study Plan:

A Study Plan is generated from each student's results on quizzes and tests. Students can clearly see which topics they have mastered and, more importantly, which they need to work on.

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*William Maguire, Rebecca Tan*

# Management accounting in context

# 1

All organisations are concerned about revenues and costs in the pursuit of their mission. Whether their outputs are management services, fast food, the latest designer fashions or outcomes from a not-for-profit endeavour, managers must understand the influence of revenues and costs on their operations or risk losing control. Managers use management accounting information to make decisions related to strategy, budgeting, production planning and pricing, among others. Of the many candidates for this opening vignette, Sundrop Farms stands out as an illustration of many of the themes that run through this book.

## INNOVATION IN THE AUSTRALIAN OUTBACK: TRANSFORMING SEAWATER AND SUNLIGHT INTO HIGH-VALUE OUTPUTS

In June 2016, Coles Supermarkets took delivery of its first consignment of truss tomatoes from Sundrop Farms, situated in Port Augusta, South Australia. Sundrop Farms represents an investment of \$180 million to \$200 million on exhausted farm-land, with little potential for traditional agriculture. After early experimentation and a four-year pilot project not far from the current site, Sundrop Farms attracted \$100 million in funding from KKR (Kohlberg Kravis Roberts), a global private equity company, which it added to funding from the Saumweber family (Philipp Saumweber is the Chief Executive Officer [CEO] of Sundrop Farms) and others, including \$6 million from the South Australian government. Starting with four employees, Sundrop Farms now employs 150 people, operates at full capacity and produces 350 tonnes of truss tomatoes per week, the demand for which is estimated to increase at an annual rate of 15–20%. It sells all of its production to Coles Supermarkets, according to the terms of a 10-year contract signed with Coles in 2014.

Sundrop Farms transforms seawater and sunlight into high-value truss tomatoes—one product and one variety. Although the investment is high, giving rise to high fixed costs, Saumweber estimates that the depreciation of the investment amounts to less than 50% of the amount that would be spent on fossil fuels were it not for the solar installation. According to Leigh Oliver, director of KKR in Australia: ‘This is an agricultural investment without the traditional risks. The highly cyclical nature of natural effects

## LEARNING OBJECTIVES

- 1 Describe management accounting and explain its role.
- 2 Describe the constituents of the value chain, how the value chain relates to the supply chain, and the dimensions of performance that customers expect.
- 3 Describe planning, control and decisions.
- 4 Explain the meaning of strategy and the way in which management accounting might influence strategic decisions.
- 5 Describe and apply the five-step guide to decisions.
- 6 Explain the way in which accounting organisations influence management accountants’ conduct and effectiveness and, given the context, apply the code of ethics.



Patryk Kosmider/Shutterstock

Sources: Neales, S. 2016, ‘Desal and solar prove the perfect tomato sauce’, *The Australian*, 11 June, <<http://www.theaustralian.com.au/national-affairs/desal-and-solar-prove-the-perfect-tomato-source/news-story/997272591dd39cbf4a774a0ee93555b>>, accessed 16 December 2016; Neales, S. 2016, ‘This is the future of farming’, *The Weekend Australian Magazine*, no date, <<http://www.theaustralian.com.au/life/weekend-australian-magazine/this-is-the-future-of-farming/news-story/99fd0a207d8b6aa0768c32fd61b3d00e>>, accessed 15 December 2016; Sundrop Farms ABC Landline coverage, YouTube, <[https://www.youtube.com/watch?v=KCup\\_B\\_RHM4#t=213.079941](https://www.youtube.com/watch?v=KCup_B_RHM4#t=213.079941)>, accessed 17 December 2016; ABC, A Taste of Landline, series 2, episode 4, <<http://iview.abc.net.au/programs/taste-of-landline/RA1603Q004S00>>, accessed 17 December 2016; Thieberger, V. 2015, ‘The company that’s growing food in the desert’, *Business Spectator*, 20 November, <<http://www.theaustralian.com.au/business/the-company-thats-growing-food-in-the-desert/news-story/8ad288c3f55d7759b434a4e6ca6c11be>>, accessed 16 December 2016.

on agriculture and unexpected floods and fires are avoided. With the effect of 300 days of sunlight a year, harnessed by 24 000 mirrors focused on a tower 127 metres tall, which in turn channels the energy into four greenhouses with a combined area of 20 hectares, safeguarding 440 000 tomato vines and ensuring their access to abundant sunlight, opportunities for expansion are considerable. First, the farm currently produces only one variety of tomato and capsicums are suited to this process, with research continuing with other produce. Potential locations in other parts of the world include the Middle East, Portugal and California.’

## LEARNING OBJECTIVE

1

Describe management accounting and explain its role.

## Management accounting and its role

‘Management accounting is the sourcing, analysis, communication and use of decision-relevant financial and non-financial information to generate and preserve value for organisations’.<sup>1</sup>

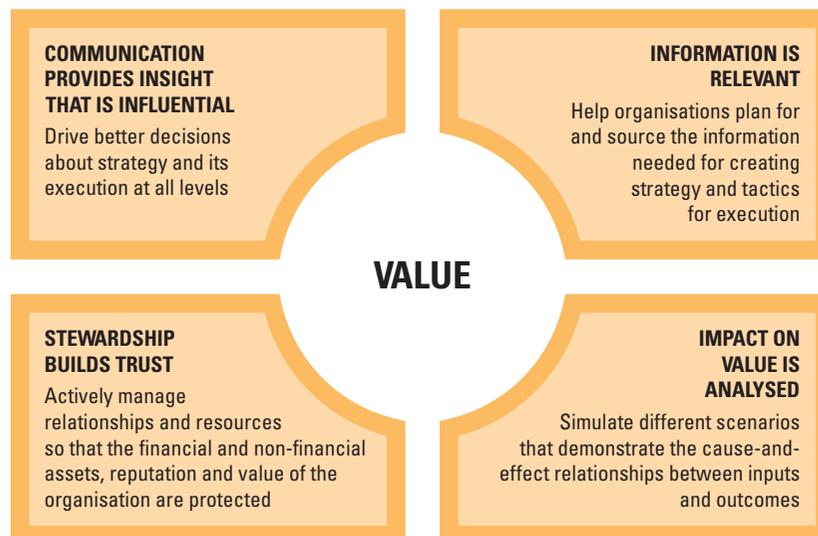
Managers seek information to help them to carry out their responsibilities. Information resides in various disciplines, including management accounting information systems, marketing and others. For managers in the world of practice, the boundaries of these disciplines are blurred. **Management accounting** serves managers by meeting their information needs. It affects and is affected by other relevant variables, and operates in context. The dictionary definition of context is ‘the circumstances that form the setting of an event, statement or idea’ and the word ‘context’ derives from the Latin: *contextus*, a combination of *con* ‘together’ and *texere* ‘to weave’.<sup>2</sup> We emphasise ‘context’ in this book because management accounting is interwoven with the factors or variables that are relevant to the decisions that need to be taken.

Although it is beyond the scope of this chapter to elaborate on and apply the global management accounting principles, the principles are consistent with the philosophy and approach that we have adopted in this book and you are encouraged to visit the CGMA (Chartered Global Management Accountant) website. Notice that value is centre-stage, consistent with the definition of management accounting that precedes Figure 1.1. Note carefully the four quadrants that surround value, and that communication is prominent among them. It does not matter how good your technical knowledge is, or how accurately you can answer multiple-choice and short-answer questions—without clear communication you will

**FIGURE 1.1**

### The Global Management Accounting Principles

Source: AICPA and CIMA. 2014, *Global Management Accounting Principles. Effective management accounting: Improving decisions and building successful organisations*, <[http://www.cgma.org/Resources/Reports/Pages/GlobalManagementAccountingPrinciples.aspx?utm\\_source=cimaglobal&utm\\_medium=principles-page&utm\\_campaign=principles2014](http://www.cgma.org/Resources/Reports/Pages/GlobalManagementAccountingPrinciples.aspx?utm_source=cimaglobal&utm_medium=principles-page&utm_campaign=principles2014)>, p. 9, accessed 17 December 2016. © 2017, Association of International Certified Professional Accountants. Used by permission.



<sup>1</sup> AICPA and CIMA. 2014, *Global Management Accounting Principles. Effective management accounting: Improving decisions and building successful organisations*, <[http://www.cgma.org/Resources/Reports/Pages/GlobalManagementAccountingPrinciples.aspx?utm\\_source=cimaglobal&utm\\_medium=principles-page&utm\\_campaign=principles2014](http://www.cgma.org/Resources/Reports/Pages/GlobalManagementAccountingPrinciples.aspx?utm_source=cimaglobal&utm_medium=principles-page&utm_campaign=principles2014)>, p. 8, accessed 17 December 2016.

<sup>2</sup> Stevenson, A. & Waite, M., editors. 2011, *Concise Oxford English Dictionary*, 12 ed., Oxford University Press, Oxford.

have limited or no impact as a management accountant or Chief Financial Officer (CFO). Clear communication includes the ability to listen, the ability to converse clearly and the ability to write clear and coherent reports. Related to this is the ability to select and present relevant information. While the availability of data can be an issue, the current over-abundance of data is perhaps a bigger challenge. The ability to analyse and demonstrate cause-and-effect relationships to identify impacts on value emphasises the focus on value and strengthens the previously mentioned principles; and trust underlies all.

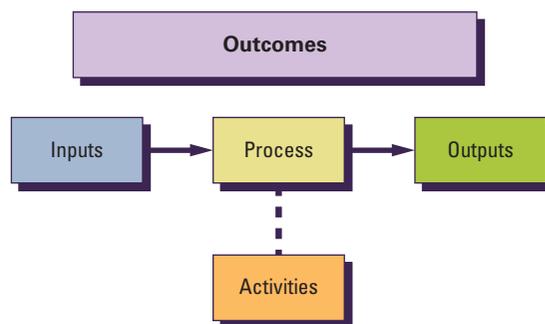
We refer repeatedly in this book to the basic business model identified in the CGMA publication<sup>3</sup> (see Figure 1.2). An ability to focus on the physical characteristics of an organisation's activities will facilitate the design and operation of management accounting systems and enhance your understanding of concepts. For example, cost as an abstract concept is bound to be elusive. A well-known management accounting academic is renowned to have said: 'I have never seen a cost walk into a room, have you?' You haven't met a cost, because 'cost' is an abstract concept. Managers manage the activities that underlie costs; they do not manage costs directly.

Accounting systems process data relating to economic events and transactions, such as sales and purchases of materials, and transform them into information that is useful for reporting to external users and internal users. Among the latter, the information is helpful to managers, sales representatives, production supervisors and others. Management accountants collect, categorise, summarise and analyse data. For example, they collect costs by category, such as materials, labour and shipping, and summarise the detail to determine total costs by month, quarter or year. They analyse the results to highlight, for example, how costs have changed relative to revenues from one period to the next.

They also provide the information found in the income statement, the balance sheet,<sup>4</sup> the statement of cash flows, and performance reports, such as the cost of operating a factory or of providing a service. Managers use management accounting information to: choose, communicate and implement strategy; coordinate product design, production and marketing decisions; evaluate performance; administer the activities, businesses or functional areas they oversee; and coordinate these activities within the framework of the organisation. This book focuses on how management accounting assists managers in these tasks.

Management accounting information is governed by the key questions: (1) how will this information help managers do their jobs better?; and (2) do the benefits of producing this information exceed the costs? The reports do not have to follow set principles or rules.

Managers with different responsibilities often require the information in an accounting system to be presented or reported in different ways. For example, a sales manager, a distribution manager and a production manager would have quite different interests in sales order information. A sales manager may be interested in the total dollar amount of sales, to determine the commissions to be paid; a distribution manager may be interested in the sales order quantities by geographical region and by customer-requested delivery dates, to ensure



**FIGURE 1.2**

The basic business model: inputs–process–outputs–outcomes

<sup>3</sup> See footnote 1.

<sup>4</sup> These terms for financial statements will be used throughout the book because they are commonly understood and widely used. However, the official terms are 'statement of comprehensive income' and 'statement of financial position' according to a 2009 revision to AASB 101.

timely deliveries; and a production manager may be interested in the quantities of various products and their desired delivery dates, to enable scheduling of production.

An ideal database—sometimes called a data warehouse or infobarn—consists of small, detailed pieces of information that can be used for multiple purposes. For instance, the sales order database will contain detailed information about product, quantity ordered, selling price and delivery details (place and date) for each sales order. The database stores information in a way that allows managers to access the information they need. Many companies are building their own enterprise resource planning (ERP) systems, single databases that collect data and feed it into applications that support the company's business activities, such as purchasing, production, distribution and sales.

### Three guidelines

Three guidelines that help management accountants provide value to their companies in strategic and operational decisions are: (1) analyse benefits and costs; (2) give full recognition to behavioural and technical considerations; and (3) use different costs for different purposes.

### Benefit–cost analysis

Management accountants continually face resource allocation decisions, such as whether to purchase a new software package or hire a new employee. A **benefit–cost analysis** is appropriate for these decisions because resources should be used only if the expected benefits to the company exceed the expected costs. Do not be put off when expected benefits and costs are difficult to quantify; it is better to recognise them and make an estimate than to ignore them.

Think about a company that conducts its business with historical record-keeping and little formal planning. Its management team thinks that it may be time for its first budgeting system. A budgeting system compels managers to plan ahead, to compare actual with budgeted information and to take corrective action. This is a major benefit of a budgeting system. The budgeting system entails investments in physical assets, in training managers and others, and in ongoing operations. These are the major costs. Once the budgeting system is in place, the new information can be expected to lead to different decisions that create more profits than the decisions that would have been made using the historical system. The expected benefits of the new budgeting system thus exceed the expected costs.

### Behavioural and technical considerations

The benefit–cost criterion assists managers in deciding whether, say, to install a proposed budgeting system instead of continuing to use a historical system. Consider the human (the behavioural) side of the decision to use budgeting. Budgets induce a different set of decisions within an organisation because of better collaboration, planning and motivation. A management accounting system has two simultaneous missions—one technical and the other behavioural. The technical considerations help managers make wise economic decisions by providing them with the desired information (e.g. costs in various value-chain categories) in an appropriate format (e.g. actual results versus budgeted amounts) and at the preferred frequency (e.g. weekly versus monthly). Appropriate attention to behavioural issues motivates managers and other employees to aim for the goals of the organisation.

Managers and management accountants are aware that management is not confined to technical matters. It is primarily a human activity that should focus on how to help individuals do their jobs better, for example by helping them to understand the activities that add value and those that do not. Moreover, when workers underperform, behavioural considerations suggest that managers should do more than send them a report highlighting their underperformance; they should also personally discuss with the workers ways to improve performance.

### Different costs for different purposes

As in many other domains, 'one size fits all' does not apply to management accounting. Different costs serve different purposes. A cost concept used for external accounting reports may not be appropriate for internal reporting to managers.

Consider the advertising costs associated with Vodafone launching a major new product. The product is expected to have a useful life of two years or more. For external reporting to shareholders, television advertising costs for this product are an expense in the income statement in the year they are incurred, as required by International Financial Reporting Standards (IFRS) and other authoritative standards. However, management accountants at Vodafone could capitalise these advertising costs and amortise them over several years if they believe that doing so would provide a more accurate and fairer measure of the performance of the managers who launched the new product. Differences also arise across different management decisions; the central criterion for short-term decisions is cost behaviour (fixed and variable costs), whereas traceability and cause-and-effect relationships are central to activity-based costing. Chapter 2 focuses on different costs for different purposes.

## Management accountants in organisations

Most organisations distinguish between line management and staff management; the management accountant is part of staff management. In practice, we might find management accountants whose responsibilities blur across other accounting-related activities and whose titles and positions might vary from organisation to organisation.

**Line management**, such as production, marketing and distribution management, is directly responsible for attaining the goals of the organisation. For example, managers of production divisions might target particular levels of budgeted operating profit, certain levels of product quality and safety, and compliance with environmental laws. **Staff management**, such as management accountants and information technology and human resources management, exists to provide advice and assistance to line management. A plant manager (a line function) may be responsible for investing in new equipment. A management accountant (a staff function) works as a business partner of the plant manager by preparing detailed operating cost comparisons of pieces of equipment. In this book, we regard the management accountant as the chief management accounting executive. By reporting and interpreting relevant data, the management accountant influences managers towards making better-informed decisions as they implement their strategies. Where an organisation is large enough to employ both a CFO and a management accountant, the management accountant reports to the CFO.

The **chief financial officer** or **financial director** is a staff manager who reports to the managing director or CEO and is the executive responsible for the financial operations of an organisation and managing the accounting or finance function. While the specific responsibilities of the CFO vary between organisations, they may include the following:

- **financial reporting** to managers for planning, control and decision making, and to shareholders
- **strategy**—defining strategy and allocating resources to implement strategy
- **treasury**—overseeing banking, short- and long-term financing, investments and cash management
- **risk management**—managing financial risk of interest-rate and exchange-rate changes and derivatives management
- **taxation**—managing income taxes, goods and services tax (GST) and tax planning
- **investor relations**—communicating with, responding to and interacting with shareholders.

An independent internal audit group function reviews and analyses financial and other records to attest to the integrity of the organisation's financial reports and to adherence to its policies and procedures.

In most organisations, there are also informal relationships that managers must understand when they attempt to implement their decisions. Examples of informal relationships are friendships of a professional or personal nature among managers and the personal preferences of top management about the managers they rely on in decision making. Increasingly,

organisations such as Honda and Dell are using teams to achieve their objectives. These teams include both line and staff management so that all inputs into a decision are available simultaneously.

Think about managers engaged in designing and implementing strategies, and the organisational structures within which they work. Then think about management accountants' roles. It should be clear that the successful management accountant must have technical and analytical competence *as well as* behavioural and interpersonal skills. The next section describes some desirable values and behaviours and why they are so critical to the partnership between management accountants and managers. We will elaborate on these values and behaviours in subsequent chapters of this book.

## Management accounting beyond the numbers<sup>5</sup>

Many people outside the accounting profession perceive accountants to be just 'numbers people'. Although management accountants are undoubtedly adept financial managers, their skills do not stop there. The characteristics and skills of successful management accountants extend beyond the numbers, enabling them to

- *work well in cross-functional teams and as a business partner.* 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.
- *promote fact-based analysis and make tough-minded, critical judgements without being adversarial.* Management accountants raise tough questions for managers to consider, especially when preparing budgets. They 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, management accountants 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.
- *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 that 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.
- *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 multidisciplinary teams need to deliver new innovations profitably.
- *have high integrity.* This precludes their succumbing to pressure from managers to manipulate financial information. Their primary commitment is to the organisation

5 Akroyd, C. & Maguire, W. 2011, 'The roles of management control in a product development setting', *Qualitative Research in Accounting & Management* 8(3); Garling, W. 2007, 'Winning the transformation battle at the Defense Finance and Accounting Service', May–June; Nixon, B., Burns, J. & Jazayeri, M. 2011, 'The role of management accounting in new product design and development decisions', *Research Executive Summary Series*, 9(1), Chartered Institute of Management Accountants, London, November; Worthen, B. 2012, 'H-P says it was duped, takes \$8.8 billion charge', *The Wall Street Journal*, November; Gollakota, K. & Vipin, G. 2009, *WorldCom Inc.: What went wrong*, Richard Ivey School of Business Case No. 905M43, The University of Western Ontario, London, ON, <[http://cb.hbsp.harvard.edu/cb/web/product\\_detail.seam?R=905M43-PDF-ENG](http://cb.hbsp.harvard.edu/cb/web/product_detail.seam?R=905M43-PDF-ENG)>; United States Senate Permanent Subcommittee on Investigations. 2013, *JPMorgan Chase Whale trades: A case history of derivatives risks and abuses*, Government Printing Office, Washington, DC, 15 March.

and its stakeholders. In 2015 Toshiba, the Japanese maker of semiconductors, consumer electronics and nuclear power plants, wrote down US\$1.9 billion of earnings that had been overstated over the previous seven years. The problems stemmed from managers setting aggressive profit targets that subordinates could not meet without inflating divisional results by understating costs, postponing losses and overstating revenues.

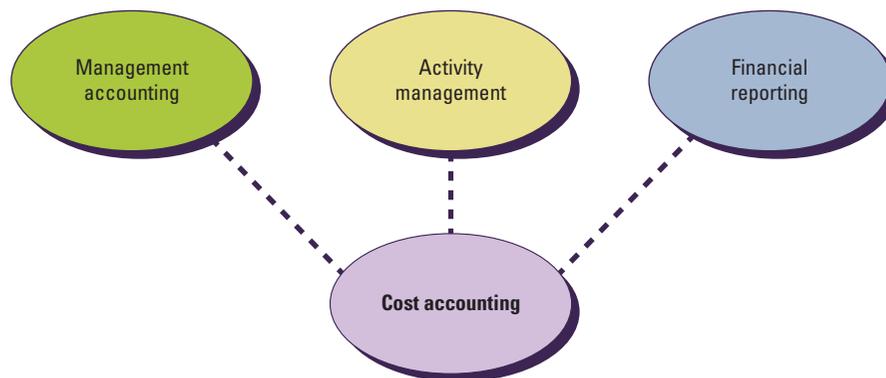
## Roots and interdisciplinary connections

Although management accounting has its roots in cost accounting, its growing prominence in the support of management has increased its connections with other disciplines over time (see Figure 1.3). Examples, among others, are: financial statement analysis—ratios such as return on investment in evaluating performance (chapter 20); finance—present values and related metrics for capital investment appraisal (chapter 18); corporate governance—accountability and sustainability (chapter 21); and internal and external auditing (planning and control) (chapter 11).

Cost accounting provides information for management accounting and financial accounting. **Cost accounting** measures, analyses and reports financial and non-financial information relating to the costs of acquiring or using resources in an organisation. For example, estimating the cost of a product is a cost accounting process that answers the financial accountant's inventory-valuation needs for providing management with information to make decisions, such as choosing which products to offer. The cost information collected is a function of the management decisions being made—hence different costs for different purposes, as noted above. Thus, the distinction between management accounting and cost accounting is not clear-cut, and we often use these terms interchangeably in the book.

As mentioned earlier, managers manage activities; they cannot manage costs directly.<sup>6</sup> By managing activities, which consume resources, managers affect resource consumption, and thus costs, in their quest to increase value to customers and to achieve the organisation's goals. Decisions in this area relate to issues such as the amounts and kinds of materials used, changes in plant processes and changes in product designs, programs that enhance customer satisfaction and quality, research and development (R&D), and marketing programs to promote 'blockbuster' new products. Managing activities shifts the emphasis from ascertaining costs to influencing resource consumption and is inextricably linked with revenue and profit planning. Managers often deliberately incur additional costs to enhance revenues and profits, for example in advertising and product modifications.

**Financial accounting**, also frequently referred to as *financial reporting*, focuses on reporting to external stakeholders, such as investors, lenders, suppliers and government agencies. It measures and records business transactions and provides financial statements that are governed by IFRS and regional and national modifications thereof. Since 2002 the internationalisation of financial reporting has led to significant convergence of the way in



**FIGURE 1.3**

Cost accounting supports management accounting, activity management and financial reporting

<sup>6</sup> You are likely to see or hear references to 'cost management' in presentations and various publications. The term is a misnomer because managers cannot manage costs—they can only manage activities. Although we avoid the term for this reason, the term 'cost management' may appear in this book from time to time because it is widely used.

**TABLE 1.1** Major differences between management accounting and financial accounting

	<b>Management accounting</b>	<b>Financial accounting</b>
Purpose of information	Helps managers make decisions to achieve an organisation's goals	Communicates an organisation's financial position and performance to investors, banks, regulators and other outside parties
Primary users	Managers of the organisation	External users, such as investors, banks, regulators and suppliers
Focus and emphasis	Future-oriented (budget for 2019 prepared in 2018)	Past-oriented (reports on 2018 performance prepared in 2019)
Rules of measurement and reporting	Internal measures and reports are based on benefit–cost analysis; they do not have to follow regulations for external users	Financial statements must be prepared in accordance with external reporting requirements and be certified by external, independent auditors
Time span and type of reports	Varies from hourly information to 15–20 years, with financial and non-financial reports on products, departments, regions and strategies	Annual and quarterly financial reports, primarily on the organisation as a whole
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

which the income statement, balance sheet and statement of cash flows are presented. While an examination of these statements as prepared for external stakeholders is beyond the scope of this book, we recognise that managers' compensation is often directly affected by the numbers in these financial statements. Consequently, managers are interested in both management accounting and financial accounting.

Table 1.1 summarises the major differences between management accounting and financial accounting. At the same time, note that reports such as balance sheets, income statements and cash flow statements are common to both management accounting and financial accounting.

### DECISION POINT 1

What is management accounting and what is its role?

## LEARNING OBJECTIVE 2

Describe the constituents of the value chain, how the value chain relates to the supply chain, and the dimensions of performance that customers expect.

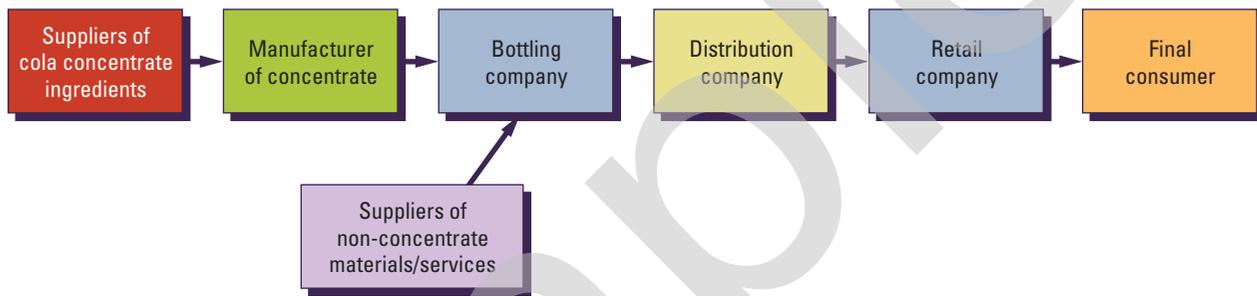
## The supply chain, the value chain and key success factors

Customers demand much more than a fair price from companies; they also expect a high-quality product or service delivered in a timely way. The entire customer experience determines the value that s/he derives from a product or service. In this section, we explore how managers and workers go about creating that value.

### The supply chain and the value chain

The term **supply chain** (see Figure 1.4) describes the flow of goods, services and information from the initial sources of materials and services to the delivery of products to consumers, regardless of whether those activities occur in the same organisation or in other organisations. By analysing activities, managers are able to integrate and coordinate them across suppliers and customers in the supply chain, as well as across business functions in an individual company's value chain, with a view to reducing costs. For example, many companies play a role in bringing soft drinks like Coke and Pepsi to consumers. Both The Coca-Cola Company and Pepsi Bottling Group contract with their suppliers (such as plastic and aluminium companies and sugar refiners) to deliver small quantities of materials directly to the production floor frequently, to reduce materials handling costs. Customers of these companies similarly manage their supply chains: supermarkets often ask these and other suppliers to manage inventory at both their warehouse and the supermarket, thus reducing inventory levels in the supply chain.

**FIGURE 1.4** Supply chain for a cola bottling company

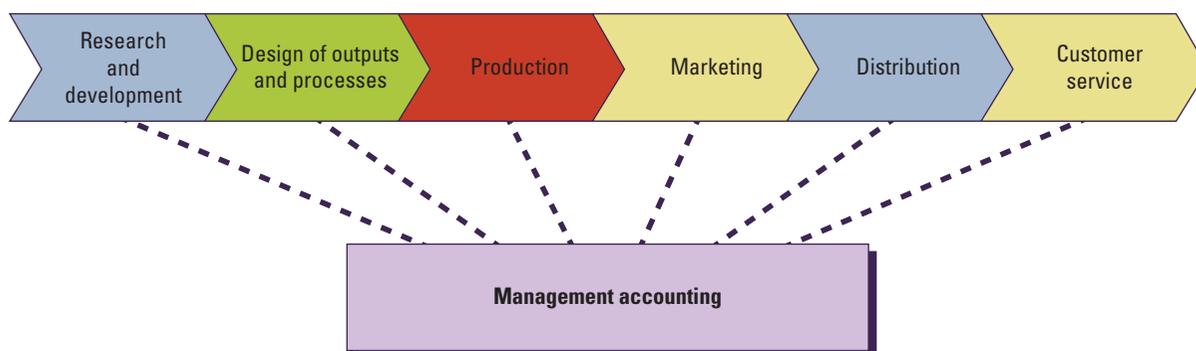


Companies make a strategic decision to create and add value by operating across the entire supply chain for the industry or to select a segment of it. The selected segment constitutes the **value chain** for the business, that is, the sequence of business functions or activities through which the organisation is able to add value in producing outputs. Beyond the value chain, managers can work with other parties in the supply chain to add value and reduce costs. Management accountants track the costs incurred in each value chain category, to reduce its costs and to improve efficiency. Cost information also helps managers make benefit–cost trade-offs. For example, is it cheaper to buy products from outside vendors or to produce in-house? Is it worthwhile to invest more resources in design and production if it reduces costs in marketing and customer service or increases revenues?

Figure 1.5 shows six business functions: research and development, design of outputs and processes, production, marketing, distribution and customer service. We illustrate these business functions using Sony’s television division.

1. **Research and development**—generating and experimenting with ideas related to new products, services or processes. At Sony, this function includes research on alternative television signal transmission (analogue, digital, high definition) and on the clarity of different shapes and thicknesses of television screens.
2. **Design of products, services or processes**—detailed planning and engineering of products, services or processes. Design at Sony includes determining the number of component parts in a television set and the effect of alternative product designs on quality and manufacturing costs.
3. **Production**—acquiring, coordinating and assembling resources to produce a product or a service. Production of a Sony television set involves the efforts of people and the use of machines and equipment to acquire and assemble the electronic parts, the cabinet and the packaging used for shipping. Screening of a movie at Village Theatres similarly involves the efforts of people and the use of machines and equipment to acquire the movie and

**FIGURE 1.5** Managers in different parts of the value chain



## CONCEPTS IN ACTION

### Supplier and customer perspectives on managing the supply chain

In 2011, the Australian Competition and Consumer Commission (ACCC) brought an unconscionable conduct action against Coles regarding the way in which it had dealt with its suppliers. Following a recent question from financial journalist Alan Kohler, John Durkan, the CEO of Coles, responded that the incident referred to a small group of suppliers, to whom Coles had apologised, and that Coles had paid its fine and had taken action to improve matters. Part of this action was to appoint Jeff Kennett, a former premier of Victoria, as arbitrator of supplier-related issues and to ensure that suppliers had easy access to him. Durkan emphasised the importance that Coles places on suppliers:

‘So over the period of time, we’ve focussed on our suppliers and our supplier base actually because the only way we can absolutely get the quality of products that we need and our customers want and the lower prices is by having the right supplier base . . . So we’ve been moving to longer term contracts now for seven years or eight years. And, as I said, we’ve been dealing with mainly these family-owned businesses for decades.’

Coles has a 10-year agreement with Murray Goulburn Co-operative Co. Ltd for milk, and in 2014 signed a 10-year

supply agreement with Sundrop Farms for its full production at Port Augusta, some 17 million kilograms a year of truss tomatoes, at a fixed price. It expects demand for truss tomatoes to grow at an annual rate of 15–25%. Durkan pointed out that this provides security of supply for Coles, including during the winter months when tomatoes are otherwise scarce and expensive.

Sundrop started delivering its first tomatoes to Coles in the first half of 2016, pursuant to the agreement with Coles referred to above. How does this style of supply-chain arrangement suit the supplier, in this case, Sundrop Farms? Sundrop’s technology, process and planting cycle ensures that tomatoes are picked 10 weeks after planting over 50 weeks a year, which is central to being able to supply Coles’ supermarkets continuously; six double-container truckloads leave the farm every day for distribution to supermarkets and consumers in Perth, Darwin, Adelaide, Melbourne, Sydney and Brisbane. The long-term contract protects Sundrop from the uncertainties that remain, allowing it to concentrate on improving production, technology and efficiency and to continue with experimentation without being concerned with finding and dealing with many separate customers. After 10 years of the Coles contract, Sundrop is able to consider re-negotiating or putting its glasshouses to work on other tomato varieties or indeed other crops such as capsicums or cucumbers.

*Sources:* ABC, A Taste of Landline, series 2, episode 4, <<http://iview.abc.net.au/programs/taste-of-landline/RA1603Q004S00>>, accessed 17 December 2016; Bartholomeusz, S. & Kohler, A. 2015, ‘Coles runs its own race’, *Business Spectator*, 30 November, <<http://www.theaustralian.com.au/business/business-spectator/coles-runs-its-own-race/news-story/55b27e917c6dada310ed51cc0820e621#differentiate>>, accessed 16 December 2016; Neales, S. 2016, ‘Desal and solar prove the perfect tomato sauce’, *The Australian*, 11 June, <<http://www.theaustralian.com.au/national-affairs/desal-and-solar-prove-the-perfect-tomato-source/news-story/9972772591dd339cbf4a774a0ce93555b>>, accessed 16 December 2016; Neales, S. 2016, ‘This is the future of farming’, *The Weekend Australian Magazine*, no date, <<http://www.theaustralian.com.au/life/weekend-australian-magazine/this-is-the-future-of-farming/news-story/99fd0a207d8b6aa0768c32fd61b3d00e>>, accessed 16 December 2016; Sundrop Farms ABC Landline coverage, YouTube, <[https://www.youtube.com/watch?v=KCup\\_B\\_RHM4#t=213.079941](https://www.youtube.com/watch?v=KCup_B_RHM4#t=213.079941)>, accessed 17 December 2016.

related inputs such as food and drink and to project the movie onto the screen. As noted above, the term *production* can be used to refer to both products (tangible outputs) and services (intangible outputs), while **manufacturing** refers only to products.

4. **Marketing (including sales)**—promoting and selling products or services to customers or prospective customers. Sony markets its televisions through trade shows, advertisements in newspapers and magazines, and on the internet.
5. **Distribution**—delivering products or services to customers. Distribution for Sony includes shipping to retail outlets, catalogue vendors, direct sales via the internet and other channels through which customers purchase televisions.
6. **Customer service**—providing after-sales support to customers. Sony provides customer service on its televisions in the form of customer-help telephone lines, support on the internet and warranty repair work.

Each of these business functions is essential to Sony’s satisfying its customers and keeping them satisfied and loyal over time. Companies use the term *customer relationship management* (CRM) to describe a strategy that integrates people and technology in all business functions

to enhance relationships with customers, partners and distributors. CRM coordinates all customer-facing activities (i.e. marketing, sales calls, distribution and post-sales support) and the design and production activities necessary to get products to customers.

Although Figure 1.5 depicts the usual order in which different business functions occur, do not interpret this figure as implying that managers should proceed sequentially through the value chain when planning and managing activities. Companies gain (in terms of cost, quality and the speed with which new products are developed) if two or more managers of the individual business functions of the value chain work concurrently as a team. For example, inputs into design decisions by production, marketing, distribution and customer service managers often lead to design choices that reduce the total costs of the company.

Campbell Soup Company incurs the following costs:

- a. purchase of tomatoes by a canning plant for Campbell's tomato soup products
- b. purchase of materials for redesigning Pepperidge Farm biscuit containers to make biscuits stay fresh longer
- c. payment to Backer Spielvogel Bates, the advertising agency, for advertising work on the Healthy Request line of soup products
- d. salaries of food technologists researching the feasibility of a Prego pizza sauce that has minimal calories
- e. payment to Safeway for redeeming coupons on Campbell's food products
- f. cost of a toll-free telephone line used for customer enquiries about using Campbell's soup products
- g. cost of gloves used by line operators on the Swanson Fiesta breakfast food production line
- h. cost of hand-held computers used by Pepperidge Farm delivery staff serving major supermarket accounts.

1.1

**TRY IT!**

### Required

Classify each cost item (a–h) as one of the business functions in the value chain in Figure 1.5 (p. 9).

**Key success factors** are those functions, activities or business practices, defined by the market not the company, and as viewed by the customer, that are critical to the vendor/customer relationship. They revolve around skills, processes and systems, of which core competencies are a part. Core competencies focus on internal activities, practices and functions. When these competencies are aligned with key success factors, the value of the business relationship blossoms and grows for the benefit of both the company and the customer. When analysing key success factors, it is important to be realistic about both the drivers of the market and the drivers of the customers' needs. It is also key to understand and to define the position of the company in relation to its competitors.

Key success factors can exist in both the functional areas and the condition or circumstances of the company. Functional key success factors might include things such as proprietary processes (production); after-sale service or a highly trained sales force (marketing); on-time, perfect order delivery (supply chain); and online, real-time information exchange between company and customer (technology). Examples of key success factors relating to the condition or circumstances of the company could be: favourable market image or reputation; low-cost operations (not limited to production); location relative to customer; and exclusive production processes in production or supply chain.

The final step in the analysis of key success factors is to determine the total value of the factors that the business brings to the customer versus the key success factors that the competitors bring to the customer, and then to arrange the key success factors in order of priority from the viewpoint of the customer and focus on those functions, activities and

practices that are considered most important to the customer, bring the most value to the customer and are most clearly distinguished from competitors. Customers expect companies to use the value chain and supply chain to deliver ever-improving levels of performance regarding several (or even all) of the following:

- **Cost and efficiency**—managers of companies face continuous pressure to reduce the cost of the products or services they sell. To calculate and manage the cost of products, the management accountant tries to understand the tasks or activities (e.g. setting up machines or distributing products) that cause costs to arise. Managers monitor the marketplace to determine prices that customers are willing to pay for products or services. Management accountants calculate a target cost for a product by subtracting the operating profit per unit of product that the company thinks it can earn from the 'target price'. Managers work with management accountants to achieve the target cost by eliminating some activities (e.g. rework) and by reducing the costs of performing activities in all value-chain functions—from initial R&D to customer service. Increased global competition is placing even more pressure on companies to lower costs. Managers of companies around the world are cutting costs by outsourcing some of their business functions. Among Australian and New Zealand companies that have done so are: Macpac, a well-known maker of bushwalking and camping gear, which has moved its manufacturing operations to China and the Philippines; Westpac, which has outsourced jobs to India; and TPG, a telecommunications company, which has also outsourced its customer service operations to India. Indeed, FooBooOnLine has established an online portal as a contact point for buyers and suppliers of outsourcing services in the Asia-Pacific region.
- **Quality**—customers expect high levels of quality. Total quality management (TQM) is a philosophy in which management improves operations throughout the value chain to deliver products and services that exceed customer expectations. TQM encompasses designing the product or service to meet the needs and wants of customers, as well as making products with zero or minimal defects and waste and with low inventories. Management accountants evaluate the costs and revenue benefits of TQM initiatives.
- **Time**—time has many components. New product development time is the time it takes for new products to be created and brought to market. The increasing pace of technological innovation has led to shorter product life-cycles and the need for companies to bring new products to market more rapidly. The management accountant measures the costs and benefits of a product over its life-cycle. Customer response time describes the speed at which an organisation responds to customer requests. To increase customer satisfaction, organisations must complete activities faster and meet promised delivery dates reliably. Delays or bottlenecks occur when the work to be performed exceeds the available capacity. To increase output in these situations, managers need to increase the capacity of the bottleneck operation. The management accountant's role is to quantify the costs and benefits of relieving the bottleneck constraints.
- **Innovation**—a constant flow of innovative products or services is the basis for ongoing success. The management accountant helps managers evaluate investment and R&D decisions.

Management accountants help managers track performance on the chosen key success factors relative to the performance of competitors on the same factors. Tracking what is happening in other companies serves as a *benchmark* and alerts managers to the changes their own customers are observing and evaluating. The goal is for a company to *continuously improve* its critical operations, for example on-time arrival for Virgin Blue, 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. However, successful strategy implementation requires more than value-chain and supply-chain analysis and execution of key success factors. It is the decisions that managers make that move them and their teams to develop, integrate and implement their strategies.

## DECISION POINT 2

How do managers and workers add value, and what are the dimensions of performance that customers expect?

## Planning, control and making decisions

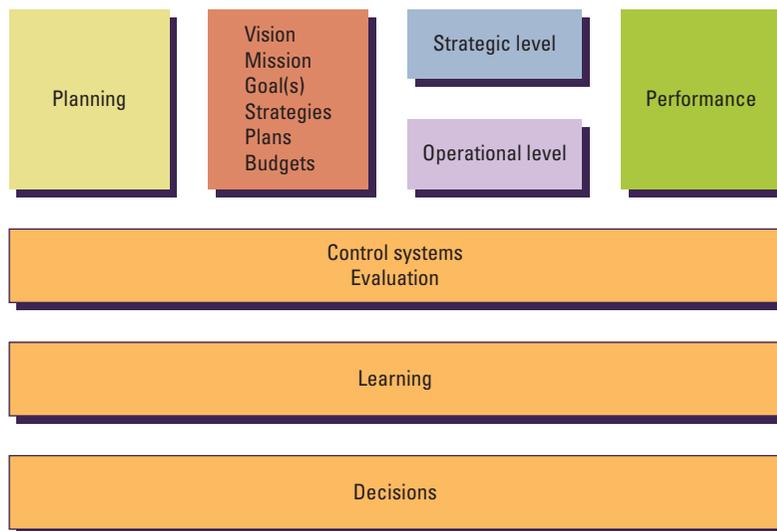
### LEARNING OBJECTIVE 3

Describe planning, control and decisions.

Managers plan, control, delegate and make decisions, among other things. These actions are interwoven; they are not discrete and distinct. A manager cannot control without a plan, and decisions permeate all actions: deciding to plan and how to plan, deciding to control and how to control, and deciding to delegate and to whom. These decisions occur on the way to other decisions in response to questions such as: What price should we charge? What product mix should we offer? Which market segment should we target? How do we improve efficiency and effectiveness? People within an organisation acquire inputs and manage processes to transform inputs into outputs.

**Planning** involves selecting organisational goals, predicting results under various ways of achieving those goals, deciding how to attain the desired goals and communicating both the goals and how to attain them to the entire organisation. Management accountants serve as business partners in these planning activities because they understand what creates value and the key success factors involved. Planning encompasses vision, mission, goal(s), strategies, plans and budgets. The different facets are organised in Figure 1.6, approximately according to the time horizons that apply—from long run to short run. ‘Strategies’ appear approximately in the middle because, although managers form them with a view to the long run, they must be continually implemented in the short term.<sup>7</sup> In a seminal article, Robert Anthony (1965)<sup>8</sup> presents a framework of planning and control systems, which distinguishes between strategic, management and operational (also subsequently referred to as task) planning and control to highlight the relationship between the levels and differing characteristics such as the time-frame involved, the reliance on external versus internal information, the frequency of reporting and the like. Although there is a difference between management control and operational control, we simplify to two levels: strategic and operational.

An organisation’s **mission statement** identifies the organisation’s purpose/objective, its output/market scope and the way it conducts its operations;<sup>9</sup> the output/market scope includes customer groups served, customer functions and technologies used.<sup>10</sup> A **statement of values** underpins the way in which the organisation conducts business. A **vision statement**, which is a



**FIGURE 1.6**

Planning and control systems

<sup>7</sup> The word ‘strategy’ is used equally to refer to ‘grand’ strategy, which overarches the entire organisation, and to specific strategies, as in marketing, pricing or competing. This is potentially confusing to newcomers and can be resolved only by examining the context in which the strategy is mentioned.

<sup>8</sup> Anthony, R. N. 1965, *Planning and control systems: A framework for analysis*, Division of Research, Graduate School of Business Administration, Harvard University.

<sup>9</sup> Maguire, W. & Bhowan, K. 1988, ‘The mission statement: Why bother with it?’, *Businessman’s Law*, 17: 189–190, 192.

<sup>10</sup> Abell, D. F., 1980, *Defining the business: The starting point of strategic planning*, Prentice Hall, Englewood Cliffs, NJ.

one-sentence statement of the organisation's long-term goal or objective, usually accompanies the mission statement. Not all organisations present these key statements in the same way, although sound statements do feature the key elements specified above. The *Concepts in action* feature opposite presents two examples, one profit-seeking (Westpac) and one not-for-profit (International Federation of Accountants [IFAC]). Note that Westpac has incorporated its mission and values into its statement of strategy, which is the focus of the next section.

A **budget** is the quantitative expression of a proposed plan of action by management, most often, but not always, for a time horizon of one year. It has the potential to encourage coordination and communication throughout a company, as well as with the company's suppliers and customers, because the process of preparing a budget crosses business functions. Although a budget is an important planning tool, it is arguably more powerful as a control tool. **Control** involves taking actions that implement the planning decisions, deciding how to evaluate performance, and providing feedback and learning to help future decision making. As mentioned above, a budget is also a control tool because it is a benchmark against which actual performance can be compared, thus providing a basis for evaluating performance. Planning and control activities must be sufficiently flexible to allow managers to seize opportunities unforeseen at the time the plan was formulated. Control should not pressure managers to cling to a plan when unfolding events, such as an opportunity for an unexpected advantage in the market, indicate that actions outside of that plan, such as spending more money for marketing, would significantly improve results from higher sales.

Performance measures tell managers how well they, the organisation as a whole and/or their responsibility centres are doing. Linking rewards to performance helps motivate managers. These rewards are both intrinsic (self-satisfaction for a job well done) and extrinsic (salary, bonuses, promotions linked to performance). **Learning** follows from examining past performance and systematically exploring ways to make better-informed decisions and plans in the future. Learning can lead to changes in goals, in the ways courses of action are identified, in the range of information collected when making predictions, and sometimes to changes in management.

## Sustainability

**Sustainability** is 'the ability to continue a defined behaviour indefinitely' and comprises environmental, economic and social sustainability: (1) 'environmental sustainability is the ability to maintain rates of renewable resource harvest, pollution creation, and non-renewable resource depletion that can be continued indefinitely'; (2) 'economic sustainability is the ability to support a defined level of economic production indefinitely'; and (3) 'social sustainability is the ability of a social system, such as a country, to function at a defined level of social well-being indefinitely'. Environmental, economic and social sustainability are frequently referred to as the 'three pillars of sustainability'.<sup>11</sup>

With the contemporary focus on sustainability, we expect companies to report on it in their corporate responsibility reports, to refer to it in their vision statements and to incorporate it into their strategies. From a societal viewpoint, management accounting contributes by bringing relevant costs and benefits of sustainability to the attention of decision makers in the public arena, such as city councillors or government ministers. At the organisational level, although at one time the decision to set up a new factory would have been made on the basis only of benefits and costs affecting the company concerned, today's management accountant would integrate sustainability issues into planning and control at both strategic and operational levels. Concern for sustainability requires that we now consider externalities, such as the pollution of air and water. Management accounting is well placed to inform these decisions by recognising both financial and non-financial benefits and costs.

The emergence of products and services that offer sustainable solutions is another manifestation of the centrality of sustainability. We have all no doubt noticed the attention

<sup>11</sup> Definitions from <thwink.org/sustain/glossary/Sustainability.htm#Definition>, accessed 21 December 2016.

# CONCEPTS IN ACTION

## Key organisational statements

### Westpac Banking Corporation: Our strategy and vision

Westpac's vision is to be one of the world's great service companies, helping our customers, communities and people to prosper and grow.

Our strategy seeks to deliver on this vision by providing superior returns for our shareholders, building deep and enduring customer relationships, being a leader in the community and being a place where the best people want to work.

In delivering on our strategy we are focused on our core markets of Australia, New Zealand and the near Pacific, where we provide a comprehensive range of financial products and services that assist us in meeting all the financial services needs of our customers. With our strong position in these markets, and nearly 13 million customers, our focus is on organic growth, growing customer numbers in our chosen segments and building stronger and deeper customer relationships.

A key element of this approach is our portfolio of financial services brands which enables us to appeal to a broader range of customers, and provides us with the strategic flexibility to offer solutions that better meet individual customer needs.

In implementing this strategy, we seek to grow customer numbers in chosen segments and increase the number of products per customer with a specific focus on deposits, and wealth and insurance cross sell.

Asia is an important market for us and we are progressively building our presence and capability across the region to better support Australian and New Zealand customers operating, trading and transacting in the region, along with Asian customers seeking financial solutions and services in Australia and New Zealand.

While continuing to build the business, the more challenging financial services environment has required us to focus on strengthening our financial position while at the same time improving efficiency. This strengthening has involved lifting the level and quality of our capital, improving our funding and liquidity position and maintaining a high level of asset quality and provisioning.

While we currently have a relatively low cost to income ratio, we continue to seek opportunities to streamline and simplify our business, to improve the quality of experience for customers and reduce our unit costs.

Our sustainability strategy supports this approach by anticipating and shaping the most pressing emerging social issues where we have the skills and experience to make a meaningful difference and drive business value. These areas are:

- Anticipating the big shifts of demographic and cultural change and their impact on our workplace and customers
- Creating economic solutions to environmental challenges
- Helping customers achieve sustainable financial futures in a changed landscape.

Our approach seeks to make sustainability part of the way we do business, embedded in our strategy, values, culture and processes.

We believe that successful execution of our strategy will lead to higher revenue per customer and strong credit quality (because we know our customers very well) and a superior cost profile.

Supporting our customer focused strategy is a strong set of company-wide values, which are well embedded in our culture. These are:

- Delighting Customers—by deeply understanding and exceeding expectations
- One Team—working together respectfully, valuing each other, to deliver the best outcomes for customers and the organisation
- Integrity—each employee accountable for their actions, their honesty and doing the right thing
- Courage—having the courage to deal with change - thinking boldly and finding new ways of doing things
- Achievement—pursuing personal, team and business excellence.

### IFAC's Vision, Mission and Values

IFAC's *vision* is that the global accountancy profession be recognized as a valued leader in the development of strong and sustainable organizations, financial markets and economies.

IFAC's *mission* is to serve the public interest by:

- Contributing to the development, adoption and implementation of high-quality international standards and guidance
- Contributing to the development of strong professional accountancy organizations and accounting firms, and to high quality practices by professional accountants
- Promoting the value of professional accountants worldwide
- Speaking out on public interest issues where the accountancy profession's expertise is most relevant.

IFAC's *values* are integrity, expertise and transparency. These values are the guiding principles that IFAC as an organization through its Council, Board, boards and committees, volunteers, and staff seeks to exemplify.

Sources: IFAC, 'Strategic plan, mission and values', <[http://www.ifac.org/system/files/downloads/Section\\_2\\_Strategic-Plan\\_Mission\\_and\\_Values\\_11-19-10.pdf](http://www.ifac.org/system/files/downloads/Section_2_Strategic-Plan_Mission_and_Values_11-19-10.pdf)>, accessed 5 January 2017 (Copyright © November 2010 by the International Federation of Accountants (IFAC). All rights reserved. Used with permission of IFAC); Westpac, 'Our strategy vision', <<https://www.westpac.com.au/about-westpac/westpac-group/company-overview/our-strategy-vision/>>, accessed 5 January 2017.

## SUSTAINABILITY IN ACTION

### Growing food in the desert, without using fossil fuel or fresh water; processing waste and planning waste out

Scott Bookmyer is Chief Operating Officer of KKR Asia and runs the KKR Australia business. As he puts it: 'Through our experience investing in agriculture companies, we recognize that the industry—while essential to feeding the world's growing population—can also be demanding on our planet's natural resources. For example, the agricultural sector consumes approximately 69% of the planet's fresh water, according to the World Wildlife Fund. Meanwhile, the UN's Food and Agriculture Organization estimates the greenhouse gas emissions from agriculture, forestry and fisheries have nearly doubled over the past 50 years, and could increase an additional 30% by 2050.' Relative to this outline, Bookmyer cites a number of authorities (World Wide Fund for Nature, May 2007; Sundrop Farms proprietary data using references by the European Commission on Climate Action, 2016; United States Department of Transportation's National Travel Survey, 2009; and Next Greencar, 2016) for key facts from Sundrop Farms, the subject of the opening vignette to this chapter: 'the 20 hectares of greenhouses together produce over 15 000 tons of delicious, carbon neutral, freshwater neutral tomatoes annually. Sundrop's technology achieves significant energy and pollution savings compared to traditional methods: approximately 26 000 tons of carbon dioxide per year—equivalent to removing 500 cars from our roads; more than 450 million litres of freshwater per year—equivalent to 180 Olympic size swimming pools; and more than two million litres of diesel per year—equivalent to driving a car around the equator 500 times.'

Sundrop Farms represents a ground-breaking development in agriculture: 'a hi-tech, capital-intensive system growing food sustainably and cleanly for the masses—all located in rocky, arid country where southeast Australia's cropping zones meet the outback and annual rainfall is less than 250 mm.' Located in an area with no arable land, Sundrop uses seawater and the light and heat of the sun to produce delicious tomatoes. Starting by growing truss tomatoes in the Australian outback, it is exploring opportunities to innovate and provide produce using renewable resources to address consumer needs worldwide. 'If you can farm successfully here, you can farm almost anywhere in the world,' says CEO Philipp Saumweber. 'I'm no eco-warrior, but I wanted to create a new business model for farming, based on a concept of doing more with less and growing in the most sustainable or restorative manner. This is what we have achieved.'

John Durkan, the CEO of Coles (see also the *Concepts in action* feature on page 10), regards Coles as an important part of the food-supply chain in Australia and asserts that Coles can make a difference by being a positive force for change in terms of the whole of the food industry. 'Now, we don't want to overplay our part in that, but we absolutely believe that we can do that if we invest either in direct investment or in tenure behind long-term contracts with some of the players in Australia.'

In recognition of the expensive and environmentally unfriendly effects of landfill, many have been motivated to develop processes for dealing with waste. One such venture is that of Tom Rudas, a microbiologist. Rudas has pointed out that 'if you put food into the ground, it potentially impacts on two fronts . . . It leaches and contaminates ground water and releases methane, which is a greenhouse gas that is 21 times worse than CO<sub>2</sub>.' Companies are increasingly forming and implementing strategies and applying the key success factors of cost and efficiency, quality, time and innovation to achieve long-term environmental, economic and social goals. The sustainability efforts of the Japanese copier company Ricoh include energy conservation, resource conservation, product recycling and pollution prevention. By designing products that can be easily recycled, Ricoh simultaneously improves its efficiency and the cost and quality of its products. Sustainability is important to these companies for several reasons:

- More and more investors care about sustainability. These investors make investment decisions based on a company's financial, social and environmental performance and raise questions about sustainability at shareholder meetings.
- Companies that emphasise sustainability find that sustainability goals attract and inspire employees.
- Customers prefer the products of companies with good sustainability records and boycott companies with poor sustainability records.
- Society and activist non-governmental organisations, in particular, monitor the sustainability performance of firms and take legal action against those that violate environmental laws. Countries with fast-growing economies, such as China and India, are now either requiring or encouraging companies to develop and report on their sustainability initiatives.

*Sources:* Bookmyer, S. 2016, 'Sundrop Farms: An agricultural solution to resources constraints', KKR, 7 November, <<http://www.kkr.com/global-perspectives/kkr-blog/sundrop-farms-agricultural-solution-resources-constraints>>, accessed 22 December 2016; Kaplan, M. 2009, 'Microbiologist realises a trashy vision', *The Weekend Australian*, 31 October–1 November, p. 30; Neales, S. 2016, 'Desal and solar prove the perfect tomato sauce', *The Australian*, 11 June, <<http://www.theaustralian.com.au/national-affairs/desal-and-solar-prove-the-perfect-tomato-source/news-story/9972772591dd39cbf4a774a0ee93555b>>, accessed 16 December 2016; Neales, S. 2016, 'This is the future of farming', *The Weekend Australian Magazine*, no date, <<http://www.theaustralian.com.au/life/weekend-australian-magazine/this-is-the-future-of-farming/news-story/99fd0a207d8b6aa0768c32fd61b3d00e>>, accessed 16 December 2016; Sundrop Farms ABC Landline coverage, YouTube, <[https://www.youtube.com/watch?v=KCup\\_B\\_RHM4#t=213.079941](https://www.youtube.com/watch?v=KCup_B_RHM4#t=213.079941)>, accessed 17 December 2016; ABC, A Taste of Landline, <<http://iview.abc.net.au/programs/taste-of-landline/RA1603Q004500>>, accessed 17 December 2016; Thieberger, V. 2015, 'The company that's growing food in the desert', *Business Spectator*, 20 November, <<http://www.theaustralian.com.au/business/the-company-thats-growing-food-in-the-desert/news-story/8ad288c3f55d7759b434a466ca6c11be>>, accessed 16 December 2016.

currently paid to refuse collection. Whereas one wheelie-bin used to suffice, many local authorities are now offering three—one for landfill, one for recyclable paper, cardboard, cans, and plastic and glass bottles for processing into similar products, and one for garden waste to be processed into compost. Management accountants would be involved in assessing the benefits and costs of these services.

Among the many issues dealt with in this book, we place sustainability at centre-stage. Chapter 21 deals extensively with this topic and its interface with management accounting, outlining how sustainability is reported and measured. *Sustainability in action* boxes also appear in most chapters, showing how management accounting connects with sustainability.

**DECISION POINT 3**

What are planning and control and how do they relate to management accounting?

## Strategy, the organisation and its environment

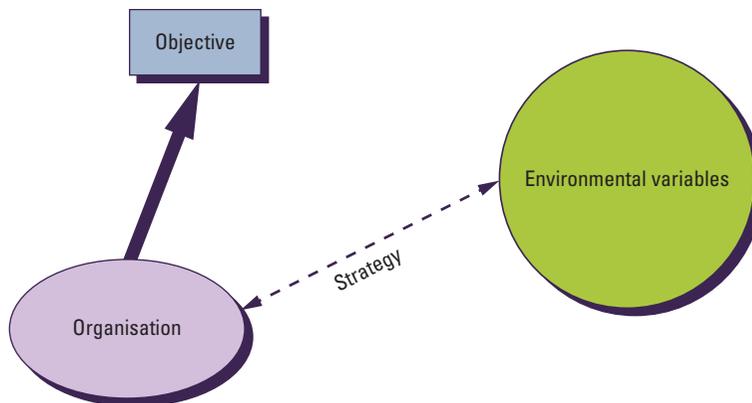
**Strategy** relates to how management matches an organisation’s capabilities with the opportunities in the marketplace to accomplish its objectives. In other words, strategy describes how an organisation chooses to compete and highlights the opportunities its managers should evaluate and pursue if advantageous. Senior management sets the goal or objective of an organisation according to the influence of its stakeholders. Managers and employees are internal stakeholders, while external stakeholders include shareholders, lenders, creditors, suppliers, customers, the government and the community at large. In striving to achieve the objective, management formulates and executes strategy to achieve an optimal fit with its environment (see Figure 1.7).

In forming strategy, senior management must first thoroughly understand the organisation and its environment. There are several approaches that assist in forming strategy, one of which is a SWOT analysis. This entails an analysis of strengths, weaknesses, opportunities and threats. Managers can assess the potential of a strategy and their ability to achieve their goal by identifying and analysing the strengths and weaknesses inherent in the organisation’s capacity and capabilities (internal analysis) and the opportunities and threats prevailing in its environment (external analysis).

Michael Porter developed a similar and more focused approach to industry analysis, which assists managers in assessing the attractiveness of an industry by identifying and analysing five forces: (1) competitors, (2) potential entrants into the market, (3) equivalent products, (4) bargaining power of customers, and (5) bargaining power of input suppliers.<sup>12</sup> The collective effect of these forces shapes an organisation’s profit potential. In general, profit potential is greater when competition is limited or zero, there are few or weak potential entrants, there are few or no similar products in the market, there is a range of available suppliers, and customers are relatively undemanding. When competition is intense, there are strong potential entrants, there are many similar products in the market, there are few available suppliers, and customers are demanding. These are clearly two extremes; managers would need to assess each of the five forces to form an

**LEARNING OBJECTIVE 4**

Explain the meaning of strategy and the way in which management accounting might influence strategic decisions.



**FIGURE 1.7**

Strategy: pursuing an organisation’s objective by optimising the organisation’s fit with its environment

<sup>12</sup> Porter, M. 1980, *Competitive strategy*, Free Press, New York; Porter, M. 1985, *Competitive advantage*, Free Press, New York; Porter, M. 1996, ‘What is strategy?’, *Harvard Business Review*, November–December, pp. 61–78.

overall view of the attractiveness of the industry. The formation and implementation of strategy receives further attention as we progress through the book, especially in chapters 9 and 15.

Organisations may be profit-seeking, ranging from small privately owned businesses to large companies listed on a stock exchange with many shareholders, or not-for-profit or public-sector organisations that operate locally, regionally, nationally or globally, with varying degrees of complexity. Globalisation has accelerated as countries enter into trade agreements that reduce barriers and encourage the provision of products and services across national boundaries. The nature, scope and complexity of organisations and their environments clearly vary. Notwithstanding this diversity, managers need to establish a vision, state a mission and set goals, which are all steps towards developing strategy, to mark out a direction for the organisation (see Figure 1.7).

Under this 'strategic umbrella', managers develop strategies to make decisions and guide activities. Scope and time horizon both feature in the shift from strategy to operations: from a broad canvass with a distant horizon to a more specific and tighter time-frame. As managers make decisions and direct activities at both strategic and operational levels, the organisation's performance parameters emerge. Strategic and management control systems that measure and compare performance with plans help both internal and external stakeholders to evaluate performance at strategic and operational levels.

Many managements of businesses follow one of two generic strategies: cost leadership or product differentiation. **Cost leadership** is an organisation's ability to achieve lower costs relative to competitors through productivity and efficiency improvements, elimination of waste, and tight cost control. **Product differentiation** is an organisation's ability to offer products or services that its customers perceive to be superior and unique relative to the products or services of its competitors, and to earn a premium based on that differentiation. Deciding between these strategies is a critical part of the responsibilities of senior management.

Cost leaders in their respective industries include JB Hi-Fi, Bunnings, The Chemist Warehouse, The Warehouse (New Zealand) and Walmart (consumer retailing in the USA). These companies have been profitable and have grown over the years by providing good-quality products and/or services at low prices. They provide products and services that are similar to—not differentiated from—those of their competitors, but at a lower cost to the customer. Lower selling prices, rather than unique products or services, provide a competitive advantage for these cost leaders. For example, Walmart creates value for its customers by locating stores in suburban and rural areas and by offering low prices on a wide range of product categories, with few choices within each product category. Consistent with this strategy, Walmart has developed the capability to keep costs down by aggressively negotiating low prices with its suppliers in exchange for high volumes and by maintaining a no-frills, cost-conscious environment with minimal sales staff. David Jones and Amcal Chemists choose not to compete on low price, but instead to generate their profits and growth based on their ability to offer differentiated or unique products or services, often at higher prices than those of their competitors. Apple Inc. has successfully differentiated its products in the consumer electronics industry, as have Johnson & Johnson in the pharmaceutical industry and Coca-Cola in the soft-drink industry. These companies have achieved differentiation through innovative product R&D, careful development and promotion of their brands, and the rapid push of products to market. Managers use differentiation to increase brand loyalty and charge higher prices.

However, the best-designed strategies and the best-developed capabilities are useless unless they are executed effectively. In the next section, we describe how management accountants help managers to take actions that create value for their customers.

## TRY IT! 1.2

MightyChip Pty Ltd (MCL) makes linear integrated circuit devices (LICDs) used in amplifiers, modems and communication networks. MCL produces a single specialised product, MCX10, a standard high-performance microchip that can be used in multiple applications. MightyChip designed the MMX10 after extensive market research and input from its customer base. A five-forces analysis reveals the following:

1. The MCX10 model faces severe competition based on price, timely delivery and quality. Companies in the industry have high fixed costs and persistent pressure to reduce selling prices and utilise capacity fully. Price reductions spur growth because it makes LICDs a cost-effective option in applications such as digital subscriber lines (DSLs).
2. The small profit margins and high capital costs discourage new entrants. Moreover, incumbent companies like MCL have experience in lowering costs and building close relationships with customers and suppliers.
3. MCL tailors the MCX10 to customers' needs and lowers prices by continuously improving MCX10's design and processes to reduce production costs. This reduces the risk of equivalent products or new technologies replacing MCX10.
4. Customers, such as EarthLink and Verizon, negotiate aggressively with MCL and its competitors to keep prices down because they buy large quantities of product.
5. To produce MCX10, MCL requires high-quality materials (such as silicon wafers, pins for connectivity, and plastic or ceramic packaging) and skilled engineers, technicians and production labour. The high level of skills required of suppliers and employees gives them bargaining power to demand higher prices and wages.

### Required

Recommend to management the generic strategy that MCL should pursue. Support your recommendations with clear reasoning drawn from the analysis of the five forces prevalent in this industry.

## Strategic decisions and management accounting

**Management accountants** work closely with managers in formulating strategy by providing information about the sources of competitive advantage, for example the cost, productivity or efficiency advantage of their company relative to that of competitors or the premium prices a company can charge relative to the costs of adding features that make its products or services distinctive. **Strategic management accounting** focuses specifically on strategic issues. Management accountants help to formulate strategy by helping managers to answer questions such as:

- Who are our most important customers, and how do we deliver value to them? For example, success in selling online has encouraged many businesses to develop the capability to sell online by building the necessary information and technology infrastructure. Toyota has built flexible computer-integrated manufacturing (CIM) plants that enable it to use the same equipment to produce a variety of cars in response to changing customer tastes.
- What substitute products exist in the marketplace, and how do they differ from our product in terms of price and quality? For example, Hewlett-Packard designs new printers after comparing the functionality, quality and price of its printers with other printers available in the marketplace.
- What is our most critical capability? Is it technology, production or marketing? How can we leverage it for new strategic initiatives? Kellogg Company, for example, uses the reputation of its brand to introduce new types of cereal. As reported in the opening vignette, the founders and managers of Sundrop Farms have developed technology to harness solar energy and seawater to produce tomatoes in the desert.
- Will adequate cash be available to fund the strategy, or will additional funds need to be raised?

In the next section, we introduce and illustrate the five-step guide to decisions, which is potentially useful in a variety of contexts; in this instance, for making a strategic decision.

### DECISION POINT 4

What is strategy and how do management accountants influence strategic decisions?

**LEARNING  
OBJECTIVE****5****The five-step guide to decisions**

Describe and apply the five-step guide to decisions.

Most managers are likely to find that an established approach or framework is useful in guiding their decision making. We suggest and apply a five-step guide to a strategic decision facing the *Daily News*, a city newspaper. We do not imply that it is the *only* guide that might be useful, nor do we guarantee that it will be fully applicable in all situations. However, the guide might be useful for many of the decision situations in this book, either in its present form or modified as required.

**Case: the *Daily News***

The *Daily News* is a newspaper published in Australia that differentiates itself from its competitors. It focuses on in-depth and well-researched news; employs highly qualified and experienced journalists; has developed a website to deliver up-to-the-minute news, interviews and analyses; has an automated, computer-integrated, state-of-the-art printing facility; has a web-based information technology infrastructure; and uses a distribution network that is one of the best in the newspaper industry.

Felicity Fawcett, the CEO of the *Daily News*, is well aware that profits fell last year, these having plateaued in the immediately preceding years. She turns to the five-step framework to guide her decision.

1. **Identify the problem.** The immediate problem is that profits have fallen and may continue to do so. The underlying problem may be that the premium earned from differentiation has been eroded by increasing costs without a commensurate increase in prices or in the volume of revenues, which may be attributable to *Daily News* operations, demand in the market, the actions of competitors or something else. Part of the problem is the level of uncertainty; Felicity does not know how any action that she might take is likely to affect profits.
2. **Gather relevant information.** Felicity decides to gather information to clarify the problem and diminish the uncertainties. She asks Tony Hall, the management accountant, to provide details of revenues and costs over the past few years; the marketing manager to survey representative readers to gauge how they might react to an increase in the newspaper's selling price; and the advertising sales manager to talk to current and potential advertisers to get a better understanding of the advertising market. Tony Hall provides information about past increases and decreases in prices and the effect on readership, and about past increases and decreases in advertising rates and their effect on advertising revenues. He also collects and analyses information on advertising rates charged by competing media outlets, including other newspapers.
3. **Identify and evaluate potential courses of action.** Felicity and the other managers thoroughly review and analyse the information gathered. The management team identifies three potential courses of action, which are not mutually exclusive: (1) reduce operating costs; (2) increase the selling price per newspaper; and (3) increase the rate per page charged to advertisers. They conclude from their evaluation that: (1) a major cost-cutting exercise might undermine the differentiation strategy by compromising the very features that justify a premium; (2) readers might be upset if management were to increase the price of the *Daily News*, with a consequent decrease in readership and reduction in revenue from this source; and (3) there is likely to be a market-wide increase in advertising rates in the near future, in which case an increase in *Daily News* advertising rates would have little effect on the number of pages of advertising sold.

Felicity recognises that considerable judgement is required when considering the consequences of the contemplated actions. She feels that gathering information, careful analysis and in-depth discussion within the management team should go a long way towards eliminating biased thinking. Nevertheless, she ponders the conclusion that the management team has reached. Have members of the team correctly judged readers' sentiments or has their thinking been overly influenced by anticipation of all the negative

publicity that the newspaper would get rather than an actual decline in readership? How sure is she that her competitors will increase advertising rates? Is her thinking in this regard biased by their past actions? Have circumstances changed? How confident is she that her sales representatives can convince advertisers to pay higher rates? Felicity tests her assumptions again and reviews her thinking. As a result, she feels confident about the judgements made.

4. **Make and implement a decision.** Based on the management team's evaluation, Felicity decides to (1) maintain operations at the current level; (2) apply continuous improvement in future; (3) add value at reasonable cost; (4) maintain the price of the *Daily News*; and (5) increase *Daily News* advertising rates. Felicity works on draft budgets with Tony Hall and the rest of the team. They estimate that 800 pages of advertising in the *Daily News* would be sold if they were to increase advertising rates by 4% to \$5200 per page in March 2019, amounting to advertising revenue of \$4 160 000. She decides to do this and communicates the new advertising rate schedule to the sales department.

Against the budgeted advertising revenues of \$4 160 000 for March 2019, the full budget includes budgeted circulation revenue and the production, distribution and customer service costs that would be needed to achieve sales goals, the anticipated cash flows and the potential financing needs. Managers at the *Daily News* take actions to implement the March 2019 budget. Tony Hall collects information to report performance (scorekeeping). The comparison of actual performance with budgeted performance is the *control* or *post-decision* role of information. This is different from the *pre-decision* planning information that Felicity collected in step 2 to help her to understand uncertainties better.

5. **Evaluate performance and learn.** During March 2019, the *Daily News* newspaper sold advertising, issued invoices and received payments, which were recorded in the accounting system. Table 1.2 shows the performance report of the advertising revenue earned by the *Daily News* for March 2019. This report shows that 760 pages of advertising (40 pages fewer than the budgeted 800 pages) were sold. The average rate per page is \$5080, compared with the budgeted \$5200 rate, amounting to advertising revenue of \$3 860 800, which is \$299 200 less than the budgeted \$4 160 000.

The performance report in Table 1.2 spurs investigation and learning, which involves examining past performance (the control function) and systematically exploring ways to make better-informed decisions and plans in the future. Learning can lead to changes in goals, strategies, the ways potential decisions are identified and the range of information gathered when exploring courses of action.

The performance report prompts Tony Hall to raise several questions that direct managers' attention to problems and opportunities. Is the strategy of differentiating the *Daily News* from other newspapers attracting more readers? Did the marketing and sales departments make sufficient efforts to convince advertisers that, even with the new higher rate of \$5200 per page, advertising in the *Daily News* was a good buy? Why was the actual average rate per page \$5080 instead of the budgeted rate of \$5200? Did some

**TABLE 1.2** Performance report of advertising revenue at the *Daily News* for March 2019

	Actual	Budget	Actual – budget	
	(1)	(2)	\$ Amount (3) = (1) – (2)	% of budget (4) = (3) ÷ (2)
Advertising pages sold	760	800	40 U	5.0% U
Average rate per page	\$5080	\$5200	\$120 U	2.3% U
Advertising revenue	\$3 860 800	\$4 160 000	\$299 200 U	7.2% U

U = unfavourable.

sales representatives offer discounted rates? Did economic conditions cause the decline in advertising revenue? Is revenue falling because editorial and production standards have declined? Are more readers getting their news online?

Answers to these questions could prompt management to take action, including, for example, adding more sales personnel or making changes in editorial policy, devoting more resources to expanding its presence online and on mobile devices, getting readers to pay for online content, selling digital advertising and management changes. Good implementation requires that the marketing, editorial and production departments coordinate their actions.

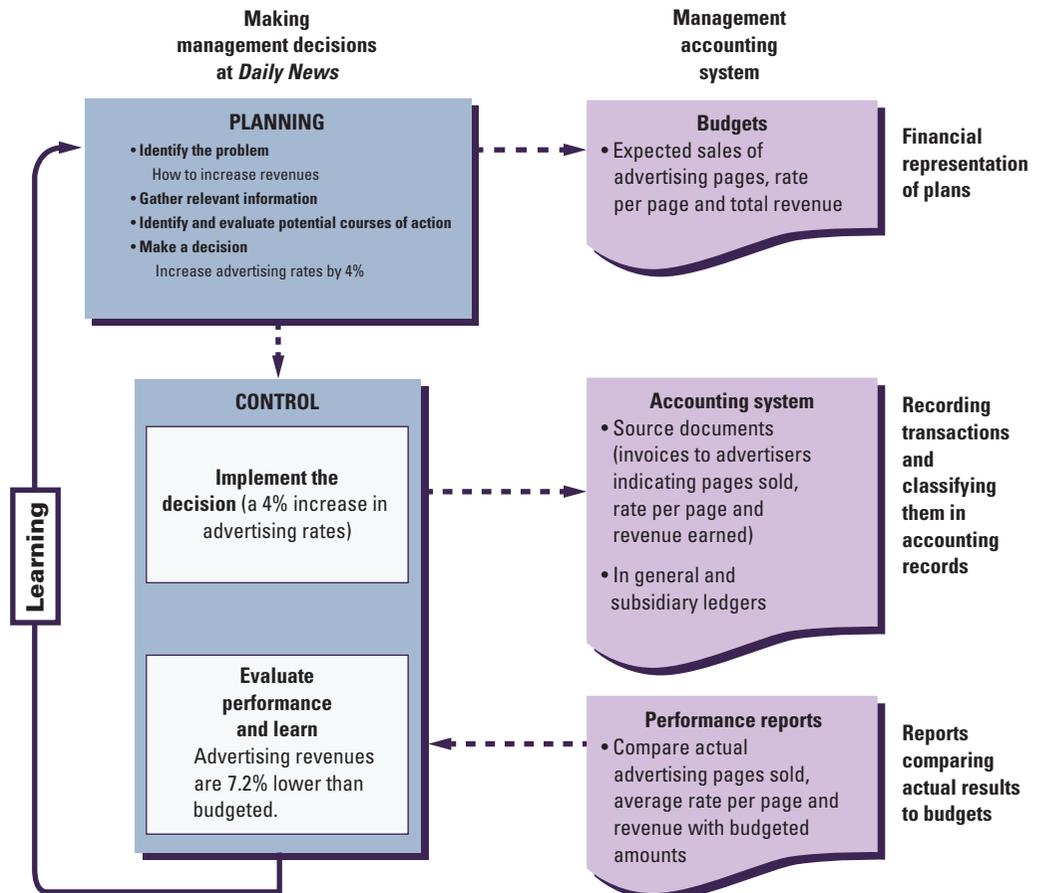
Tony Hall could go further by identifying the specific advertisers that cut back or stopped advertising after the rate increase went into effect, which would enable managers to then decide when and how sales representatives should follow up with these advertisers.

The left side of Figure 1.8 provides an overview of the decision-making processes at the *Daily News*. The right side highlights how the management accounting system aids in decision making.

Planning and control activities are more challenging when monitoring and managing innovation and sustainability. Think about how the *Daily News* must innovate as more of its readers migrate to the Web to get their news: in step 1, the uncertainties are much greater. Will there be demand for a newspaper? Will customers look to the *Daily News* to get their information or to other sources? In step 2, gathering information is more difficult because there is little history that managers can rely on. Instead, managers will have to make connections across disparate data, run experiments, engage with diverse experts and speculate to understand how the world might evolve. In step 3, making predictions about the future will require developing different scenarios and models. In step 4, managers will need to make decisions knowing that the world might still evolve in unanticipated ways that might require

**FIGURE 1.8**

How management accounting aids decision making, planning and control at the *Daily News*



them to be flexible and change course midstream. In step 5, the learning component is critical. How have the uncertainties evolved and what do managers need to do to respond to these changing circumstances?

Planning and control for sustainability is equally challenging. What should the *Daily News* do about energy consumption in its printing presses, the recycling of newsprint, and pollution prevention? Among the uncertainties that managers face is whether customers will reward the *Daily News* for these actions with loyalty and whether investors will react favourably to managers spending resources on sustainability. Information to gauge customer and investor sentiment is not easy to obtain. Predicting how sustainability efforts might pay off in the long run is far from certain. Even as managers make decisions, the sustainability landscape will doubtlessly change in regard to environmental regulations and societal expectations, requiring managers to learn and adapt. The challenges do not imply that planning and control systems should not be used for these initiatives. Many companies find value in using the systems to manage innovation and sustainability. We return to the themes of innovation and sustainability at various points in the book.

Two final points: first, managers use information to help implement their strategies. For example, action plans often include targets. Although budgets are primarily financial, managers use both financial and non-financial information for market share, quality, new product development and employee satisfaction. When exercising control, managers compare actual and targeted non-financial measures as well as financial measures, and take corrective action. Second, a plan must be flexible enough that managers can seize sudden opportunities unforeseen at the time the plan was formulated. Control should not lead managers to cling to a plan when unfolding events indicate that actions not encompassed by that plan would offer better results for the company. Think about this in the context of the *Daily News*. An unexpected and sensational news story, such as a major fraud in the public service, may break; if the managers wish to maximise the value of this story and beat competing newspapers to it, they need to spend more money on reporting than they had expected before the story broke. Through spending more money to cover the story, there is an opportunity to improve results for the *Daily News* by selling more newspapers.

## The influence of professional accounting organisations on management accounting

The IFAC has 175 members and associates from 130 countries, representing almost 3 million accountants. Among these are a number of professional accounting organisations that are well known in Australia, particularly those in the UK, USA, New Zealand and Australia itself. Many of these organisations have a significant international presence, such as the **Chartered Institute of Management Accountants (CIMA)**, the Association of Chartered Certified Accountants (ACCA) and CPA Australia. A relatively recent development is associations of these organisations across countries, and even closer arrangements such as that between the American Institute of CPAs (AICPA) and CIMA, which jointly awards the Chartered Global Management Accountant (CGMA) designation, and the merger of the Institute of Chartered Accountants in Australia (ICAA) and the New Zealand Institute of Chartered Accountants (NZICA) to form Chartered Accountants of Australia and New Zealand (CAANZ). All of these organisations specify entry criteria, set and administer examinations, specify continuing education requirements and apply codes of ethics.

Although professional accounting organisations have always stipulated standards of ethical professional conduct, corporate scandals over the past two decades like Enron, Arthur Andersen, Storm Financial and One.Tel have seriously eroded the public's confidence in corporations. All employees in a company, whether in line management or staff management, must comply with the society's expectations of ethical behaviour.

Accountants have special ethical obligations, given that they are responsible for the integrity of the financial information provided to internal and external parties. The Sarbanes–Oxley Act 2002 in the USA, passed in response to a series of corporate scandals,

### DECISION POINT 5

How do managers apply the five-step guide to decisions and how does it relate to management accounting?

### LEARNING OBJECTIVE 6

Explain the way in which accounting organisations influence management accountants' conduct and effectiveness and, given the context, apply the code of ethics.

focuses on improving internal control, corporate governance, the monitoring of managers and the disclosure practices of public corporations. These regulations apply tough ethical standards to managers and accountants and provide a process for employees to report violations of illegal and unethical acts. The impact of the Sarbanes–Oxley legislation extends beyond the boundaries of the USA to Australian companies that trade with US companies. In addition to the codes of ethics stipulated by professional accounting organisations, measures in Australia include the Australian Stock Exchange (ASX) Principles of Good Corporate Governance.

### Codes of ethics

CPA Australia and the ICAA established the Accounting Professional and Ethical Standards Board (APESB) in 2006 as an independent body to produce the code of ethics and professional standards, and were joined by the Institute of Public Accountants in the following year. Not only is it mandatory for all members to comply with this code, but they should also be guided by its spirit. Following the merger of the ICAA and NZICA, the APESB governs the behaviour of its Australian members, and the New Zealand Regulatory Board that of its New Zealand members. All of the above-mentioned professional accounting organisations have codes of ethics with guiding principles similar to those articulated for the CGMA designation: namely, integrity and objectivity; professional competence and due care; confidentiality; professional behaviour and conduct (see <<http://www.cgma.org/AboutCGMA/DownloadableDocuments/CGMA-code-of-ethics.v2.pdf>>).

#### DECISION POINT 6

How do professional accounting organisations influence management accountants' behaviour?

### Typical ethical challenges

Ethical issues can confront management accountants in many ways. *Try it 1.3* provides two examples.

## CONCEPTS IN ACTION

### What is material in this story? If it matters, what is to be done?

Yesterday, Wesfarmers chief executive Richard Goyder singled out the former CFO of Target for his role in the accounting scandal where Target was discovered to have used upfront payments from 31 suppliers to artificially inflate its first half earnings by \$21 million. 'If Graeme wasn't aware he should have been aware,' Mr Goyder said yesterday, as he unveiled the findings of an investigation into accounting and corporate governance practices at Target.

The above is an extract from a report that appeared in *The Australian* newspaper on 12 April 2016. Profit before interest and tax for the first half-year ended December 2015 was reported as \$74 million rather than the \$53 million that should have been reported. Following management changes at Target, accountants who were members of a new team

informed Wesfarmers executives of the accounting adjustments in late March. The executive formerly responsible for Target, Stuart Machin, had resigned a few days before the newspaper report appeared. He stated that while he knew nothing of the irregularities, they happened on his watch and he must take ultimate responsibility. Although it is not unusual for suppliers to offer rebates to retailers when products do not sell well, it appears that staff at Target requested the rebates before the end of the reporting period, with a promise to return them to suppliers secretly in the form of higher prices in the following half-year. While the impact on Wesfarmers' results was immaterial, the effect of the arrangement was to report Target's profits at a level 40% higher than they should have been. It was damaging to the reputation of Wesfarmers, a blue-chip organisation that is serious about its corporate culture.

Sources: Greenblat, E. 2016, 'Target scandal spreads to UK', *The Australian*, 12 April 2016, <<http://www.theaustralian.com.au/business/companies/target-scandal-spreads-to-uk/news-story/1d625302f2ce2bb6e381b626c18975e8>>, accessed 22 December 2016; Greenblat, E. & Durie, J. 2016, 'Wesfarmers' Stuart Machin resigns', *The Australian*, 8 April 2016.

1.3

**TRY IT!**

- **Case A:** Demetrius is the management accountant at Softisbetter, the software development division of a large information technology company. He notes that, for internal reporting purposes, a substantial amount of the development costs for one of their projects is currently being capitalised as an asset rather than being shown as an expense. He is concerned about the commercial potential of the software product being developed. The division manager, whose bonus is based in part on the division's profits, argues that showing development costs as an asset is justified because the new product will generate profits, although he presents little evidence to support his argument. The last two products from this division have been unsuccessful. Demetrius wishes to make the right decision but would prefer to avoid a difficult personal confrontation with the division manager, who is his superior.
- **Case B:** A packaging supplier, bidding for a new contract, offers the management accountant of the purchasing company an all-expenses-paid weekend to the AFL grand final. The supplier does not mention the new contract when giving the invitation. The accountant is not a personal friend of the supplier. He knows that cost issues are critical in approving the new contract and is concerned that the supplier will ask for details about bids by competing packaging companies.

**Required**

1. Identify and explain the ethical issues raised by these two cases.
2. Advise the management accountant in each case as to what action he should take, if any.

**PROBLEM FOR SELF-STUDY**

Computing manufacturer Dell incurs the following costs:

- a. Electricity costs for the plant in which the Latitude computer line of products is assembled
- b. Distribution costs for shipping the Latitude line of products to a retail chain
- c. Payment to David Newbury Designs for design of the XPS 2-in-1 laptop
- d. Salary of computer scientist working on the next generation of servers
- e. Cost of visit by Dell employees to a major customer to demonstrate Dell's ability to interconnect with other computers
- f. Purchase of competitors' products for testing against potential Dell products
- g. Payment to business magazine for running Dell advertisements
- h. Cost of cartridges purchased from outside supplier to be used with Dell printers

**Required**

Classify each of the cost items (a–h) into one of the business functions of the value chain.

**Solution**

Cost item	Value chain business function
a	Production
b	Distribution
c	Design of products, services or processes
d	Research and development
e	Customer service; or marketing
f	Design of products, services or processes; or research and development
g	Marketing
h	Production

## DECISION POINTS

Each decision point listed below presents a key question related to a learning objective and corresponds with a decision point that appears in the text. Adjacent to each decision point is an answer guideline drawn from the content of the chapter.

### Decision

### Answer guideline

- |   |  |
|---|--|
| 1. What is management accounting and what is its role?  | Management accounting is the sourcing, analysis, communication and use of decision-relevant financial and non-financial information to generate and preserve value for organisations'. <sup>13</sup>   |
| 2. How do managers and workers add value, and what are the dimensions of performance that customers expect? | A knowledge of the value chain assists the management accountant to identify the benefits and costs of each business function to assess the value it adds. Managers and workers add value through research and development; design of products, services or processes; production; marketing; distribution; and customer service. Customers want companies to deliver performance through cost and efficiency, quality, timeliness and innovation. |
| 3. What are planning and control and how do they relate to management accounting?                           | Planning involves selecting organisational goals, predicting results under various ways of achieving those goals, deciding how to attain the desired goals, and communicating both the goals and how to attain them to the entire organisation. Control involves comparing actual performance with plans and taking appropriate action. Refer to the chapter for a full explanation.   |
| 4. What is strategy and how do management accountants influence strategic decisions?                        | Management accountants contribute to strategic decisions by providing information about the sources of competitive advantage, and to their implementation by using the five-step guide to decisions described in the chapter (complete your answer by referring to that).  |
| 5. How do managers apply the five-step guide to decisions and how does it relate to accounting?             | Refer to the chapter for a full description of the five-step guide to decisions.   |
| 6. How do professional accounting organisations influence the management accountants' behaviour?            | They put in place entry requirements, examinations and continuing education requirements to maintain technical competence, and compliance with their ethical codes of conduct is mandatory to retain membership. Ethical responsibilities relate to competence, confidentiality, integrity, objectivity and professional conduct.  |

## TERMS TO LEARN

*Each chapter will include this section. Like all technical terms, accounting terms have precise meanings. Learn the definitions of new terms when you initially encounter them. The meaning of each of the following terms is given in this chapter and in the glossary at the end of this book.*

benefit–cost analysis (p. 4)	chief financial officer (CFO) (p. 5)	design of products, services or processes (p. 9)
budget (p. 14)	control (p. 14)	distribution (p. 10)
Chartered Institute of Management Accountants (CIMA) (p. 23)	cost accounting (p. 7)	financial accounting (p. 7)
	cost leadership (p. 18)	financial director (p. 5)
	customer service (p. 10)	

<sup>13</sup> AICPA and CIMA. 2014, *Global Management Accounting Principles. Effective management accounting: Improving decisions and building successful organisations*, <[http://www.cgma.org/Resources/Reports/Pages/GlobalManagementAccountingPrinciples.aspx?utm\\_source=5cimaglobal&utm\\_medium=5principles-page&utm\\_campaign=5principles2014](http://www.cgma.org/Resources/Reports/Pages/GlobalManagementAccountingPrinciples.aspx?utm_source=5cimaglobal&utm_medium=5principles-page&utm_campaign=5principles2014)>, p. 8, accessed 17 December 2016.

key success factors (p. 11)	mission statement (p. 13)	strategic management accounting (p. 19)
learning (p. 14)	planning (p. 13)	strategy (p. 17)
line management (p. 5)	production (p. 9)	supply chain (p. 8)
management accountant (p. 19)	product differentiation (p. 18)	sustainability (p. 14)
management accounting (p. 2)	research and development (p. 9)	value chain (p. 9)
manufacturing (p. 10)	staff management (p. 5)	vision statement (p. 13)
marketing (including sales) (p. 10)	statement of values (p. 13)	

## ASSIGNMENT MATERIAL

### Questions

- 1.1 Explain the way in which cost accounting, management accounting, activity management and financial reporting are inter-related.
- 1.2 'Management accounting should not fit the straitjacket of financial reporting.' Explain your response to this statement and give an example.
- 1.3 Explain the way in which a management accountant is able to help to form strategy.
- 1.4 Describe the business functions in the value chain.
- 1.5 Explain the term 'supply chain' and its importance to the management of activities.
- 1.6 'Management accounting deals only with costs.' Do you agree? Explain your answer.
- 1.7 Explain the way in which management accountants help to improve quality and to ensure that products are delivered on time.
- 1.8 Describe the five-step guide to making decisions.
- 1.9 Distinguish between planning decisions and control decisions.
- 1.10 Describe the three guidelines that help management accountants provide the most value to managers.
- 1.11 'Knowledge of technical issues such as computer technology is a necessary but not a sufficient condition to becoming a successful management accountant.' Do you agree? Explain your answer.
- 1.12 As a new management accountant, reply to this comment by a production manager: 'No bean counter knows enough about my responsibilities to be of any use to me. As I see it, our accountants may be needed to keep records for shareholders and the Australian Tax Office, but I don't want them sticking their noses in my day-to-day operations.'
- 1.13 Describe the professional occupation of members of CPA Australia, Chartered Accountants of Australia and New Zealand (CAANZ) and the Chartered Institute of Management Accountants (CIMA).
- 1.14 Name the five areas in which there are standards of ethical conduct for management accountants in Australia. Name the organisations that set these standards.
- 1.15 If a management accountant is faced with an ethical conflict, state and explain the steps that s/he should take if established written policies provide insufficient guidance on how to handle it.

### Exercises

One or more stars following each problem number indicate the suggested level of difficulty:

- \* basic
- \*\* intermediate
- \*\*\* difficult.

#### 1.16 \* Value chain and classification of costs

#### OBJECTIVE 2

Johnson & Johnson, a health-care company, incurs the following costs:

- a. Payment of booth registration fee at a medical conference to promote new products to physicians
- b. Cost of redesigning an artificial knee to make it easier to implant in patients
- c. Cost of a toll-free telephone line used for customer inquiries about drug usage, side effects of drugs and so on
- d. Equipment purchased to develop drugs yet to be approved by the government
- e. Sponsorship of a professional golfer
- f. Labour costs of workers in the tableting area of a production facility
- g. Bonus paid to a salesperson for exceeding a monthly sales quota
- h. Cost of FedEx courier service to deliver drugs to hospitals

#### REQUIRED

Classify each of the cost items (a–h) as one of the business functions of the value chain shown in Figure 1.5 (p. 9).

**1.17 \* Key success factors****OBJECTIVE 2**

Dominion Consulting has issued a report recommending changes for its newest manufacturing client, Gibson Engine Works. Gibson currently manufactures a single product, which is sold and distributed nationally. The report contains the following suggestions for enhancing business performance:

- Develop a rechargeable electric engine to stay ahead of competitors
- Adopt a TQM philosophy to reduce waste and defects to near zero
- Reduce lead times (time from customer order of product to customer receipt of product) by 20% in order to increase customer retention
- Negotiate faster response times with direct material suppliers to allow for lower material inventory levels
- Benchmark the company's gross margin percentages against its major competitors

**REQUIRED**

Link each of these changes to the key success factors that are important to managers.

**1.18 \* Key success factors****OBJECTIVE 2**

Vargas Construction Ltd provides construction services for major projects. Managers at the company believe that construction is a people-management business, and they list the following as factors critical to their success:

- Increase spending on employee development to streamline processes
- Foster cooperative relationships with suppliers that allow for more frequent deliveries as and when products are needed
- Integrate tools and techniques that reduce errors in construction projects
- Train employees in green construction techniques to appeal to companies seeking certification
- Benchmark the company's gross margin percentages against its major competitors

**REQUIRED**

Match each of the above factors to the key success factors that are important to managers.

**1.19 \* Planning and control decisions****OBJECTIVE 3**

Gregor Ltd makes and sells brooms and mops. It takes the following actions, not necessarily in the order given. For each action (a–e), state whether it is a planning decision or a control decision.

- Gregor asks its advertising team to develop fresh advertisements to market its newest product.
- Gregor calculates customer satisfaction scores after introducing its newest product.
- Gregor compares the costs it actually incurred with the costs it expected to incur for the production of the new product.
- Gregor's design team proposes a new product to compete directly with the Swiffer.
- Gregor estimates the costs it will incur to distribute 30 000 units of the new product in the first quarter of next financial year.

**1.20 \* Planning and control decisions****OBJECTIVE 3**

Gavin Adams is the CEO of Trusted Pool Service. He takes the following actions, not necessarily in the order given. For each action (a–e), state whether it is a planning decision or a control decision.

- Adams decides to expand service offerings into an adjacent market.
- Adams calculates material costs of a project that was recently completed.
- Adams weighs the purchase of an expensive new excavation machine proposed by field managers.
- Adams estimates the weekly cost of providing maintenance services next year to the city recreation department.
- Adams compares payroll costs of the past quarter to budgeted costs.

**1.21 \* Planning and control decisions****OBJECTIVE 3**

Leisure Hotels (LH) is a hotel chain in Australia that provides superior accommodation. It takes the following actions, not necessarily in the order given below. For each action (a–e), state whether it is a planning decision or a control decision.

- LH compares the cost of food ingredients in its top restaurants with the expected costs.
- LH calculates its share of the accommodation market after introducing its off-season special offers.
- LH asks its marketing and management accounting teams to conduct a feasibility study of offering special rates in the off-season.
- LH estimates the costs it will incur to sell 500 additional room-nights in the off-season next year.
- LH compares the sales of room-nights in the first off-season of offering reduced rates with the estimate in the feasibility study.

**1.22 \* Five-step guide to decisions, service firm****OBJECTIVE 5**

Dewhirst Painters is a firm that provides house-painting services. Harry Dewhirst, the owner, is trying to find new ways to increase revenues. Dewhirst performs the following actions, not in the order listed.

- a. Dewhirst calls Johnson's Hardware to ask the price of paint sprayers.
- b. Dewhirst discusses with his employees the possibility of growing the revenues of the firm.
- c. One of Dewhirst's project managers suggests that using paint sprayers instead of hand painting will increase productivity and thus revenues.
- d. The workers who are not familiar with paint sprayers take more time to finish a job than they did when painting by hand.
- e. Dewhirst compares the expected cost of buying sprayers to the expected cost of hiring more workers who paint by hand, and estimates profits from both alternatives.
- f. The project scheduling manager confirms that demand for house painting services has increased.
- g. Dewhirst decides to buy the paint sprayers rather than hire additional painters.

**REQUIRED**

Classify each action (a–g) according to its step in the five-step guide to decisions (identify the problem and uncertainties; obtain relevant information; make predictions about the future; make decisions by choosing among alternatives; implement the decision, evaluate performance, and learn).

**1.23 \* Five-step guide to decisions****OBJECTIVE 5**

Sizemore Landscaping is a firm that provides commercial landscaping and grounds maintenance services. Derek Sizemore, the owner, is trying to find new ways to increase revenues. Mr Sizemore performs the following actions, not in the order listed.

- a. Mr Sizemore decides to buy power tilling equipment rather than hire additional landscape workers.
- b. Mr Sizemore discusses with his employees the possibility of using power equipment instead of manual processes to increase productivity and thus profits.
- c. Mr Sizemore learns of a large potential job that is about to go out for bids.
- d. Mr Sizemore compares the expected cost of buying power equipment to the expected cost of hiring more workers and estimates profits from both alternatives.
- e. Mr Sizemore estimates that using power equipment will reduce tilling time by 20%.
- f. Mr Sizemore researches the price of power tillers online.

**REQUIRED**

Classify each of the actions (a–f) according to its step in the five-step decision-making process (identify the problem and uncertainties; obtain relevant information; make predictions about the future; make decisions by choosing among alternatives; implement the decision, evaluate performance, and learn).

**1.24 \*\* Professional ethics****OBJECTIVE 6**

Heather Scott is division management accountant and Martin Andrews is division manager of the Walk Smart Shoe Company. Scott has line responsibility to Andrews, but she also has staff responsibility to the company management accountant.

Andrews is under severe pressure to achieve the budgeted division profit for the year. He has asked Scott to book \$200 000 of revenues on 30 June. The customers' orders are firm but the shoes are still in the production process. They will be shipped on or around 4 July. Andrews says to Scott: 'The key event is getting the sales order, not shipping the shoes. You should support me, not obstruct me in reaching my division goals.'

**REQUIRED**

1. Describe Scott's ethical responsibilities.
2. What should Scott do if Andrews gives her a direct order to book the sales?

**1.25 \*\* Professional ethics****OBJECTIVE 6**

Hannah Gilpin is the management accountant of Blakemore Auto Glass, a division of Eastern Glass and Window. Blakemore replaces and installs broken windshields. Her division has been under pressure to improve its divisional operating income. Currently, divisions of Eastern Glass are allocated corporate overhead based on cost of goods sold. Jake Myers, the president of the division, has asked Gilpin to reclassify \$50 000 of installation labour, which is included in cost of goods sold, as administrative labour, which is not. Doing so will save the division \$20 000 in allocated corporate overhead. The labour costs in question involve installation labour provided by trainee employees. Myers argues, 'The trainees are not as efficient as regular employees, so this is unfairly inflating our cost of goods sold. This is really a cost of training (administrative labour) not part of cost of goods sold.' Gilpin does not see a reason for reclassification of the costs, other than to avoid overhead allocation costs.

**REQUIRED**

1. Describe Gilpin's ethical dilemma.
2. What should Gilpin do if Myers gives her a direct order to reclassify the costs?

**1.26 \* Planning and control decisions****OBJECTIVE 3**

Intheknow.com.au offers its subscribers several services, such as an annotated television guide and local area information on weather, restaurants and movie theatres, music festivals and art workshops. Its main revenue sources are fees for banner advertisements and fees from subscribers. Recent data are:

Month/year	Advertising revenues	Actual number of subscribers	Monthly fee per subscriber
June 2017	\$4 000 988	28 642	\$14.95
December 2017	833 158	54 813	19.95
June 2018	861 034	58 178	19.95
December 2018	1 478 072	86 437	19.95
June 2019	2 916 962	146 581	19.95

The following decisions were made from June to October 2019:

- a. June 2019: Raised subscription fee to \$24.95 per month from July 2019 onwards. The budgeted number of subscribers for this monthly fee is shown in the following table.
- b. June 2019: Informed existing subscribers that from July onwards the monthly fee would be \$24.95.
- c. July 2019: Offered email service to subscribers and upgraded other online services.
- d. October 2019: Dismissed the director of marketing after significant slowdown in subscribers and subscription revenues, based on July to September 2019 data in the table below.
- e. October 2019: Reduced subscription fee to \$21.95 per month from November 2019 onwards.

Results for July–September 2019 are:

Month/year	Budgeted number of subscribers	Actual number of subscribers	Monthly fee per subscriber
July 2019	140 000	128 933	\$24.95
August 2019	150 000	139 419	24.95
September 2019	160 000	143 131	24.95

**REQUIRED**

1. Classify each of the decisions (a–e) as a planning or a control decision.
2. Give two examples of other planning decisions and two examples of other control decisions that may be made at Intheknow.com.au.

**1.27 \* Strategic decisions and management accounting****OBJECTIVE 4**

A series of independent situations in which a firm is about to make a strategic decision follow.

**Decisions**

- a. Prestige Computers is trying to decide whether to produce and sell a new home computer software package that includes the ability to interface with a thermostat and a refrigerator. There is no such software currently on the market.
- b. Mayberry Pharmaceuticals has been asked to provide a 'store brand' facial cream that will be sold at discount retail stores.
- c. Hellophones is about to decide whether to launch the production and sale of a mobile phone with standard features.
- d. Georges Delicatessen is entertaining the idea of developing a special line of gourmet pasta sauce made with sun-dried tomatoes, mushrooms and truffle oil.

**REQUIRED**

1. For each decision, state whether the company is following a cost-leadership or a differentiated-product strategy.
2. For each decision, discuss what information the management accountant can provide about the source of competitive advantage for these firms.

**1.28 \* Management accounting guidelines****OBJECTIVE 1**

For each of the following items, identify which of the management accounting guidelines applies: benefit–cost approach, behavioural and technical considerations, or different costs for different purposes.

1. Analysing whether to keep the billing function within an organisation or outsource it
2. Deciding to give bonuses for superior performance to the employees in an Indian subsidiary and extra holiday time to the employees in a New Zealand subsidiary
3. Including costs of all the value-chain functions before deciding to launch a new product, but including only its manufacturing costs in determining its inventory valuation
4. Considering the desirability of hiring one more salesperson
5. Giving each salesperson the compensation option of choosing either a low salary and a high-percentage sales commission or a high salary and a low-percentage sales commission
6. Selecting the more costly computer system after considering two systems
7. Installing a participatory budgeting system in which managers set their own performance targets, instead of top management imposing performance targets on managers
8. Recording research costs as an expense for financial reporting purposes (as required by Australian Accounting Standards) but capitalising and expensing them over a longer period for management performance evaluation purposes
9. Introducing a profit-sharing plan for employees

**1.29 \* Management accounting guidelines**

**OBJECTIVE 1**

For each of the following items, identify which of the management accounting guidelines applies: benefit-cost approach, behavioural and technical considerations, or different costs for different purposes.

1. Analysing whether to produce a component needed for an end product or to outsource it
2. Deciding whether to compensate the sales force by straight commission or by salary
3. Adding the cost of store operations to merchandise cost when deciding on product pricing, but only including the cost of freight and the merchandise itself when calculating cost of goods sold on the income statement
4. Considering the desirability of purchasing new technology
5. Weighing the cost of increased inspection against the costs associated with customer returns of defective goods
6. Deciding whether to buy or lease an existing production facility to increase capacity
7. Estimating the loss of future business resulting from bad publicity related to an environmental disaster caused by a company's factory in the Philippines, but estimating clean-up costs for calculating the liability on the balance sheet

**1.30 \* Role of management accountant, role of chief financial officer**

**OBJECTIVE 1**

Martin Saunders is the management accountant at Future Ltd, a manufacturer of devices for the computer industry. He is being considered for a promotion to chief financial officer.

**REQUIRED**

1. In this table, indicate which executive is *primarily* responsible for each activity.

Activity	Management accountant	CFO
Managing accounts payable		
Communicating with investors		
Strategic review of different lines of business		
Budgeting funds for a plant upgrade		
Managing the company's short-term investments		
Negotiating fees with auditors		
Assessing profitability of various products		
Evaluating the costs and benefits of a new product design		

2. Based on this table and your understanding of the two roles, what types of training or experiences will Saunders find most useful for the CFO position?

**1.31 \* Role of management accountant, role of chief financial officer**

**OBJECTIVE 1**

George Jimenez is the management accountant at Balkin Electronics, a manufacturer of devices for the computer industry. The company may promote him to chief financial officer (CFO).

**REQUIRED**

1. In this table, indicate which executive is primarily responsible for each activity.

Activity	Management accountant	CFO
Managing the company's long-term investments		
Presenting the financial statements to the board of directors		
Strategic review of different lines of businesses		
Budgeting funds for a plant upgrade		
Managing accounts receivable		
Negotiating fees with auditors		
Assessing profitability of various products		
Evaluating the costs and benefits of a new product design		

2. Based on this table and your understanding of the two roles, what types of training or experience will George find most useful for the CFO position?

### 1.32 \*\* Ethics

### OBJECTIVE 6

Jocinta Marks is the Melbourne-based management accountant of Prakash & Sons, a rapidly growing manufacturer and marketer of Indian food products. Marks is currently considering the purchase of a new cost management package for use by each of the company's six manufacturing plants and its many marketing personnel. Four major competing products are being considered by Marks.

Pinnacle is an aggressive software developer. It views Prakash & Sons as a target of opportunity. Every six months, Pinnacle has a three-day users' conference in a Chinese location. Each conference has substantial time allowed for 'rest and recreation'. Pinnacle offers Marks an all-expenses-paid visit to the upcoming conference in Hong Kong. Marks accepts the offer, believing it will be very useful to talk to other users of Pinnacle software. She is especially looking forward to the visit because she has friends living in Hong Kong.

Prior to leaving, Marks receives a visit from the chief executive of Prakash & Sons. Marks shows him an anonymous letter sent to her. It argues that Pinnacle is receiving unfair favourable treatment in Prakash & Sons' software decision-making process. The letter specifically mentions Marks's upcoming 'all-expenses-paid package to Hong Kong'. Marks is deeply offended. She says she has made no decision, and she believes she is very capable of making a software choice on the merits of each product. Prakash & Sons currently does not have a formal, written code of ethics.

### REQUIRED

1. Do you think Marks faces an ethical problem in regard to her forthcoming visit to the Pinnacle users' group meeting? Refer to the CGMA Code of Ethics (<<http://www.cgma.org/AboutCGMA/DownloadableDocuments/CGMA-code-of-ethics.v2.pdf>>). Explain.
2. Should Prakash & Sons allow executives to attend user meetings while negotiating with other vendors about a purchase decision? Explain. If yes, what conditions on attending should apply?
3. Would you recommend that Prakash & Sons develop its own code of ethics to handle situations such as this? What are the pros and cons of having such a written code?

### 1.33 \*\* Budgeting, ethics, pharmaceutical company

### OBJECTIVE 6

Chris Jackson was recently promoted to management accountant of Research and Development (R&D) for BrisCor, a Fortune 500 pharmaceutical company that manufactures prescription drugs and nutritional supplements. The company's total R&D cost for 2018 was expected (budgeted) to be \$5 billion. During the company's mid-year budget review, Chris realised that current R&D expenditures were already at \$3.5 billion, nearly 40% above the mid-year target. At this current rate of expenditure, the R&D division was on track to exceed its total year-end budget by \$2 billion!

In a meeting with CFO Ronald Meece later that day, Jackson delivered the bad news. Meece was both shocked and outraged that the R&D spending had got out of control. Meece wasn't any more understanding when Jackson revealed that the excess cost was entirely related to research and development of a new drug, Vyacon, which was expected to go to market next year. The new drug would result in large profits for BrisCor, if the product could be approved by year-end.

Meece had already announced his expectations of third-quarter earnings to Wall Street analysts. If the R&D expenditures weren't reduced by the end of the third quarter, Meece was certain that the targets he had announced publicly would be missed and the company's stock price would tumble. Meece instructed Jackson to make up the budget shortfall by the end of the third quarter using 'whatever means necessary'.

Jackson was new to the controller's position and wanted to make sure that Meece's orders were followed. Jackson came up with the following ideas for making the third-quarter budgeted targets:

- a. Stop all research and development efforts on the drug Vyacon until after year-end. This change would delay the drug going to market by at least six months. It is possible that in the meantime a BrisCor competitor could make it to market with a similar drug.

- b. Sell off rights to the drug Martek. The company had not planned on doing this because, under current market conditions, it would get less than fair value. It would, however, result in a one-time gain that could offset the budget shortfall. Of course, all future profits from Martek would be lost.
- c. Capitalise some of the company's R&D expenditures, reducing R&D expense on the income statement. This transaction would not be in accordance with accounting standards, but Jackson thought it was justifiable because the Vyacon drug was going to market early next year. Jackson would argue that capitalising R&D costs this year and treating them as expenses next year would better match revenues and expenses.

### REQUIRED

1. Referring to ethical principles, comment on the acceptability of items a–c above.
2. Recommend an appropriate course of action to Jackson.

### 1.34 \*\* Professional ethics

### OBJECTIVE 6

Marie Sommers is the new division management accountant of the snack foods division of Superior Foods. Superior Foods has reported a minimum 15% growth in annual earnings for each of the past five years. The snack foods division has reported annual earnings growth of more than 20% each year in this same period. During the current year, the economy went into a recession. The corporate management accountant estimates a 10% annual earnings growth rate for Superior Foods this year. One month before the 30 June financial year-end of the current year, Sommers estimates that the snack foods division will report an annual earnings growth of only 8%. Zac Haast, the snack foods division manager, is not happy, but he notes that 'the end-of-financial-year actions' still need to be taken.

Sommers makes some enquiries and is able to compile the following list of end-of-financial-year actions that were more or less accepted by the previous division management accountant:

- a. deferring June's routine monthly maintenance on packaging equipment by an independent contractor to July
- b. extending the close of the current financial year beyond 30 June so that some sales of next year are included in the current year
- c. altering dates of shipping documents of next July's sales to record them as sales in June of the current financial year
- d. giving salespeople a double bonus to exceed June sales targets
- e. deferring the current period's advertising by reducing the number of television spots run in June and running more than planned in July
- f. deferring the current period's reported advertising costs by having Superior Foods' outside advertising agency delay the billing of June advertisements until July or by having the agency alter invoices to conceal the June date
- g. persuading carriers to accept merchandise for shipment in June of the current financial year although they normally would not have done so

### REQUIRED

1. Why might the snack foods division director want to take these end-of-financial-year actions?
2. The division management accountant is deeply troubled and reads the CIMA Code of Ethics for Professional Accountants. Classify each of the end-of-financial-year actions (a–g) as *acceptable* or *unacceptable* according to that document.
3. What should Sommers do if Haast suggests that these end-of-financial-year actions are taken in every division of Superior Foods and that she will greatly harm the snack foods division if she does not cooperate and paint the rosiest picture possible of the division's results?

### 1.35 \*\* Professional ethics

### OBJECTIVE 6

Trade Issue Pty Ltd is a publishing company that produces trade magazines. The company's shareholders are awaiting the announcement of Trade Issue's earnings for the financial year, which ends on 30 June. Market analysts have predicted earnings to be around \$1.34 per share. The CEO of Trade Issue expects earnings to be only \$1.20 per share, and knows this will cause the price of the shares to drop. The CEO suggests the following ideas to various managers to try to increase reported earnings by the end of the financial year:

- a. delaying the recording of cancelled subscriptions for June until July
- b. waiting until the new financial year to update the software on office computers
- c. recognising unearned subscription revenue (cash received in advance for magazines that will be sent in the future) as revenue when received in the current month (just before financial year-end) instead of booking it as a liability
- d. delaying the recording of purchases of office supplies on account until after financial year-end
- e. recording advertising revenues that relate to July in June

- f. waiting until after financial year-end to do building repairs
- g. switching from declining-balance to straight-line depreciation to reduce depreciation expenses in the current year

**REQUIRED**

1. Why would Trade Issue's CEO want to 'manage' earnings?
2. From the point of view of the CIMA Code of Ethics for Professional Accountants, which of items a–g above are acceptable to Trade Issue's management accountant? Which are unacceptable?
3. What should the management accountant do about the CEO's suggestions? What should the management accountant do if the CEO refuses to change the suggestions?

## COLLABORATIVE LEARNING PROBLEMS

**1.36 \*\*\* Ethical challenges****OBJECTIVE 6**

In June 2017, the government of Sandos invited bids for the construction of a mobile telephone network. Pure Tone, an experienced communications company, was eager to enter the growing field of mobile telephone networks in countries with poor infrastructure for land-lines. If Pure Tone won a few of these early contracts, it would be sought after for its field experience and expertise. After careful analysis, the company prepared a detailed bid for the Communications Ministry of Sandos, building in only half of its usual profit margin and providing a contractual guarantee that the project would be completed in two years or less. The multimillion-dollar bid was submitted before the deadline, and Pure Tone received notification that it had reached the Sandos government. Then, despite repeated faxes, emails and telephone calls to the ministry, there was no news on the bids or the project from the Sandos government.

Richard Burns, Director of Global Operations for Pure Tone, contacted the Australian commercial attaché in Sandos, who told him that his best chance was to go to Sandos and try to meet the deputy minister of communications in person. Burns prepared thoroughly for the trip, rereading the proposal and making sure that he understood the details.

At the commercial attaché's office in Sandos's capital, Burns waited nervously for the deputy minister and his assistant. Burns had come to Sandos with a clear negotiating strategy to try to win the bid. Soon the deputy minister and his staff arrived, introductions were made and pleasantries exchanged. The deputy minister asked a few questions about Pure Tone and the bid and then excused himself, leaving his assistant to talk to Burns. After clearly indicating that many other compelling bids had been made by firms from around the world, the assistant said: 'Mr Burns, I guarantee that Pure Tone's bid will be accepted if you pay a \$1 million commission. Of course, your excellent proposal doesn't have to be altered in any way.' It was clear to Burns that the 'commission' was, in fact, a bribe. Tactfully, he pointed out that Australian laws and Pure Tone's corporate policy prohibited such a payment. The assistant wished him a good day and a pleasant flight home and left.

**REQUIRED**

1. As a shareholder in Pure Tone, would you prefer that Pure Tone executives agree to the payment of the 'commission'?
2. When Burns described his experience to his friend Anthony Corder, who managed international business development for another company, Corder said that his own 'personal philosophy' was to make such payments if they were typical in the local culture. Do you agree with Corder's point of view? Explain.
3. Why would Pure Tone have a corporate policy against such payments?
4. What should Richard Burns do next?

**1.37 \*\*\* Ethical challenges, environmental concerns****OBJECTIVE 6**

Furniquial Ltd produces high-quality furniture in Australia for sale to top Australian retailers. In 1995, Furniquial purchased a timber operation in Indonesia, and shifted from using Australian hardwoods to using Indonesian ramin in its products. The ramin proved to be a cheaper alternative, and it was widely accepted by Furniquial's customers. Furniquial's management credits the early adoption of Indonesian wood for its ability to keep its Australian factory open when so many competitors had closed their doors. Recently, however, consumers have become increasingly concerned about the sustainability of tropical woods, including ramin. Furniquial has seen sales begin to fall, and the company was even singled out by an environmental group for boycott. It appears that a shift to more sustainable woods before year-end will be necessary, and more costly.

In response to the looming increase in material costs, CEO Stuart Fisher calls a meeting of senior management. The group generates the following ideas to address customer concerns and/or salvage company profits for the current year:

- a. Pay local officials in Indonesia to 'certify' that the ramin used by Furniquial is sustainable. It is not certain whether the ramin would indeed be sustainable. Put highly visible tags on each piece of furniture to inform consumers of the change.
- b. Make deep cuts in pricing through the end of the year to generate additional revenue.
- c. Record executive year-end bonus compensation accrued for the current year when it is paid in the next year, after the December fiscal year-end.
- d. Reject the change in materials. Counter the bad publicity with an aggressive ad campaign showing the consumer products as 'made in Australia', since production takes place in Australia.
- e. Redesign upholstered furniture to replace ramin contained inside with less expensive recycled plastic. The change in materials would not affect the appearance or durability of the furniture. The company would market the furniture as 'sustainable'.
- f. Pressure current customers to take early delivery of goods before the end of the year so that more revenue can be reported in this year's financial statements.
- g. Begin purchasing sustainable Australian hardwoods and sell the Indonesian subsidiary. Initiate a 'plant a tree' marketing program, in which the company would plant a tree for every piece of furniture sold. Material costs would increase 25%, and prices would be passed along to customers.
- h. Sell off production equipment before year-end. The sale would result in one-time gains that could offset the company's lagging profits. The owned equipment could be replaced with leased equipment at a lower cost in the current year.
- i. Recognise sales revenues on orders received but not shipped as of year-end.

### REQUIRED

1. As the management accountant for Furniquial, prepare a report to the CEO in which you evaluate each of the preceding items (a–i) in the context of the professional accountants' code of ethics.
2. Prepare a formal written note as to the action you would take with regard to those items that are in violation of the ethical standards for management accountants.

## ▶ TRY IT SOLUTIONS

### TRY IT 1.1 solution

- a production
- b design of products, services or processes
- c marketing
- d research and development
- e marketing
- f customer service
- g production
- h distribution

### TRY IT 1.2 solution

To respond to the challenges posed in MCL's environment, as highlighted by the five-forces analysis, MCL must choose between two basic strategies: differentiating its product or achieving cost leadership. Strong competition and the bargaining powers of customers and suppliers put significant pressure on MCL's selling prices, service and quality performance. While these conditions demand high-quality materials and labour inputs, new entrants are deterred by low prices and MCL has the capability to continuously improve quality and contain prices. Under these conditions, MCL should pursue a cost-leadership strategy.

### TRY IT 1.3 solution

In both cases, the management accountant is faced with an ethical dilemma. Ethical issues are not always clear-cut. Case A involves competence, objectivity and integrity. The management accountant should request that the division manager provide credible evidence that the new product is commercially viable. If the manager does not provide such evidence, it is appropriate that the development costs be treated as an expense in the current period. Case B involves confidentiality, integrity and objectivity. The supplier in case B may have no intention of raising issues associated with the bid. However, the appearance of a conflict of interest in case B is sufficient for many companies to prohibit employees from accepting 'favours'

from suppliers. The management accountant in case B should discuss the invitation with his immediate supervisor. If the visit is approved, the supplier should be informed that the invitation has been officially approved subject to his following corporate policy, which includes not disclosing confidential information.

If the divisional management accountant in case A is not satisfied with the division manager's response regarding the commercial viability of the product, s/he should discuss the issue with the CFO.

Sample

# Different costs for different purposes

## 2

What does the word cost mean to you? Is it the price you pay for something of value, like a tablet? A cash outflow, like monthly rent? Something that affects profitability, like salaries? Organisations, like individuals, deal with different types of cost. They incur costs to generate revenues. Unfortunately, when times get tough, companies may find that they are unable to cut costs fast enough, leading to bankruptcy. This was the case with surf-wear company Quiksilver in the USA.

### HIGH FIXED COSTS BANKRUPT QUIKSILVER

Cost cutting is a term that is mentioned in the media a lot. It is especially prominent in times of credit crunching and economic downturns. In Australia, the wealth management sector is one of those being paralysed by high fixed costs (such as from office leases) pushing companies to cut costs. Recently, Morgan Stanley undertook a major overhaul of its Australian operations, targeting millions of dollars of fixed-cost savings to achieve a sustainable position.

In 2015, surf-wear company Quiksilver announced that it had filed for Chapter 11 bankruptcy in the USA (excluding its European and Asia-Pacific operations). The company's high fixed costs—costs that did not decrease as the number of boardshorts and hoodies sold declined—had crippled the company. In the 1990s and early 2000s, Quiksilver rode the wave of young shoppers emulating the cool lifestyle of surfers, skateboarders and snowboarders to financial success and opened hundreds of retail stores worldwide, many in expensive areas such as Times Square in New York. This expansion saddled the company with a huge amount of debt. When sales rapidly declined in 2015, the company collapsed under the weight of its high fixed operating costs—like long-term leases and salaries—and massive debt-servicing payments. After declaring bankruptcy, Quiksilver began rapidly selling off its non-core brands and closing many retail stores.

The car industry, which has high fixed costs that cannot be easily changed, is another feeling the crunch. The competitiveness of companies such as General Motors in the Australian car market is drastically affected by the fixed costs—costs that do not change with the number of cars made. Holden, Toyota and Ford will all cease manufacturing in Australia due to the high costs and low levels of local car sales.

### LEARNING OBJECTIVES

- 1 Define and illustrate a cost object.
- 2 Distinguish between direct costs and indirect costs.
- 3 Explain variable costs and fixed costs.
- 4 Interpret unit costs with caution.
- 5 Distinguish between inventoriable costs and period costs.
- 6 Explain why product costs are calculated in different ways for different purposes.
- 7 Describe a framework for cost accounting and activity management.



Richard Levine/Alamy Stock Photo

Sources: Khouri, A. 2015, 'Wipeout: Quiksilver files for Chapter 11 bankruptcy in U.S.', *Los Angeles Times*, 9 September, <[www.latimes.com/business/la-fi-quirksilver-bankruptcy-20150909-story.html](http://www.latimes.com/business/la-fi-quirksilver-bankruptcy-20150909-story.html)>, accessed 19 September 2016; Belgum, D. 2015, 'Oaktree Capital working on buying Quiksilver', *California Apparel News*, 3 November, <[www.apparelnews.net/news/2015/nov/03/oaktree-capital-working-buying-quirksilver/](http://www.apparelnews.net/news/2015/nov/03/oaktree-capital-working-buying-quirksilver/)>, accessed 18 September 2016; Bennet, M. & White, A. 2016, 'Morgan Stanley takes axe to adviser pay in revamp', 27 May, <[www.theaustralian.com.au/business/financial-services/morgan-stanley-takes-axe-to-adviser-pay-in-revamp/news-story/3309dd5d054beefc2bd8b402bbc0d4b](http://www.theaustralian.com.au/business/financial-services/morgan-stanley-takes-axe-to-adviser-pay-in-revamp/news-story/3309dd5d054beefc2bd8b402bbc0d4b)>, accessed 18 September 2016; Dowling, J. 2015, 'Holden's pot-holed history: How it came to this', 13 September, <[www.news.com.au/technology/innovation/motoring/holdens-potholed-history-how-it-came-to-this/news-story/2aec8dc7bb8019ead16b59122fee4119](http://www.news.com.au/technology/innovation/motoring/holdens-potholed-history-how-it-came-to-this/news-story/2aec8dc7bb8019ead16b59122fee4119)>, accessed 19 September 2016.

As these stories illustrate, managers must understand costs in order to interpret and act on accounting reports. Organisations from a variety of sectors, such as Greenpeace, Westmead Children's Hospital and Nokia, generate reports containing a variety of cost concepts and terms that managers need to understand to run their operations. If managers do understand these concepts and terms, they can use the information provided; moreover, they can avoid misusing it. This chapter discusses the cost concepts and terms that are the basis of accounting information used for internal and external reporting.

## LEARNING OBJECTIVE

1

Define and illustrate a cost object.

## Costs and cost terminology

Accountants define **cost** as a resource sacrificed or forgone to achieve a specific objective. A cost (e.g. direct materials or advertising) is usually measured as the monetary amount that must be paid to acquire goods or services. An **actual cost** is the cost incurred (a historical or past cost), as distinguished from a **budgeted cost**, which is a predicted or forecasted cost (a future cost).

When you think of cost, you invariably think of it in the context of finding the cost of a particular thing. We call this thing a **cost object**, which is anything for which a measurement of costs is desired. Suppose that you were a manager at a BMW manufacturing plant that makes several different types of passenger and sports utility vehicle. What cost objects can you think of? Now look at Table 2.1.

You will see that BMW managers want to know the cost of various products, such as the BMW X6 sport utility crossover, but that they also want to know the costs of things such as projects, services and departments. Managers use their knowledge of these costs to guide decisions, for example about product innovation, quality and customer service.

Now think about whether a manager at BMW might want to know the *budgeted cost* of a cost object or the *actual cost*. Managers almost always need to know both types of cost when making decisions. Comparing budgeted costs with actual costs helps managers evaluate how well they did and learn about how they can do better in the future.

How does a cost system determine the costs of various cost objects? This is typically done in two basic stages: accumulation, followed by assignment. **Cost accumulation** is the collection of cost data in some organised way by means of an accounting system. For example, at its manufacturing plant, BMW collects (accumulates) costs in various categories, such as different types of material, different classifications of labour and costs incurred for supervision. These accumulated costs are then assigned to designated cost objects, such as the different models of cars that BMW manufactures at that plant. The BMW managers use this cost information for two main purposes: (1) to *make* decisions, for instance how to price different models of car or how much to invest in R&D and marketing; and (2) to *implement* decisions by influencing and motivating employees to act and learn, for example by rewarding employees for reducing costs.

**TABLE 2.1** Examples of cost objects at BMW

Cost object	Example
Product	A BMW X6
Service	Telephone hotline providing information and assistance to BMW dealers
Project	R&D on fuel technology
Customers	Rolfe Classic BMW, the BMW dealer in Canberra that purchases a wide range of BMW vehicles
Activity	Maintenance on assembly equipment
Department	Sales, Marketing and Aftersales Department

### DECISION POINT 1

What is a cost object?

Now that we know why it is useful to assign costs, we turn our attention to some concepts that will help us do this. Again, think of the different types of cost that we just discussed—materials, labour and supervision. You are probably thinking that some costs, such as costs of materials, are easier to assign to a cost object than others, such as costs of supervision. As you will see, this is indeed the case.

## Direct costs and indirect costs

We now describe how costs are classified as direct and indirect costs and the methods used to assign these costs to cost objects.

- Direct costs of a cost object** are related to the particular cost object and can be traced to it in an economically feasible (cost-effective) way. For example, the cost of alloy wheels is a direct cost of the BMW X6. The cost of the steel or tyres can be easily traced to or identified with the BMW X6. The workers on the BMW X6 line request materials from the warehouse and the material requisition document identifies the cost of the materials supplied to the X6. In a similar vein, individual workers record on time sheets the time spent working on the X6. The cost of this labour can easily be traced to the X6 and is another example of a direct cost. The term **cost tracing** is used to describe the assignment of direct costs to a particular cost object.
- Indirect costs of a cost object** are related to the particular cost object but cannot be traced to it in an economically feasible (cost-effective) way. For example, the salaries of plant administrators (including the plant manager) who oversee production of the many different types of cars produced at the BMW plant are an indirect cost of the X6s. Plant administration costs are related to the cost object (X6s) because plant administration is necessary for managing the production of these vehicles. Plant administration costs are indirect costs because plant administrators also oversee the production of other products, such as the Z4 Roadster. Unlike the cost of alloy wheels, there is no requisition of plant administration services and it is virtually impossible to trace plant administration costs to the X6 line. The term **cost allocation** is used to describe the assignment of indirect costs to a particular cost object.
- Cost assignment** is a general term that encompasses both: (1) tracing direct costs to a cost object and (2) allocating indirect costs to a cost object. Figure 2.1 depicts direct costs and indirect costs and both forms of cost assignment—cost tracing and cost allocation—using the BMW X6 as an example.

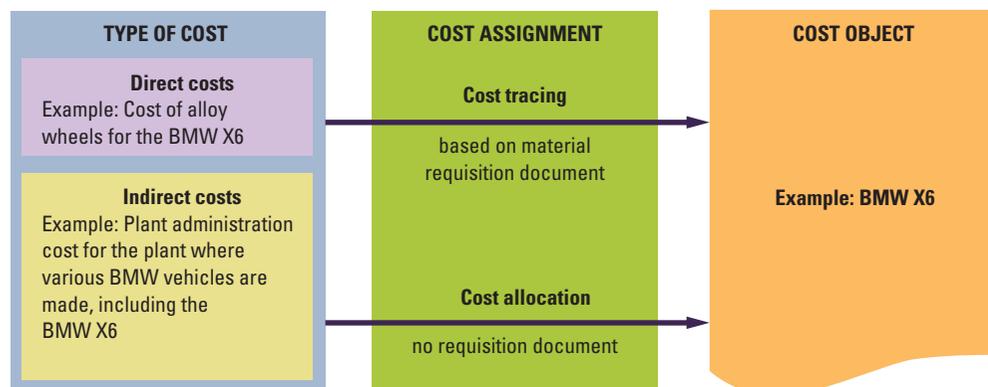
## LEARNING OBJECTIVE 2

Distinguish between direct costs and indirect costs.

## Challenges in cost allocation

Managers want to assign costs accurately to cost objects. Inaccurate product costs will mislead managers about the profitability of different products. Consequently, managers might unknowingly promote unprofitable products while de-emphasising profitable products.

Generally, managers are more confident about the accuracy of direct costs of cost objects, such as the cost of alloy wheels of the X6, because these costs can be easily traced to the cost



**FIGURE 2.1**

Cost assignment to a cost object

object. Indirect costs are a different story. Some indirect costs can be assigned to cost objects reasonably accurately. Others are more difficult.

Consider the cost to power the BMW plant. This cost is an indirect cost of the X6—there is no separate meter for the electricity used to make the X6. But BMW *allocates* a part of the electricity cost of the building to the X6—for example, on the basis of the machine hours used for the production of the X6 relative to the total machine hours used to produce all vehicles. Allocating the cost of the electricity on the basis of the total machine hours used by each vehicle model makes sense. This approach measures the electricity used by each vehicle reasonably and accurately. The more machine hours that a model uses, the greater the electricity costs that should be assigned to it. Accurately allocating other indirect costs, such as plant administration, to the X6 is, however, more difficult. Should these costs be allocated on the basis of the number of workers working on each car model or the number of vehicles produced of each model? Measuring the share of plant administration used by each vehicle is not clear-cut.

## Factors affecting direct/indirect cost classifications

Several factors affect the classification of a cost as direct or indirect:

- **The materiality of the cost in question.** The smaller the amount of a cost—that is, the more immaterial the cost is—the less likely it is to be economically feasible to trace that cost to a particular cost object. Consider an online-order company, such as Amazon.com. It would be economically feasible to trace the courier charge for delivering a package to an individual customer as a direct cost. In contrast, the cost of the invoice paper included in the package would be classified as an indirect cost. Why? Because although the cost of the paper can be traced to each customer, it is not cost-effective to do so. The benefits of knowing that, say, exactly 0.5c worth of paper is included in each package do not exceed the data processing and administrative costs of tracing the cost to each package.
- **Available information-gathering technology.** Improvements in information-gathering technology make it possible to consider more and more costs as direct costs. Barcodes, for example, allow manufacturing plants to treat certain low-cost materials, such as clips and screws, that were previously classified as indirect costs as direct costs of products. At Dell, component parts such as the computer chip and the DVD drive display a barcode that can be scanned at every point in the production process. Barcodes can be read into a manufacturing cost file by waving a ‘wand’ in the same quick and efficient way that supermarket checkout operators enter the cost of each item purchased by a customer.
- **Design of operations.** Classifying a cost as direct is easier if a company’s facility (or some part of it) is used exclusively for a specific cost object, such as a specific product or a particular customer. For example, the cost of a facility that is dedicated to manufacturing disc brakes is a direct cost of disc brakes.

Be aware that a specific cost may be both a direct cost of one cost object and an indirect cost of another cost object. That is, the direct/indirect classification depends on the *choice* of cost object. For example, the salary of an Assembly Department supervisor at BMW is a direct cost if the cost object is the Assembly Department, but an indirect cost if the cost object is a product such as the BMW X6 because the Assembly Department assembles many different models. A useful rule to remember is that the broader the definition of the cost object—the Assembly Department rather than the X6—the higher the proportion of total costs that are direct costs and the more confidence a manager has in the accuracy of the resulting cost amounts.

### DECISION POINT 2

How do managers decide whether a cost is a direct or an indirect cost?

### LEARNING OBJECTIVE 3

Explain variable costs and fixed costs.

## Cost behaviour patterns: variable costs and fixed costs

Costing systems record the cost of resources acquired, such as materials, labour and equipment, and track how those resources are used to produce and sell products or services. Recording the costs of resources acquired and used allows managers to see how costs behave.

Consider two basic types of cost behaviour pattern found in many accounting systems—variable and fixed costs. To illustrate these two basic types of costs, again consider costs at the BMW plant.

- Variable costs.** If BMW buys four tyres at \$360 for each of its BMW X6 vehicles, then the total cost of tyres should be \$360 times the number of vehicles produced, as the following table illustrates.

Number of X6s produced (1)	Variable cost per set of four tyres (2)	Total variable cost of tyres (3) = (1) × (2)
1	\$360	\$360
1000	360	360 000
3000	360	1 080 000

The tyre cost is an example of a variable cost because *total cost* changes in proportion to changes in the number of vehicles produced. A **variable cost** changes *in total* in proportion to changes in the related level of total activity or volume. The cost per unit of a variable cost is constant. It is precisely because the variable cost per set of four tyres in column 2 is the same for each set of four tyres that the total variable cost of tyres in column 3 changes proportionately with the number of BMW X6s produced in column 1. When considering how variable costs behave, always focus on total costs.

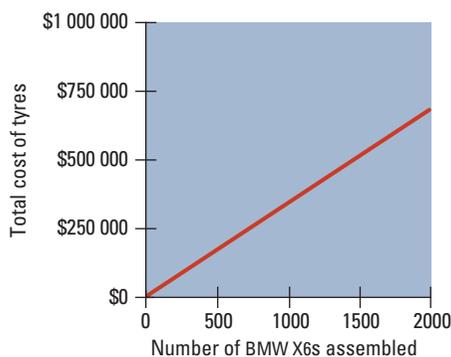
Figure 2.2, panel A, graphically illustrates the total variable cost of tyres. The cost is represented by a straight line that climbs from left to right. The phrases ‘strictly variable’ and ‘proportionately variable’ are sometimes used to describe the variable cost in panel A.

Consider an example of a variable cost with respect to a different activity—the \$40 hourly wage paid to each worker to set up machines at the BMW plant. Set-up labour cost is a variable cost with respect to set-up hours because set-up cost changes in total in proportion to the number of set-up hours used.

- Fixed costs.** Suppose BMW incurs a total cost of \$2 000 000 per year for supervisors who work exclusively on the X6. These costs are unchanged in total over a designated range of the number of vehicles produced during a given time span (see Figure 2.2, panel B). Fixed costs become smaller and smaller on a per unit basis as the number of vehicles assembled increases, as the following table shows.

Annual total fixed supervision costs for BMW X6 assembly line (1)	Number of X6s produced (2)	Fixed supervision cost per X6 (3) = (1) ÷ (2)
\$2 000 000	10 000	\$200
2 000 000	25 000	80
2 000 000	50 000	40

PANEL A: Variable cost of tyres at \$360 per BMW X6 assembled



PANEL B: Supervision costs for the BMW X6 assembly line

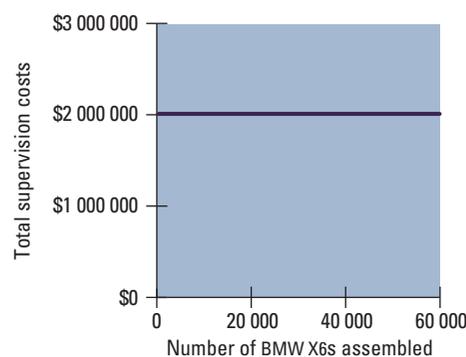


FIGURE 2.2

Graphs of variable and fixed costs

It is precisely because the *total* line supervision costs are fixed at \$2 000 000 that the fixed supervision cost per X6 decreases as the number of X6s produced increases; the same fixed cost is spread over a larger number of X6s. A **fixed cost** remains unchanged *in total* for a given time period, despite changes in the related level of total activity or volume. Do not be misled by the change in fixed cost per unit. Just as in the case of variable costs, when considering fixed costs always focus on total costs. Costs are fixed when total costs remain unchanged despite significant changes in the level of total activity or volume.

Costs are defined as variable or fixed with respect to *a specific activity* and for *a given time period*. Surveys of practice repeatedly show that identifying a cost as variable or fixed provides valuable information for making management decisions and is an important input when evaluating performance.

Why are some costs variable and other costs fixed? Recall that a cost is usually measured as the amount of money that must be paid to acquire goods and services. The total cost of tyres is a variable cost because BMW buys the tyres only when they are needed. As more X6s are produced, proportionately more tyres are acquired and proportionately more costs are incurred.

Contrast the description of variable costs with the \$2 000 000 of fixed costs per year incurred by BMW for supervision of the X6 assembly line. This level of supervision is acquired and put in place well before BMW uses it to produce X6s and before BMW even knows how many X6s it will produce. Suppose that BMW puts in place supervisors capable of supervising the production of 60 000 X6s each year. If the demand is for only 55 000 X6s, there will be idle

## CONCEPTS IN ACTION

### Changing cost structures using software as a service (SaaS) vendors or application service providers (ASPs)

Companies now have the option of renting software that they need from the world of application service providers (ASPs) and software as a service (SaaS) vendors. This is because many users will not want to install applications locally but, instead, will access the applications they need over the internet, on demand, from online providers for a fee for the precise value of the specific features and resources they choose to use. Imagine the possibilities for businesses—they could choose to: (1) build their own systems at high cost (hardware and software development); (2) purchase a software package, recruit and then retrain in-house information technology resources; or (3) rent software from ASPs or SaaS vendors. The first two options call for high fixed costs, which means that some small businesses have to go without automated basic financial reporting and human resources processes. Businesses are making the shift away from legacy IT services as part of digital business strategy thanks to SaaS.

ASPs such as Microsoft and Salesforce.com, and SaaS vendors such as SAP (SAP Business ByDesign) or RecruitAdvantage (TurboRecruit) design, develop, maintain and upgrade software application packages and charge a fee to anyone wanting to use their applications. This means

that businesses can now convert the fixed costs of software applications to variable costs based on usage. When there is a downturn, therefore, these businesses are not saddled with such fixed costs. The financial benefits for businesses of using SaaS vendors or ASPs are compelling. However, there are non-financial reasons why companies may decide not to use them: (1) concerns about the security of proprietary data sent over the internet; (2) lack of control over important applications; and (3) lack of reliability of the network. In order to counteract the third concern, ASPs and SaaS vendors offer service agreements that guarantee 99.9% uptime.

Barely four years ago, venture capitalist Marc Andreessen declared that '2012 will be remembered as the year of the SaaS'. The popularity of SaaS as a tool for businesses to change their cost structures by avoiding expansion or replacement of in-house equipment contributed to worldwide SaaS revenues (in US dollars) of \$12.3 billion in 2011 growing to \$31.4 billion in 2015 (approximately 155% growth), greatly exceeding the expected peak of \$22.1 billion. This figure is forecasted to grow by 20% to reach \$37.7 billion in 2016 within the \$204 billion worldwide public cloud services market.

*Sources:* Geron, T. 2012, 'Marc Andreessen: 2012 will be remembered as the year of SaaS', 29 November, <[www.forbes.com/sites/tomiogeron/2012/11/29/marc-andreessen-2012-will-be-remembered-as-the-year-of-saas/](http://www.forbes.com/sites/tomiogeron/2012/11/29/marc-andreessen-2012-will-be-remembered-as-the-year-of-saas/)>, accessed 3 December 2012; Heath, N. 2012, 'Worldwide SaaS spikes as adoption shifts from extending software to rip and replace', 28 November, <[www.zdnet.com/worldwide-saas-spikes-as-adoption-shifts-from-extending-software-to-rip-and-replace-7000008026/](http://www.zdnet.com/worldwide-saas-spikes-as-adoption-shifts-from-extending-software-to-rip-and-replace-7000008026/)>, accessed 3 December 2012; Lavery, R. 2001, 'The ABC of ASPs', *Strategic Finance*, May; Newcomb, K. 2004, 'The second coming of ASPs', 5 May, <[www.aspnnews.com/analysis/aspnews\\_analysis/article.php/3349851](http://www.aspnnews.com/analysis/aspnews_analysis/article.php/3349851)>, accessed 3 December 2009; Pettey, C. & Stevens, H. 2012, 'Gartner says worldwide software-as-a-service revenue to reach \$14.5 billion in 2012', 27 March, <[www.gartner.com/it/page.jsp?id=1963815](http://www.gartner.com/it/page.jsp?id=1963815)>, accessed 3 December 2012; Stamford, C. 2016, 'Gartner says worldwide public cloud services market is forecast to reach \$204 billion in 2016', 25 January, <[www.gartner.com/newsroom/id/3188817](http://www.gartner.com/newsroom/id/3188817)>, accessed 3 October 2016.

capacity. Supervisors on the X6 line could have supervised the production of 60 000 X6s but will supervise only 55 000 X6s because of the lower demand. However, BMW must pay for the unused line supervision capacity because the cost of supervision cannot be reduced in the short run. If demand is even lower—say only 50 000 X6s—line supervision costs will not change; they will continue to be \$2 000 000 and idle capacity will increase.

Unlike variable costs, fixed costs of resources (such as for line supervision) cannot be quickly and easily changed to match the resources needed or used. Over time, however, managers can take actions to reduce fixed costs. For example, if the X6 line needs to be run for fewer hours because of low demand for X6s, BMW may lay off supervisors or move them to another production line. Companies may also choose to rent their software from a service provider rather than buying it to reduce fixed costs, as shown in the *Concepts in action* feature opposite.

Do not assume that individual cost items are inherently variable or inherently fixed. Consider labour costs. Labour costs can be purely variable with respect to units produced when workers are paid on a unit basis. For example, some garment workers are paid on a per-garment-sewed basis. In contrast, the labour costs at a plant in the coming year are sometimes appropriately classified as fixed. For instance, a labour union agreement might set annual salaries and conditions, contain a no-lay-off clause and severely restrict a company's flexibility to assign workers to any other plant that has demand for labour. Japanese companies have, for a long time, had a policy of lifetime employment for their workers. Although such a policy entails higher labour costs, particularly in economic downturns, the benefits are increased loyalty and dedication to the company and higher productivity. The *Sustainability in action*

## SUSTAINABILITY IN ACTION

### How car sharing is helping reduce business transportation costs

Rising petrol prices, high insurance costs and hefty parking fees have forced many businesses to reconsider the ownership of company or fleet cars. In Sydney and Melbourne, car-sharing businesses, such as Flexicar, GoGet CarShare and Charter Drive, have emerged as an attractive alternative. These businesses provide an on-demand option for city businesses and individuals to rent a car by the day or even the hour. Basically, members make a reservation by telephone or internet, go to where the car is located (usually on foot or by public transport), swipe an electronic card over a sensor that unlocks the door, and then just climb in and drive away. Rental fees usually include fuel, insurance, maintenance and cleaning.

Car sharing offers an environmentally friendly, low-cost and no-hassle alternative for companies. Many small businesses own a company car or two for getting to meetings, making deliveries and other errands. Similarly, large companies may own a fleet of cars to shuttle visiting executives and clients back and forth from appointments, business lunches and the airport. Traditionally, companies had no other option but to own these cars, which involves very high fixed costs, including buying the asset (car) and the costs of maintenance and insurance for multiple drivers. Now, companies can use car-sharing businesses for on-demand transportation while reducing their

transportation, overhead and fringe benefits costs. This has resulted in lower or no fleet expenses for private companies using car-sharing services. In the USA, Twitter managers use Zipcar's fleet of Mini Coopers and Toyota Priuses to meet venture capitalists and partners in Silicon Valley or when travelling far away from its headquarters. In 2015, research found that Zipcar's business program eliminated the need for roughly 33 000 cars across North America.

From a business perspective, car sharing allows companies to convert the fixed costs of owning a company car to variable costs. If business slows, or a car isn't required, car-share customers are not burdened with the fixed costs of car ownership. Such an arrangement is also attractive to those keen on reducing carbon emissions or companies with core values of employing sustainable practices, as research has shown that one car-sharing vehicle can replace up to 10 privately owned cars on the road. Several councils are putting their support behind car sharing by providing dedicated car-share parking spaces.

Car sharing is a practical and creative concept that helps solve the problem of congestion on major city roads. In addition, car-sharing businesses that are conscious about the environment can choose to operate hybrid or small fuel-economical cars in their fleet.

*Sources:* Anon. 2008 'Share a car and fight congestion', *Sydney Morning Herald*, 28 May; Hutton, J. 2008, 'Share exchange—Covering corporate car share and outsourced fleet service', *Business Review Weekly*, 5 June; Keegan, P. 2009, 'Zipcar—The best new idea in business.' *Fortune*, 27 August, <[http://money.cnn.com/2009/08/26/news/companies/zipcar\\_car\\_rentals.fortune/](http://money.cnn.com/2009/08/26/news/companies/zipcar_car_rentals.fortune/)>, accessed 3 December 2012; Olsen, E. 2009, 'Car sharing reinvents the company wheels', *New York Times*, 7 May, <[www.nytimes.com/2009/05/07/business/businessspecial/07CAR.html](http://www.nytimes.com/2009/05/07/business/businessspecial/07CAR.html)>, accessed 3 December 2012; Zipcar, Inc. 2012, 'Zipcar for business case studies', <[www.zipcar.com/business/is-it/case-studies](http://www.zipcar.com/business/is-it/case-studies)>, accessed 3 December 2012; Zipcar, Inc. 2015, 'New research finds business use of Zipcar reduces personal car ownership', press release, 27 July, <[www.zipcar.com/press/releases/z4breducescarownership](http://www.zipcar.com/press/releases/z4breducescarownership)>, accessed 25 September 2016.

### DECISION POINT 3

How do managers decide whether a cost is a variable or a fixed cost?

feature on page 43 describes how a car-sharing service offers companies the opportunity to convert the fixed costs of owning corporate cars into variable costs while simultaneously reducing their environmental impact.

A particular cost item could be variable with respect to one level of activity and fixed with respect to another. Consider annual registration and licence costs for a fleet of planes owned by an airline company. Registration and licence costs would be a variable cost with respect to the number of planes owned. But registration and licence costs for a particular plane are fixed with respect to the kilometres flown by that plane during a year.

Some costs have both fixed and variable elements and are called *mixed* or *semi-variable* costs. For example, a company's telephone costs may have a fixed monthly payment and a charge per phone-minute used. We discuss mixed costs and techniques to separate out their fixed and variable components in chapter 3.

## TRY IT!

2.1

PepsiCo Beverages uses trucks to transport bottles from the warehouse to different retail outlets. This problem focuses on the cost of operating a truck. Fuel costs are \$0.15 per kilometre driven. Insurance costs are \$6 000 per year.

### Required

Calculate the total costs and the cost per kilometre for fuel and insurance if the truck is driven (a) 20 000 kilometres per year or (b) 30 000 kilometres per year.

## Cost drivers

A **cost driver** is a variable, such as the level of activity or volume, that causally affects costs over a given time span. That is, there is a cause-and-effect relationship between a change in the level of activity or volume and a change in the level of total costs. For example, if product design costs change with the number of parts in a product, the number of parts is a cost driver of product design costs. Similarly, kilometres driven is often a cost driver of distribution costs.

The cost driver of a variable cost is the level of activity or volume for which change causes proportionate changes in the variable cost. For example, the number of vehicles assembled is the cost driver of the total cost of tyres. If set-up workers are paid an hourly wage, the number of set-up hours is the cost driver of total (variable) set-up costs.

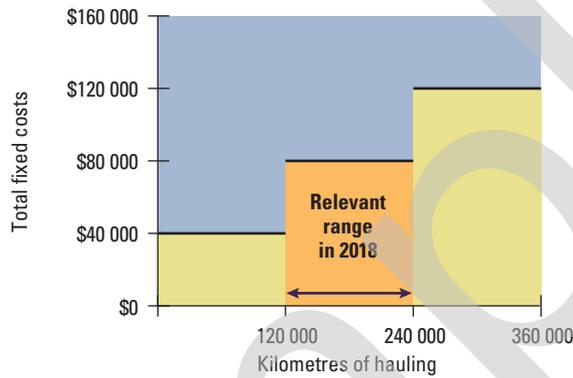
Costs that are fixed in the short run have no cost driver in the short run but may have a cost driver in the long run. Consider the costs of testing, say, 0.2% of the colour printers at Hewlett-Packard. These costs consist of Testing Department equipment and staff costs that are difficult to change and, hence, are fixed in the short run with respect to changes in the volume of production. In this case, volume of production is not a cost driver of testing costs in the short run. In the long run, however, Hewlett-Packard will increase or decrease the Testing Department's equipment and staff to the levels needed to support future production volumes. In the long run, volume of production is a cost driver of testing costs.

Costing systems that identify the cost of each activity, such as testing, design, or set-up, are called activity-based costing systems.

## Relevant range

**Relevant range** is the band of normal activity level or volume in which there is a specific relationship between the level of activity or volume and the cost in question. For example, a fixed cost is fixed only in relation to a given wide range of total activity or volume (at which the company is expected to operate) and only for a given time span (usually a particular budget period). Suppose that BMW contracts with Linfox Logistics (LL) to transport X6s to dealers. LL rents two trucks for annual fixed rental costs of \$40 000 each. The maximum annual usage of each truck is 120 000 kilometres. In the current year (2018), the predicted combined total hauling of the two trucks is 170 000 kilometres.

Figure 2.3 shows how annual fixed costs behave at different levels of kilometres of hauling. Up to 120 000 kilometres, LL can operate with one truck; from 120 001 to 240 000 kilometres, it operates with two trucks; from 240 001 to 360 000 kilometres, it operates with three trucks.



**FIGURE 2.3**  
Fixed cost behaviour at Linfox Logistics

This pattern will continue as LL adds trucks to its fleet to provide more kilometres of hauling. Given the predicted 170 000 kilometre usage for 2018, the range of 120 001–240 000 kilometres hauled is the range in which LL expects to operate, resulting in fixed rental costs of \$80 000. Within this relevant range, changes in kilometres hauled will not affect the annual fixed costs.

Fixed costs may change from one year to the next. For example, if the total rental fee of the two trucks is increased by \$2000 for 2019, the total level of fixed costs will increase to \$82 000 (all else remaining the same). If that increase occurs, total rental costs will be fixed at this new level of \$82 000 for 2019 for kilometres hauled in the 120 001–240 000 range.

The relevant range also applies to variable costs. Outside the relevant range, variable costs, such as direct materials, may not change proportionately with changes in production volume. For example, above a certain volume, direct materials costs may increase at a lower rate because of price discounts on purchases greater than a certain quantity.

### Relationships of types of cost

We have introduced two major classifications of costs: direct/indirect and variable/fixed. Costs may simultaneously be:

- direct and variable
- direct and fixed
- indirect and variable
- indirect and fixed.

Figure 2.4 shows examples of costs in each of these four cost classifications for the BMW X6.

		Assignment of costs to cost object	
		Direct costs	Indirect costs
Cost behaviour pattern	Variable costs	<ul style="list-style-type: none"> <li>• Cost object: BMW X6s produced</li> <li>Example: Tyres used in assembly of vehicle</li> </ul>	<ul style="list-style-type: none"> <li>• Cost object: BMW X6s produced</li> <li>Example: Electricity costs at plant. Electricity usage is metered only to the plant, where multiple vehicles are assembled</li> </ul>
	Fixed costs	<ul style="list-style-type: none"> <li>• Cost object: BMW X6s produced</li> <li>Example: Salary of supervisor on BMW X6 assembly line</li> </ul>	<ul style="list-style-type: none"> <li>• Cost object: BMW X6s produced</li> <li>Example: Annual lease costs at plant. Lease is for whole plant, where multiple products are produced</li> </ul>

**FIGURE 2.4**  
Examples of costs in combinations of the direct/indirect and variable/fixed cost classifications for a car manufacturer

**LEARNING  
OBJECTIVE****4****Total costs and unit costs**

Interpret unit costs with caution.

The preceding section concentrated on the behaviour patterns of total costs in relation to activity or volume levels. We now consider unit costs.

**Unit costs**

Generally, the decision maker should think in terms of total costs rather than unit costs. In many decision contexts, however, calculating a unit cost is essential. Consider the chairman of the social committee of a student association who is trying to decide whether to hire a musical group for an upcoming party. He estimates the cost of hiring the group to be \$1000. This knowledge is helpful for the decision, but it is not enough.

Before a decision can be reached, the chairman must also predict the number of people who will attend. Without knowing total cost and number of attendees, he cannot make an informed decision on a possible admission price to recover the cost of the party or even on whether to have a party at all. So he calculates the unit cost of hiring the musical group by dividing the total cost (\$1000) by the expected number of people who will attend. If 1000 people attend, the unit cost is \$1 per person; if 100 attend, the unit cost increases to \$10.

Unless the total cost is 'unitised' (i.e. averaged with respect to the level of activity or volume), the \$1000 cost is difficult to interpret. The unit cost combines the total cost and the number of people in a handy, communicative way.

Accounting systems typically report both total cost amounts and average-cost-per-unit amounts. A **unit cost**, also called an **average cost**, is calculated by dividing total cost by the number of units. The units might be expressed in various ways. Examples are vehicles assembled, packages delivered or hours worked. Suppose that in 2018, its first year of operations, \$40 000 000 of manufacturing costs are incurred to produce 500 000 speaker systems at the plant of Music Products. Then the unit cost is \$80:

$$\frac{\text{Total manufacturing costs}}{\text{Number of units manufactured}} = \frac{\$40\,000\,000}{500\,000 \text{ units}} = \$80 \text{ per unit}$$

If 480 000 units are sold and 20 000 units remain in ending inventory, the unit cost concept helps in the determination of total costs in the income statement and balance sheet and, hence, the financial results reported by Music Products to shareholders, banks and the government.

Cost of goods sold in the income statement, 480 000 units × \$80 per unit	\$38 400 000
Ending inventory in the balance sheet, 20 000 units × \$80 per unit	1 600 000
Total manufacturing costs of 500 000 units	\$40 000 000

Unit costs are found in all areas of the value chain—for example, unit cost of product design, sales visits and customer service calls. By summing unit costs throughout the value chain, managers calculate the unit cost of the different products or services they deliver and determine the profitability of each product or service. Managers use this information, for instance, to decide the products in which they should invest more resources, such as R&D and marketing, and the prices they should charge.

**Use unit costs with caution**

Although unit costs are regularly used in financial reports and for making product mix and pricing decisions, managers should think in terms of *total costs* rather than unit costs for many decisions. Consider the manager of Music Products' plant. Assume that the \$40 000 000 of costs in 2018 consists of \$10 000 000 of fixed costs and \$30 000 000 of variable costs (at \$60 variable cost per speaker system produced). Suppose the total fixed cost and the variable cost per speaker system in 2019 are expected to be unchanged from 2018. The budgeted costs for 2019 at different production levels, calculated on the basis of total variable costs, total fixed costs and total costs, are:

Units produced (1)	Variable cost per unit (2)	Total variable costs (3) = (1) × (2)	Total fixed costs (4)	Total costs (5) = (3) + (4)	Unit cost (6) = (5) ÷ (1)
100 000	\$60	\$6 000 000	\$10 000 000	\$16 000 000	\$160.00
200 000	60	12 000 000	10 000 000	22 000 000	110.00
500 000	60	30 000 000	10 000 000	40 000 000	80.00
800 000	60	48 000 000	10 000 000	58 000 000	72.50
1 000 000	60	60 000 000	10 000 000	70 000 000	70.00

A plant manager who uses the 2018 unit cost of \$80 per unit will underestimate actual total costs if 2019 output is below the 2018 level of 500 000 units. If the actual volume is 200 000 units due to, say, the presence of a new competitor, actual costs would be \$22 000 000. The unit cost of \$80 times 200 000 units equals \$16 000 000, which underestimates the actual total costs by \$6 000 000 (\$22 000 000 – \$16 000 000). *The unit cost of \$80 applies only when 500 000 units are produced.*

An over-reliance on unit cost in this situation could lead to insufficient cash being available to pay costs if volume declines to 200 000 units. Therefore, for making this decision, managers should think in terms of total variable costs, total fixed costs and total costs rather than unit cost. As a general rule, first calculate total costs, then calculate a unit cost if it is needed for a particular decision.

#### DECISION POINT 4

How should costs be estimated?

## Business sectors, types of inventory, inventoriable costs and period costs

In this section, we describe the different sectors of the economy, the different types of inventory that companies hold and some commonly used classifications of manufacturing costs.

#### LEARNING OBJECTIVE 5

Distinguish between inventoriable costs and period costs.

### Manufacturing, retail and service sector companies

We define three sectors of the economy and provide examples of companies in each sector.

1. **Manufacturing sector companies** purchase materials and components and convert them into various finished goods. Examples are car manufacturers, mobile phone producers, food-processing companies and textile companies.
2. **Retail sector companies** purchase and then sell tangible products without changing their basic form. This sector includes companies engaged in retailing (e.g. book shops or department stores), distribution or wholesale.
3. **Service sector companies** provide services (intangible products)—for example, legal advice or audits—to their customers. Examples are law firms, accounting firms, banks, insurance companies, transportation companies, advertising agencies, radio and television stations, internet-based companies such as internet service providers, travel agencies and brokerage firms.

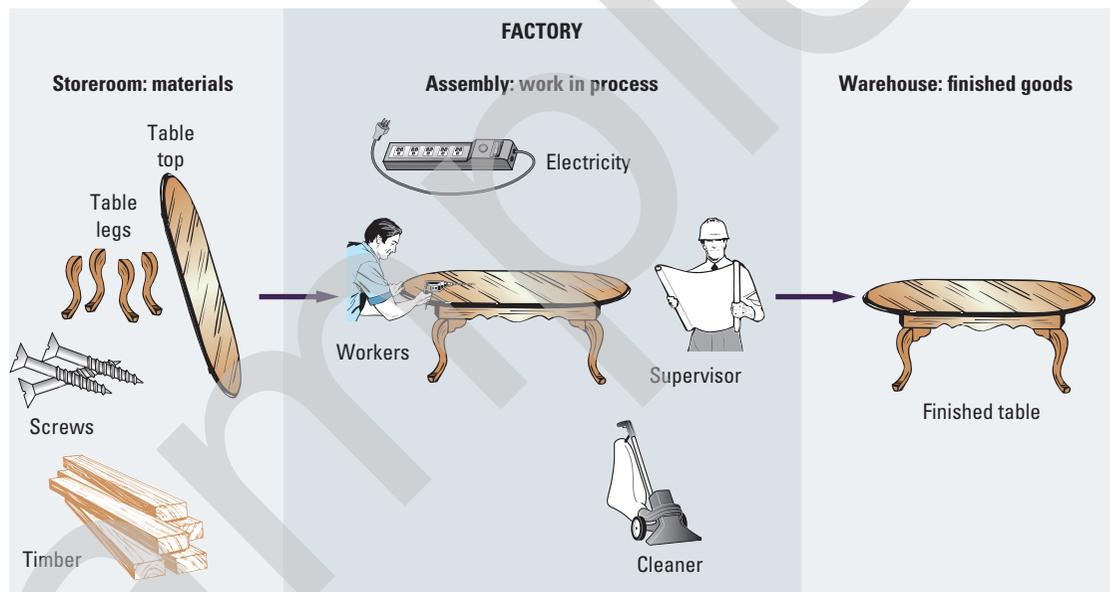
As stated above, manufacturing companies purchase raw materials and components to convert them via a process known as the **manufacturing process** into saleable, finished products. Figure 2.5 (overleaf) illustrates a basic manufacturing process for a table. Raw materials (requisitioned from the storeroom) are converted to the completed table by workers on the factory floor. The completed tables are then stored in a warehouse and then distributed for sale to the end-consumer.

### Types of inventory

Manufacturing sector companies purchase materials and components to convert them into various finished goods. These companies typically have one or more of the following three types of inventory:

FIGURE 2.5

Illustration of the manufacturing process



1. **Direct materials inventory**—direct materials in stock and awaiting use in the manufacturing process (e.g. computer chips and components needed to manufacture mobile phones).
2. **Work-in-process inventory**—goods partially worked on but not yet completed (e.g. mobile phones at various stages of completion in the manufacturing process). This is also called **work in progress**.
3. **Finished goods inventory**—goods (e.g. mobile phones) completed but not yet sold.

Retail sector companies purchase tangible products and then sell them without changing their basic form. They hold only one type of inventory, which is products in their original purchased form, called *inventory*. Service sector companies provide only services or intangible products and so do not hold inventories of tangible products.

### Commonly used classifications of manufacturing costs

Three terms commonly used when describing manufacturing costs are direct materials costs, direct manufacturing labour costs and indirect manufacturing costs.<sup>1</sup>

1. **Direct materials costs** are the acquisition costs of all materials that eventually become part of the cost object (work in process and then finished goods) and can be traced to the cost object in an economically feasible way. The acquisition costs of direct materials include freight-in (inward delivery) charges and taxes. Examples of direct materials costs are the tyres used to make the BMW X6 and the computer chips used to make mobile phones.
2. **Direct manufacturing labour costs** include the compensation of all manufacturing labour that can be traced to the cost object (work in process and then finished goods) in an economically feasible way. Examples include wages and fringe benefits paid to machine operators and assembly-line workers who convert direct materials purchased to finished goods.
3. **Indirect manufacturing costs** are all manufacturing costs that are related to the cost object (work in process and then finished goods) but cannot be traced to that cost object in an economically feasible way. Examples include supplies, indirect materials such as

<sup>1</sup> Similar terms are *direct production labour costs* and *indirect production labour costs*, which are used elsewhere in the book. Note the distinction between production and manufacturing: *production* includes both products (tangible outputs) and services (intangible outputs) while *manufacturing* refers to products only.

lubricants, indirect manufacturing labour such as plant maintenance and cleaning labour, plant rent, plant insurance, property taxes on the plant, plant depreciation and the compensation of plant managers. This cost category is also referred to as **manufacturing overhead costs** or **factory overhead costs**. We use *indirect manufacturing costs* and *manufacturing overhead costs* interchangeably in this book.

We now describe the distinction between inventoriable costs and period costs.

## Inventoriable costs

**Inventoriable costs** are all costs of a product that are considered as assets in the balance sheet when they are incurred and that become cost of goods sold only when the product is sold. For manufacturing sector companies, all manufacturing costs are inventoriable costs. Consider Mobile Products, a manufacturer of mobile phones. Costs of direct materials, such as computer chips, issued to production (from direct materials inventory), direct manufacturing labour costs and manufacturing overhead costs create new assets, starting as work in process and becoming finished goods (the mobile phones). Hence, manufacturing costs are included in work-in-process inventory and in finished goods inventory (they are ‘inventoried’) to accumulate the costs of creating these assets.

When the mobile phones are sold, the cost of manufacturing them is matched against **revenues**, which are inflows of assets (usually cash or accounts receivable) received for products or services provided to customers. The cost of goods sold includes all manufacturing costs (direct materials, direct manufacturing labour and manufacturing overhead costs) incurred to produce them. The mobile phones may be sold during a different accounting period than the period in which they were manufactured. Thus, inventorying manufacturing costs in the balance sheet during the accounting period when goods are manufactured and expensing the manufacturing costs in a later income statement when the goods are sold matches revenues and expenses.

For retail sector companies such as Kmart, inventoriable costs are the costs of purchasing the goods that are resold in their same form. These costs comprise the costs of the goods themselves plus any incoming freight, insurance and handling costs for those goods. Service sector companies provide only services or intangible products. The absence of inventories of tangible products for sale means there are no inventoriable costs.

## Period costs

**Period costs** are all costs in the income statement other than cost of goods sold. Period costs are treated as expenses of the accounting period in which they are incurred because they are expected to benefit revenues in that period and are not expected to benefit revenues in future periods (because there is not sufficient evidence to conclude that such future benefit exists). Expensing these costs in the period they are incurred matches expenses to revenues.

For manufacturing sector companies, period costs in the income statement are all non-manufacturing costs (e.g. design costs and distribution costs). For retail sector companies, period costs in the income statement are all costs not related to the cost of goods purchased for resale. Examples of these period costs are labour costs of floor salespeople and advertising costs. Because there are no inventoriable costs for service sector companies, all costs in the income statement are period costs.

Figure 2.4 showed examples of inventoriable costs in direct/indirect and variable/fixed cost classifications for a car manufacturer. Figure 2.6 (overleaf) shows examples of period costs in direct/indirect and variable/fixed cost classifications for a bank.

## Illustrating the flow of inventoriable costs and period costs

We illustrate the flow of inventoriable costs and period costs through the income statement of a manufacturing company, for which the distinction between inventoriable costs and period costs is most detailed.

**FIGURE 2.6**

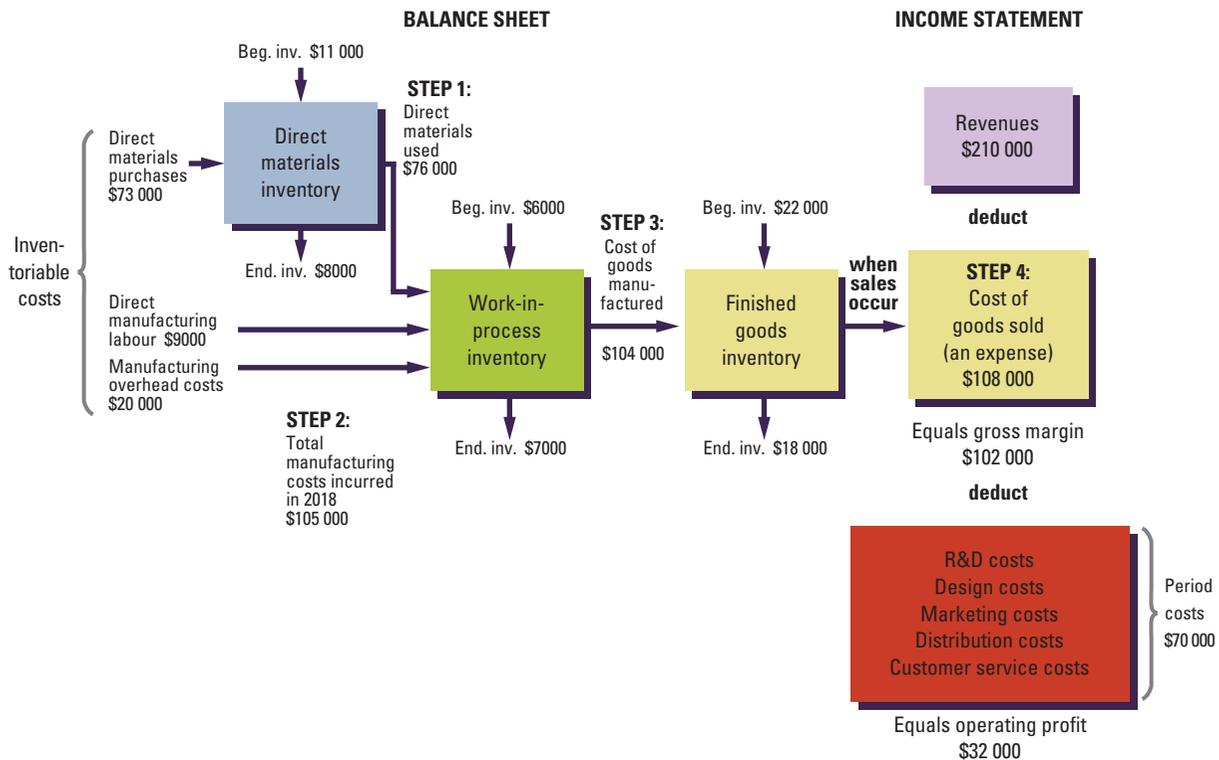
Examples of period costs in combinations of the direct/indirect and variable/fixed cost classifications for a bank

		Assignment of costs to cost object	
		Direct costs	Indirect costs
Cost behaviour pattern	Variable costs	<ul style="list-style-type: none"> <li>• Cost object: Number of mortgage loans</li> <li>Example: Fees paid to property appraisal company for each mortgage loan</li> </ul>	<ul style="list-style-type: none"> <li>• Cost object: Number of mortgage loans</li> <li>Example: Postage paid to deliver mortgage loan documents to lawyers/homeowners</li> </ul>
	Fixed costs	<ul style="list-style-type: none"> <li>• Cost object: Number of mortgage loans</li> <li>Example: Salary paid to executives in mortgage loan department to develop new mortgage loan products</li> </ul>	<ul style="list-style-type: none"> <li>• Cost object: Number of mortgage loans</li> <li>Example: Cost to the bank of sponsoring annual golf tournament</li> </ul>

### Manufacturing sector example

Follow the flow of costs for Mobile Products in Figures 2.7 and 2.8. Figure 2.7 visually highlights the differences in the flow of inventoriable and period costs for a manufacturing sector company. Note how, as described in the previous section, inventoriable costs go through the balance sheet accounts of work-in-process inventory and finished goods inventory before

**FIGURE 2.7** Flow of revenue and costs for a manufacturing sector company, Mobile Products (in thousands)



**FIGURE 2.8**

Income statement and schedule of cost of goods manufactured of a manufacturing sector company, Mobile Products

	A	B	C	D
1	<b>Panel A: Income statement</b>			
2	<b>Mobile Products</b>			
3	<b>Income statement</b>			
4	<b>For the year ended 31 December 2018 (in thousands)</b>			
5	Revenues		\$210 000	
6	Cost of goods sold:			
7	Beginning finished goods inventory, 1 January 2018	\$ 22 000		
8	Cost of goods manufactured (see Panel B)	<u>104 000</u>		
9	Cost of goods available for sale	126 000		
10	Ending finished goods inventory, 31 December 2018	<u>18 000</u>		
11	Cost of goods sold		<u>108 000</u>	
12	Gross margin (or gross profit)		102 000	
13	Operating costs:			
14	R&D, design, mktg., dist. & cust. service cost	70 000		
15	Total operating costs		<u>70 000</u>	
16	Operating income		<u>\$ 32 000</u>	
17				
18	<b>Panel B: Cost of goods manufactured</b>			
19	<b>Mobile Products</b>			
20	<b>Schedule of cost of goods manufactured<sup>a</sup></b>			
21	<b>For the year ended 31 December 2018 (in thousands)</b>			
22	Direct materials:			
23	Beginning inventory, 1 January 2018	\$11 000		
24	Purchases of direct materials	<u>73 000</u>		
25	Cost of direct materials available for use	84 000		
26	Ending inventory, 31 December 2018	<u>8 000</u>		
27	Direct materials used		\$ 76 000	
28	Direct manufacturing labour		9 000	
29	Manufacturing overhead costs:			
30	Indirect manufacturing labour	\$ 7 000		
31	Supplies	2 000		
32	Heat, light and electricity	5 000		
33	Depreciation—plant building	2 000		
34	Depreciation—plant equipment	3 000		
35	Miscellaneous	<u>1 000</u>		
36	Total manufacturing overhead costs		<u>20 000</u>	
37	Manufacturing costs incurred during 2018		105 000	
38	Beginning work-in-process inventory, 1 January 2018		<u>6 000</u>	
39	Total manufacturing costs to account for		111 000	
40	Ending work-in-process inventory, 31 December 2018		<u>7 000</u>	
41	Cost of goods manufactured (to income statement)		<u>\$104 000</u>	
42	<sup>a</sup> Note that this schedule can become a schedule of cost of goods manufactured and sold simply by including the beginning and ending finished goods inventory figures in the supporting schedule rather than in the body of the income statement.			

STEP 4

STEP 1

STEP 2

STEP 3

entering cost of goods sold in the income statement. Period costs are expensed directly in the income statement. Figure 2.8 takes the visual presentation in Figure 2.7 and shows how inventoriable costs and period expenses would appear in the income statement and schedule of cost of goods manufactured of a manufacturing company.

We start by tracking the flow of direct materials shown on the left of Figure 2.7 and in panel B of Figure 2.8.

1. **Cost of direct materials used in 2018.** Note how the arrows in Figure 2.7 for beginning inventory, \$11 000, and direct materials purchases, \$73 000, 'fill up' the direct materials inventory box and how direct materials used, \$76 000, 'empties out' direct materials inventory, leaving an ending inventory of direct materials of \$8 000, which becomes the beginning inventory for the next financial year. The cost of direct materials used in 2018 is calculated in Figure 2.8, panel B, as:

Beginning inventory of direct materials, 1 January 2018	\$11 000
+ Purchases of direct materials in 2018	73 000
– Ending inventory of direct materials, 31 December 2018	<u>8 000</u>
= Direct materials used in 2018	<u>\$76 000</u>

2. **Total manufacturing costs incurred in 2018.** Total manufacturing costs refers to all direct manufacturing costs and manufacturing overhead costs incurred during 2018 for all goods worked on during the year. Mobile Products classifies its manufacturing costs into the three categories described earlier.

(i) Direct materials used in 2018 (Figure 2.8, panel B)	\$76 000
(ii) Direct manufacturing labour in 2018 (Figure 2.8, panel B)	9 000
(iii) Manufacturing overhead costs (Figure 2.8, panel B)	<u>20 000</u>
Total manufacturing costs incurred in 2018	<u>\$105 000</u>

Note how, in Figure 2.7, these costs increase work-in-process inventory.

## TRY IT!

### 2.2

Diana Corporation provides the following information for 2018.

Beginning inventory of direct materials, 1 January 2018	\$12 000
Purchases of direct materials in 2018	\$85 000
Ending inventory of direct materials, 31 December 2018	\$7 000
Direct manufacturing labour costs in 2018	\$30 000
Manufacturing overhead costs in 2018	\$40 000

#### Required

Calculate the total manufacturing costs incurred in 2018.

3. **Cost of goods manufactured in 2018.** **Cost of goods manufactured** refers to the cost of goods brought to completion, whether they were started before or during the current accounting period.

Note how the work-in-process inventory box in Figure 2.7 has a very similar structure to the direct materials inventory box described in step 1. Beginning work-in-process inventory of \$6 000 and total manufacturing costs incurred in 2018 of \$105 000 'fill up' the work-in-process inventory box. Some of the manufacturing costs incurred during 2018 are held back as the cost of the ending work-in-process inventory. The ending work-in-process inventory of \$7 000 becomes the beginning inventory for the next financial year, and the cost of goods manufactured during 2018 of \$104 000 'empties out' the work-in-process inventory while 'filling up' the finished goods inventory box.

The cost of goods manufactured in 2018 is calculated in Figure 2.8, panel B as:

Beginning work-in-process inventory, 1 January 2018	\$6 000
+ Total manufacturing costs incurred in 2018	<u>105 000</u>
= Total manufacturing costs to account for	111 000
– Ending work-in-process inventory, 31 December 2018	<u>7 000</u>
= Cost of goods manufactured in 2018	<u>\$104 000</u>

4. **Cost of goods sold in 2018.** The cost of goods sold is the cost of finished goods inventory sold to customers during the current accounting period. Looking at the finished goods inventory box in Figure 2.7, we see that the beginning inventory of finished goods of \$22 000 and cost of goods manufactured in 2018 of \$104 000 ‘fill up’ the finished goods inventory box. The ending inventory of finished goods of \$18 000 becomes the beginning inventory for the next financial year, and the cost of goods sold during 2018 of \$108 000 ‘empties out’ the finished goods inventory box.

This cost of goods sold is an expense that is matched against revenues. The cost of goods sold for Mobile Products is calculated in Figure 2.8, panel A, as:

Beginning inventory of finished goods, 1 January 2018	\$22 000
+ Cost of goods manufactured in 2018	104 000
– Ending inventory of finished goods, 31 December 2018	<u>18 000</u>
= Cost of goods sold in 2018	<u>\$108 000</u>

Figure 2.9 shows related general ledger T-accounts for Mobile Products’ manufacturing cost flow. Note how the cost of goods manufactured (\$104 000) is the cost of all goods completed during the accounting period. These costs are all inventoriable costs. Goods completed during the period are transferred to finished goods inventory. These costs become cost of goods sold in the accounting period when the goods are sold. Also note that the direct materials, direct manufacturing labour and manufacturing overhead costs of the units in work-in-process inventory (\$7 000) and finished goods inventory (\$18 000), as of 31 December 2018, will appear as an asset in the balance sheet. These costs will become expenses next year, when these units are sold.

**FIGURE 2.9** General ledger T-accounts for Mobile Products’ manufacturing cost flow

Work-in-process inventory		Finished goods inventory		Cost of goods sold
Bal. 1 January 2018	6 000	Bal. 1 January 2018	22 000	
Direct materials used	76 000	Cost of goods manufactured	104 000	Cost of goods sold
				108 000
Direct manuf. labour	9 000	Bal. 31 December 2018	18 000	
Indirect manuf. costs	20 000			
Bal. 31 December 2018	7 000			

Diana Corporation provides the following information for 2018.

Beginning work-in-process inventory, 1 January 2018	\$9 000
Total manufacturing costs incurred in 2018	\$90 000
Ending work-in-process inventory, 31 December 2018	\$8 000
Beginning inventory of finished goods, 1 January 2018	\$15 000
Ending inventory of finished goods, 31 December 2018	\$21 000

**Required**

Calculate: (a) cost of goods manufactured in 2018 and (b) cost of goods sold in 2018.

**2.3**

**TRY IT!**

We are now in a position to prepare Mobile Products's income statement for 2018. The income statement of Mobile Products is shown on the right-hand side of Figure 2.7 and in Figure 2.8, panel A. The revenues of Mobile Products are (in thousands) \$210 000. Inventoriable costs expensed during 2018 equal cost of goods sold of \$108 000.

$$\text{Gross margin} = \text{Revenues} - \text{Cost of goods sold} = \$210\,000 - \$108\,000 = \$102\,000$$

The \$70 000 comprising R&D, design, marketing, distribution and customer service costs are period costs of Mobile Products. These period costs include, for example, the salaries of salespersons, depreciation on computers and other equipment used in marketing, and the cost of leasing warehouse space for distribution. Period costs help to calculate **operating profit**, which is total revenues from operations minus cost of goods sold and operating costs (excluding interest expense and income taxes).<sup>2</sup> The operating profit of Mobile Products is \$32 000 (gross margin, \$102 000 – period costs, \$70 000).

Newcomers to cost accounting frequently assume that indirect costs, such as rent, telephone and depreciation, are always costs of the period in which they are incurred and are not associated with inventories. When these costs are incurred in marketing or in corporate headquarters, they are period costs. However, when these costs are incurred in manufacturing, they are manufacturing overhead costs and are inventoriable.<sup>3</sup>

## Recap of inventoriable costs and period costs

Figure 2.7 highlights the differences between inventoriable costs and period costs for a manufacturing company. The manufacturing costs of finished goods include direct materials, other direct manufacturing costs (such as direct manufacturing labour) and manufacturing overhead costs (such as supervision, production control and machine maintenance). All these costs are inventoriable: they are assigned to work-in-process inventory until the goods are completed and then to finished goods inventory until the goods are sold. All non-manufacturing costs, such as R&D, design and distribution costs, are period costs.

Inventoriable costs and period costs flow through the income statement of a retail company in a similar way to those of a manufacturing company. At a retail company, however, the flow of costs is much simpler to understand and track. Figure 2.10 shows the distribution between inventoriable costs and period costs for a retailer or wholesaler who buys goods for resale. The only inventoriable cost is the cost of merchandise, which corresponds to the cost of finished goods manufactured for a manufacturing company. Purchased goods are held as inventory, the cost of which is shown as an asset in the balance sheet. As the goods are sold, their costs are shown in the income statement as cost of goods sold. A retailer or wholesaler also has a variety of marketing, distribution and customer service costs, which are period costs. In the income statement, period costs are deducted from revenues without ever having been included as part of inventory.

### DECISION POINT 5

What are the differences in the accounting for inventoriable versus period costs?

## Prime costs and conversion costs

Two terms to describe cost classifications in manufacturing costing systems are prime costs and conversion costs. **Prime costs** are all direct manufacturing costs. For Mobile Products:

$$\text{Prime costs} = \text{Direct materials costs} + \text{Direct manufacturing labour costs} = \$76\,000 + \$9\,000 = \$85\,000$$

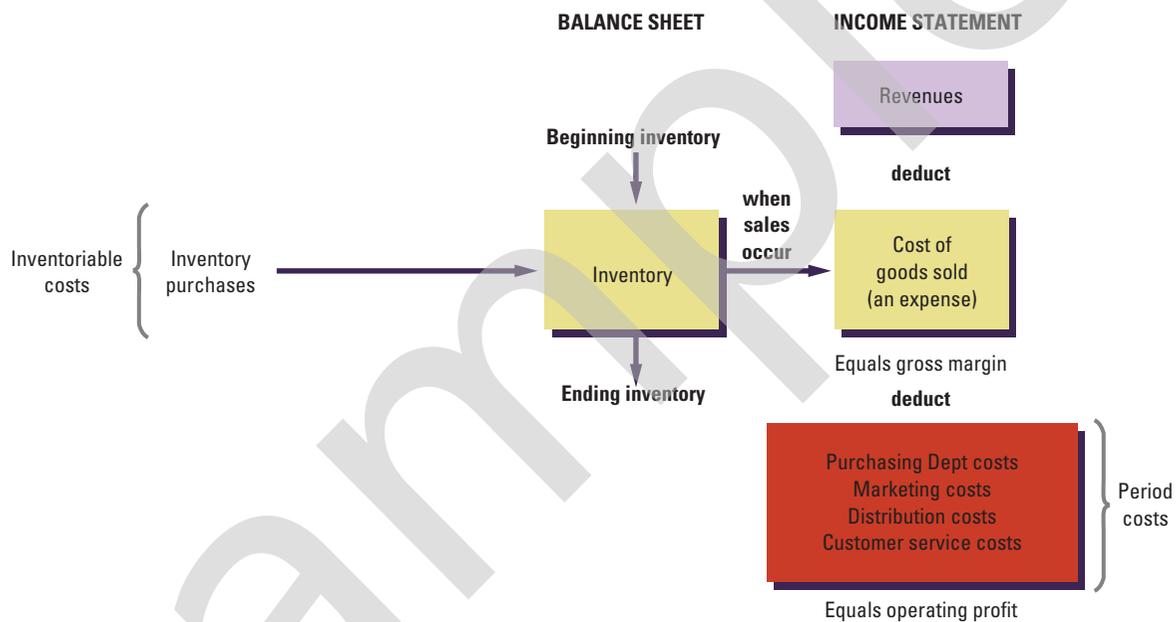
As we have already discussed, the greater the proportion of prime costs in a company's cost structure, the more confident managers can be about the accuracy of the costs of products. As information-gathering technology improves, companies can add more and more direct

<sup>2</sup> Operating profit is different from *profit* (also known as *profit after tax*) in the context of AASB 101, which is the total of income less expenses, excluding the components of other comprehensive income.

<sup>3</sup> Under absorption costing all manufacturing overhead costs are inventoriable, but under variable costing only variable manufacturing costs are inventoriable. Refer to the discussion of these costing systems below.

FIGURE 2.10

Flow of revenue and costs for a retail company or wholesaler



cost categories. For example, electricity costs might be metered in specific areas of a plant and identified with specific products. In this case, prime costs would include direct materials, direct manufacturing labour and direct metered electricity. Furthermore, if a production line were dedicated to the manufacture of a specific product, the depreciation on the production equipment would be a direct manufacturing cost and would be included in prime costs.

**Conversion costs** are all manufacturing costs other than direct materials costs. Conversion costs represent all manufacturing costs incurred to convert direct materials into finished goods. For Mobile Products:

$$\text{Conversion costs} = \text{Direct manufacturing labour costs} + \text{Manufacturing overhead costs} = \\ \$9\,000 + \$20\,000 = \$29\,000$$

Note that direct manufacturing labour costs are a part of both prime costs and conversion costs.

## Methods for costing inventories

The two most common methods of costing inventories in manufacturing companies are variable costing and absorption costing. We apply both in detail in relation to a hypothetical timber producer in chapter 6.

**Variable costing** is a method of inventory costing in which all variable manufacturing costs (direct and indirect) are included as inventoriable costs. All fixed manufacturing costs are excluded from inventoriable costs and are treated as costs of the period in which they are incurred. Note that variable costing is a less than perfect term to describe this inventory costing method because not all variable costs are inventoriable costs; only variable manufacturing costs are inventoriable. Another common term used to describe this method is direct costing, which is even more misleading because variable costing considers variable manufacturing overhead (an indirect cost) as inventoriable, while excluding direct non-manufacturing costs.

**Absorption costing** is a method of inventory costing in which all variable manufacturing costs and all fixed manufacturing costs are included as inventoriable costs. That is, inventory 'absorbs' all manufacturing costs; hence the name.

Under both variable costing and absorption costing, all variable manufacturing costs are inventoriable costs and all non-manufacturing costs in the value chain (e.g. R&D and marketing), whether variable or fixed, are period costs and are recorded as expenses when incurred.

## The use of judgement in measuring costs

Measuring costs requires judgement. That's because there are alternative ways in which costs can be defined and classified. Different companies or sometimes even different subunits within the same company may define and classify costs differently. Be careful to define and understand the ways costs are measured in a company or situation. We first illustrate this point with respect to labour cost measurement.

### Measuring labour costs

Although manufacturing labour cost classifications vary between companies, most companies have the following categories:

- direct manufacturing labour (labour that can be traced to individual products)
- manufacturing overhead (examples of prominent labour components of manufacturing overhead follow):
  - indirect labour (wages and salaries)
    - forklift truck operators (internal handling of materials)
    - plant cleaners
    - rework labour (time spent by direct labourers redoing defective work)
    - overtime premium paid to plant workers (explained in chapter 5)
    - idle time (explained in chapter 5)
  - managers', department heads' and supervisors' salaries
  - payroll costs, for example payroll taxes and superannuation contribution (explained later).

Note how *indirect labour costs* are commonly divided into many subclassifications, for example forklift operators and plant cleaners, to retain information on different categories of indirect labour. Note also that managers' salaries are not usually classified as indirect labour costs. Instead, the compensation of supervisors, department heads and all others who are regarded as manufacturing management is placed in a separate classification of labour-related manufacturing overhead.

### Benefits of defining accounting terms

Managers, accountants, suppliers and others will avoid many problems if they thoroughly understand and agree on the classifications and meanings of the cost terms introduced in this chapter and later in this book.

Consider the classification of manufacturing labour *payroll costs* (e.g. employer contributions to employee superannuation fund and payroll taxes). Some companies classify these costs as manufacturing overhead costs. In other companies, these additional costs related to direct manufacturing labour are treated as an additional direct manufacturing labour cost. Consider, for example, a direct labourer, such as a machine operator, whose gross wages are calculated on the basis of a stated wage rate of \$20 an hour and fringe benefits totalling, say, \$3 per hour. Some companies classify the \$20 as direct manufacturing labour cost and the \$3 as manufacturing overhead cost. Other companies classify the entire \$23 as direct manufacturing labour cost. The latter approach is preferable because the stated wage and the fringe benefit costs together are a fundamental part of acquiring direct manufacturing labour services.

*Caution:* In every situation, pinpoint clearly what direct manufacturing labour includes and what direct manufacturing labour excludes. Achieving clarity may prevent disputes regarding income tax payments and labour union matters. Consider that some countries, such as Costa Rica and Mauritius, offer substantial income tax savings to companies that locate plants within their borders. In some cases, to qualify for the tax benefits, the direct manufacturing labour costs of the plant must at least equal a specified percentage of the total manufacturing costs. When direct manufacturing labour costs are not precisely defined, disputes have arisen as to whether payroll fringe costs should be included in direct manufacturing labour when calculating the direct manufacturing labour percentage for qualifying for such tax benefits. Companies have sought to classify payroll costs as part of direct manufacturing labour costs to make direct manufacturing labour costs a higher percentage of total manufacturing costs. Tax authorities have argued that payroll costs are part of manufacturing overhead. In addition to fringe benefits, other debated items are compensation for training time, idle time, sick leave and overtime premium. To prevent disputes, contracts and laws should be as specific as possible regarding definitions and measurements.

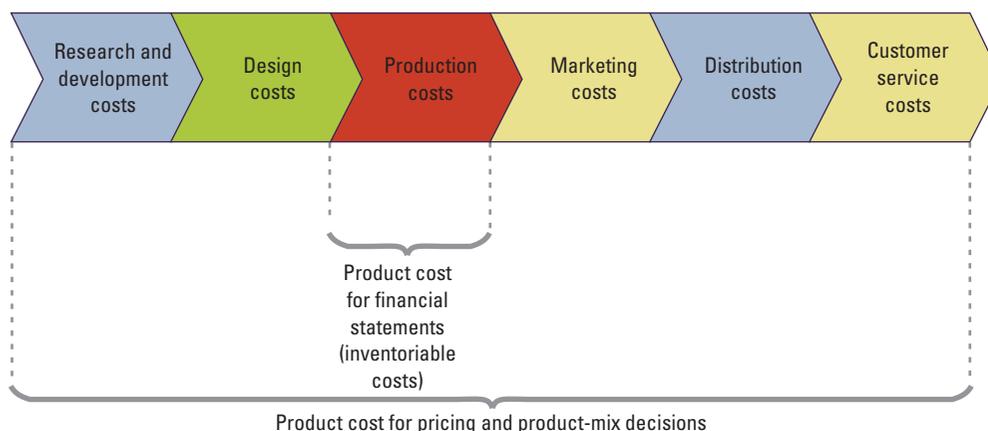
## Different meanings of costs

Many cost terms found in practice have ambiguous meanings. Consider the term *product cost*. A **product cost** is the sum of the costs assigned to a product for a specific purpose. Different purposes can result in different measures of product cost, as the brackets on the value chain in Figure 2.11 illustrate:

- **Pricing and product-mix decisions.** For the purposes of making decisions about pricing and which products provide the most profits, the manager is interested in the overall (total) profitability of different products and, consequently, assigns costs incurred in all business functions of the value chain to the different products.
- **Preparing financial statements for external reporting under Australian Accounting Standards.** Under Australian Accounting Standards, only manufacturing costs can be assigned to inventories in the financial statements. For the purpose of calculating inventory costs, product costs include only inventoriable (manufacturing) costs.

As Figure 2.11 illustrates, product cost measures range from a narrow set of costs for financial statements—a set that includes only inventoriable costs—to a much broader set of costs for pricing and product-mix decisions.

This section has focused on how different purposes result in the inclusion of different cost items of the value chain of business functions when product costs are calculated. The same caution about the need to be clear and precise about cost concepts and their measurement applies to each cost classification introduced in this chapter. Figure 2.12 (overleaf) summarises the key cost classifications.



## LEARNING OBJECTIVE 6

Explain why product costs are calculated in different ways for different purposes.

**FIGURE 2.11**

Different product costs for different purposes

**FIGURE 2.12**

Alternative classifications of costs

<b>1</b> Business function	<b>3</b> Behaviour pattern in relation to the level of activity or volume
<b>a</b> Research and development	<b>a</b> Variable cost
<b>b</b> Design of products, services or processes	<b>b</b> Fixed cost
<b>c</b> Production	<b>4</b> Aggregate or average
<b>d</b> Marketing	<b>a</b> Total cost
<b>e</b> Distribution	<b>b</b> Unit cost
<b>f</b> Customer service	<b>5</b> Assets or expenses
<b>2</b> Assignment to a cost object	<b>a</b> Inventoriable cost
<b>a</b> Direct cost	<b>b</b> Period cost
<b>b</b> Indirect cost	

Using the five-step process described in chapter 1, think about how these different classifications of costs are helpful to managers when making decisions and evaluating performance:

- 1. Identify the problem.** Consider a decision about how much to price a product. This decision often depends on how much it costs to make the product.
- 2. Collect relevant information.** Managers identify direct and indirect costs of a product in each business function. Managers also gather other information about customers, competitors and prices of alternative products.
- 3. Determine possible courses of action and consider the consequences of each.** Managers make predictions about the quantity of product expected to be sold and conduct sensitivity analyses (see chapter 4) for various scenarios.
- 4. Evaluate each possible course of action and select the best one.** Managers choose a price to charge based on a thorough understanding of costs and other information.
- 5. Implement the decision, evaluate performance and learn.** Managers control activities, which carry associated costs, and learn by comparing actual total and unit costs against predicted amounts.

### DECISION POINT 6

Why do managers assign different costs to the same cost object?

The next section describes how the basic concepts introduced in this chapter lead to a framework for understanding cost accounting and activity management (with its associated costs) that can then be applied to the study of many topics, such as strategy evaluation, quality and investment decisions.

### LEARNING OBJECTIVE 7

Describe a framework for cost accounting and activity management.

## A framework for cost accounting and activity management

Three features of cost accounting and activity management (with its associated costs) across a wide range of applications are:

1. calculating the cost of products, services and other cost objects
2. obtaining information for planning and control and performance evaluation
3. analysing the relevant information for making decisions.

We develop these ideas in chapters 3 to 14. The ideas also form the foundation for the study of various topics later in the book.

## Calculating the cost of products, services and other cost objects

We have already seen the different purposes and measures of product costs. Whatever the purpose, the costing system traces direct costs and allocates indirect costs to products. Chapters 5, 6 and 7 describe systems, such as activity-based costing systems, used to calculate total costs and unit costs of products and services. The chapters also discuss how managers use this information to formulate strategy and make pricing, product-mix and activity-management decisions.

## Obtaining information for planning and control and performance evaluation

Budgeting is the most commonly used tool for planning and control. A budget forces managers to look ahead, to translate strategy into plans, to coordinate and communicate within the organisation and to provide a benchmark for evaluating performance. Budgeting often plays a major role in affecting behaviour and decisions because managers strive to meet budget targets. Chapter 11 describes budgeting systems.

At the end of a reporting period, managers compare actual results with planned performance. The manager's tasks are to understand why differences (called variances) between actual and planned performances arise and to use the information provided by these variances as feedback to promote learning and future improvement. Managers also use variances, as well as non-financial measures such as defect rates and customer satisfaction ratings, to control and evaluate the performance of various departments, divisions and managers. Chapters 12 and 13 discuss variance analysis. Chapter 8 describes planning, control and inventory costing issues relating to capacity. Chapters 11, 12 and 13 focus on the management accountant's role in implementing strategy.

## Analysing the relevant information for making decisions

When making decisions about strategy design and strategy implementation, managers must understand which revenues and costs to consider and which ones to ignore. Management accountants help identify information that is relevant versus that which is irrelevant. Consider a decision about whether to buy a product from an outside vendor or to make it in-house. The costing system indicates that it costs \$25 per unit to make the product in-house. A vendor offers the product for \$22 per unit. At first glance, it seems it will cost less for the company to buy the product rather than make it. Suppose, however, that of the \$25 to make the product in-house, \$5 consists of plant lease costs that the company will have to pay whether the product is made or bought. That is, if the product is bought, the plant will remain idle and the \$5 in lease costs will still be incurred. Under this condition, it will cost less to make the product than to buy it. This is because making the product costs only an *additional* \$20 per unit ( $\$25 - \$5$ ), compared with an *additional* \$22 per unit if it is bought. The \$5 per unit of lease costs is irrelevant to the decision because it will be incurred whether the product is made or bought. Analysing relevant information is a key aspect of making decisions.

When making strategic decisions about which products to produce, managers must know how revenues and costs vary with changes in output levels. For this purpose, managers need to distinguish fixed costs from variable costs. Chapter 3 describes methods to estimate the fixed and variable components of costs. Chapter 4 analyses how operating profit changes with changes in units sold and how managers use this information to make decisions, such as how much to spend on advertising. Chapter 9 describes how management accountants help managers determine prices and manage activities (with their associated costs) across the value chain and over a product's life-cycle. Chapter 10 applies the concept of relevance to decision making in many different situations and describes methods managers use to maximise income given the resource constraints that they face.

Later chapters in the book discuss topics such as strategy evaluation, customer profitability, quality, just-in-time systems, investment decisions, transfer pricing and performance evaluation. Each of these topics invariably has product costing, planning and control, and decision-making perspectives. A command of the first 14 chapters will help you master these topics. For example, chapter 15, on strategy, describes the balanced scorecard, a set of financial and non-financial measures used to implement strategy that builds on the planning and control functions. The section on strategic analysis of operating profit builds on ideas of product costing and variance analysis. The section on downsizing and managing capacity builds on ideas of relevant revenues and relevant costs.

### DECISION POINT 7

What are the three key features of cost accounting and activity management?

## PROBLEM FOR SELF-STUDY

Gumwood Ltd is a metal- and woodcutting manufacturer, selling products to the home construction market. Consider the following data for 2018:

Sandpaper	\$2 000
Materials handling costs	70 000
Lubricants and coolants	5 000
Miscellaneous indirect manufacturing labour	40 000
Direct manufacturing labour	300 000
Direct materials inventory, 1 January 2018	40 000
Direct materials inventory, 31 December 2018	50 000
Finished goods inventory, 1 January 2018	100 000
Finished goods inventory, 31 December 2018	150 000
Work-in-process inventory, 1 January 2018	10 000
Work-in-process inventory, 31 December 2018	14 000
Plant leasing costs	54 000
Depreciation—plant equipment	36 000
Property taxes on plant equipment	4 000
Fire insurance on plant equipment	3 000
Direct materials purchased	460 000
Revenues	1 360 000
Marketing promotions	60 000
Marketing salaries	100 000
Distribution costs	70 000
Customer service costs	100 000

### Required

1. Prepare an income statement with a separate supporting schedule of cost of goods manufactured. For all manufacturing items, classify costs as direct costs or indirect costs and indicate by V or F whether each is basically a variable cost or a fixed cost (when the cost object is a product unit). If in doubt, decide on the basis of whether the total cost will change substantially over a wide range of units produced.
2. Suppose that both the direct materials costs and the plant leasing costs are for the production of 900 000 units. What is the direct materials cost of each unit produced? What is the plant leasing cost per unit? Assume that the plant leasing cost is a fixed cost.
3. Suppose Gumwood Ltd manufactures 1 000 000 units in the next year. Repeat the calculation in requirement 2 for direct materials and plant leasing costs. Assume that the implied cost behaviour patterns persist.
4. As a management consultant, explain concisely to the company president why the unit cost for direct materials did not change in requirements 2 and 3, but the unit cost for plant leasing costs did change.

**Solution**

1.

**Gumwood Ltd**  
**Income statement**  
**for the financial year ended 31 December 2018**

Revenues		\$1 360 000
Cost of goods sold		
Beginning finished goods inventory, 1 January 2018	\$100 000	
Cost of goods manufactured (see schedule below)	<u>960 000</u>	
Cost of goods available for sale	1 060 000	
Deduct ending finished goods inventory, 31 December 2018	<u>150 000</u>	<u>910 000</u>
Gross margin (or gross profit)		450 000
Operating costs		
Marketing promotions	60 000	
Marketing salaries	100 000	
Distribution costs	70 000	
Customer service costs	<u>100 000</u>	<u>330 000</u>
Operating profit		<u>120 000</u>

**Gumwood Ltd**  
**Schedule of cost of goods manufactured**  
**for the financial year ended 31 December 2018**

Direct materials		
Beginning inventory, 1 January 2018		40 000
Purchases of direct materials		<u>460 000</u>
Cost of direct materials available for use		500 000
Ending inventory, 31 December 2018		<u>50 000</u>
Direct materials used		450 000 (V)
Direct manufacturing labour		300 000 (V)
Indirect manufacturing costs		
Sandpaper	2 000 (V)	
Materials handling costs	70 000 (V)	
Lubricants and coolants	5 000 (V)	
Miscellaneous indirect manufacturing labour	40 000 (V)	
Plant leasing costs	54 000 (F)	
Depreciation—plant equipment	36 000 (F)	
Property taxes on plant equipment	4 000 (F)	
Fire insurance on plant equipment	<u>3 000 (F)</u>	<u>214 000</u>
Manufacturing costs incurred during 2018		964 000
Beginning work-in-process inventory, 1 January 2018		<u>10 000</u>
Total manufacturing costs to account for		974 000
Ending work-in-process inventory, 31 December 2018		<u>14 000</u>
Cost of goods manufactured (to income statement)		<u>960 000</u>

2. Direct materials unit cost = Direct materials used ÷ Units produced  
= \$450 000 ÷ 900 000 units = \$0.50 per unit  
Plant leasing unit cost = Plant leasing costs ÷ Units produced  
= \$54 000 ÷ 900 000 units = \$0.06 per unit
3. The direct materials costs are variable, so they would increase in total from \$450 000 to \$500 000 (1 000 000 units × \$0.50 per unit). However, their unit cost would be unaffected: \$500 000 ÷ 1 000 000 units = \$0.50 per unit.  
In contrast, the plant leasing costs of \$54 000 are fixed, so they would not increase in total. However, the plant leasing cost per unit would decline from \$0.060 to \$0.054: \$54 000 ÷ 1 000 000 units = \$0.054 per unit.

- The explanation would begin with the answer to requirement 3. As a consultant, you should stress that the unitising (averaging) of costs that have different behaviour patterns can be misleading. A common error is to assume that a total unit cost, which is often a sum of variable unit cost and fixed unit cost, is an indicator that total costs change in proportion to changes in production levels. Chapters 3 and 4 demonstrate the necessity for distinguishing between cost behaviour patterns. You must be wary, especially about average fixed cost per unit. Too often, unit fixed cost is erroneously regarded as being indistinguishable from unit variable cost.

## DECISION POINTS

Each decision point listed below presents a key question related to a learning objective and corresponds with a decision point that appears in the text. Adjacent to each decision point is an answer guideline drawn from the content of the chapter.

### Decision

### Answer guideline

- What is a cost object? A cost object is anything for which a separate measurement of cost is needed. Examples include a product, a service, a project, a customer, a brand category, an activity and a department.
- How do managers decide whether a cost is a direct or an indirect cost? A direct cost is any cost that is related to a particular cost object and can be traced to that cost object in an economically feasible way. Indirect costs are related to the particular cost object but cannot be traced in an economically feasible way. The same cost can be direct for one cost object and indirect for other cost objects. This book uses cost tracing to describe the assignment of direct costs to a cost object and cost *allocation* to describe the assignment of indirect costs to a cost object.
- How do managers decide whether a cost is a variable or a fixed cost? A variable cost changes *in total* in proportion to changes in the related level of total activity or volume. A fixed cost remains unchanged *in total* for a given time period despite wide changes in the related level of total activity or volume.
- How should costs be estimated? In general, focus on total costs, not unit costs. When making total cost estimates, think of variable costs as an amount per unit and fixed costs as a total amount. The unit cost of a cost object should be interpreted cautiously when it includes a fixed cost component.
- What are the differences in the accounting for inventoriable versus period costs? Inventoriable costs are all costs of a product that are regarded as an asset in the accounting period when they are incurred and then become cost of goods sold in the accounting period when the product is sold. Period costs are expensed in the accounting period in which they are incurred and are all of the costs in an income statement other than cost of goods sold.
- Why do managers assign different costs to the same cost object? Managers can assign different costs to the same cost object depending on the purpose. For example, for the external reporting purpose in a manufacturing company, the inventoriable cost of a product includes only manufacturing costs. In contrast, costs from all business functions of the value chain often are assigned to a product for pricing and product-mix decisions.
- What are the three key features of cost accounting and activity management? Three features of cost accounting and activity management (with its associated costs) are: (a) calculating the cost of products, services and other cost objects; (b) obtaining information for planning and control and performance evaluation; and (c) analysing the relevant information for making decisions.

## TERMS TO LEARN

*This chapter contains more basic terms than any other in this book. Do not proceed before you check your understanding of the following terms. Both the chapter and the glossary at the end of the book contain definitions.*

absorption costing (p. 55)	direct manufacturing labour costs (p. 48)	manufacturing sector companies (p. 47)
actual cost (p. 38)	direct materials costs (p. 48)	operating profit (p. 54)
average cost (p. 46)	direct materials inventory (p. 48)	period costs (p. 49)
budgeted cost (p. 38)	factory overhead costs (p. 49)	prime costs (p. 54)
conversion costs (p. 55)	finished goods inventory (p. 48)	product cost (p. 57)
cost (p. 38)	fixed cost (p. 42)	relevant range (p. 44)
cost accumulation (p. 38)	indirect costs of a cost object (p. 39)	retail sector companies (p. 47)
cost allocation (p. 39)	indirect manufacturing costs (p. 48)	revenues (p. 49)
cost assignment (p. 39)	inventoriable costs (p. 49)	service sector companies (p. 47)
cost driver (p. 44)	manufacturing overhead costs (p. 49)	unit cost (p. 46)
cost object (p. 38)	manufacturing process (p. 47)	variable cost (p. 41)
cost of goods manufactured (p. 52)		variable costing (p. 55)
cost tracing (p. 39)		work-in-process inventory (p. 48)
direct costs of a cost object (p. 39)		work in progress (p. 48)

## ASSIGNMENT MATERIAL

### Questions

- 2.1 Define a cost object and give three examples.
- 2.2 Define direct costs and indirect costs.
- 2.3 Why do managers consider direct costs to be more accurate than indirect costs?
- 2.4 Name three factors that will affect the classification of a cost as direct or indirect.
- 2.5 Define variable cost and fixed cost. Give an example of each.
- 2.6 What is a cost driver? Give one example.
- 2.7 What is the relevant range? What role does the relevant range concept play in explaining how costs behave?
- 2.8 Explain why unit costs must often be interpreted with caution.
- 2.9 Describe how manufacturing, retail and service sector companies differ from each other.
- 2.10 What are three different types of inventory that manufacturing companies hold?
- 2.11 Define the following: direct materials costs, direct manufacturing labour costs, manufacturing overhead costs, prime costs and conversion costs.
- 2.12 Distinguish between inventoriable costs and period costs. Do service sector companies have inventoriable costs? Explain.
- 2.13 Describe the overtime premium and idle time categories of indirect labour.
- 2.14 Define product cost. Describe two different purposes for calculating product costs.
- 2.15 What are three common features of cost accounting and activity management?

### Exercises

One or more stars following each problem number indicate the suggested level of difficulty:

- \* basic
- \*\* intermediate
- \*\*\* difficult.

#### 2.16 \* Calculating and interpreting manufacturing unit costs

#### OBJECTIVES 1, 2, 4

Green Office Products (GOP) produces three different paper products at its manufacturing plant: Supreme, Deluxe and Regular. Each product has its own dedicated production line at the plant. It currently uses the following three-part classification for its manufacturing costs: direct materials, direct manufacturing labour and manufacturing overhead costs. Total manufacturing overhead costs of the plant in July 2018 are \$150 million (\$15 million of which are fixed). This total amount is allocated to each product line on the basis of the direct manufacturing labour costs of each line. Summary data (in millions) for July 2018 are as follows:

	Supreme	Deluxe	Regular
Direct materials costs	\$89	\$57	\$60
Direct manufacturing labour costs	\$16	\$26	\$8
Manufacturing overhead costs	\$48	\$78	\$24
Units produced	125	150	140

**REQUIRED**

1. Calculate the manufacturing cost per unit for each product produced in July 2018.
2. Suppose that, in August 2018, production was 150 million units of Supreme, 190 million units of Deluxe and 220 million units of Regular. Why might the July 2018 information on manufacturing cost per unit be misleading when predicting total manufacturing costs in August 2018?

**2.17 \* Direct, indirect, fixed and variable costs****OBJECTIVES 1, 2, 3**

Best Tyres manufactures two types of tyre which it sells as wholesale products to various specialty retail auto supply stores. Each tyre requires a three-step process. The first step is mixing. The mixing department combines some of the necessary direct materials to create the material mix that will become part of the tyre. The second step involves the forming of each tyre, where the materials are layered and shaped to form the tyre. This is an entirely automated process. The final step is finishing, which is an entirely manual process. The finishing department includes curing and quality control.

**REQUIRED**

1. Costs involved in the process are listed below. For each cost below, indicate whether it is a direct variable, direct fixed, indirect variable or indirect fixed cost, assuming that 'units of production of each kind of tyre' is the cost object.

**Costs:**

Rubber	Mixing department manager
Reinforcement cables	Material handlers in each department
Other direct materials	Custodian in factory
Depreciation on formers	Night guard in factory
Depreciation on mixing machines	Machinist (running the mixing machine)
Rent on factory building	Machine maintenance personnel in each department
Fire insurance on factory building	Maintenance supplies for factory
Factory utilities	Cleaning supplies for factory
Finishing department hourly labourers	Machinist (running the forming machines)

2. If the cost object were 'Mixing Department' rather than units of production of each kind of tyre, which costs above would now be direct instead of indirect costs?

**2.18 \* Classification of costs, service sector****OBJECTIVES 1, 2, 3**

People Points is a marketing research firm that organises focus groups for consumer product companies. Each focus group has eight individuals who are paid \$60 per session to provide comments on new products. These focus groups meet in hotels and are led by a trained, independent marketing specialist hired by People Points. Each specialist is paid a fixed fee to conduct a minimum number of sessions and a per-session fee of \$2200. A People Points staff member attends each session to ensure that all the logistical aspects run smoothly.

**REQUIRED**

Classify each of the following cost items (A–H) as:

- a. direct or indirect (D or I) costs with respect to each individual focus group
- b. variable or fixed (V or F) costs with respect to how the total costs of People Points change as the number of focus groups conducted changes. (If in doubt, select on the basis of whether the total costs will change substantially if there is a large change in the number of groups conducted.)

You will have two answers (D or I; V or F) for each of the following items:

Cost item	D or I	V or F
<b>A</b> Payment to individuals in each focus group to provide comments on new products		
<b>B</b> Annual subscription of People Points to <i>Consumer Reports</i> magazine		
<b>C</b> Telephone calls made by People Points staff member to confirm that individuals will attend a focus group session (records of individual calls are not kept)		
<b>D</b> Meals provided to participants in each focus group		
<b>E</b> Lease payment by People Points for corporate office		
<b>F</b> Cost of tapes used to record comments made by individuals in a focus group session (these tapes are sent to the company whose products are being tested)		
<b>G</b> Fuel costs of People Points staff for company-owned vehicles (staff members submit monthly bills)		
<b>H</b> Fee paid to focus group leader to conduct 20 focus groups per year on new products		

**2.19 \* Classification of costs, retail sector**

**OBJECTIVES 1, 2, 3**

Home Entertainment Online (HEO) operates an online streaming service. The company offers both a movie and a music subscription service. HEO reports revenues for the movie service separately from the music service.

**REQUIRED**

Classify each of the following cost items (A–G) as:

- a. direct or indirect (D or I) costs with respect to the total number of movie subscriptions sold
- b. variable or fixed (V or F) costs with respect to how the total costs of the movie service change as the total number of subscriptions sold changes. (If in doubt, select on the basis of whether the total costs will change substantially if there is a large change in the total number of subscriptions sold.)

You will have two answers (D or I; V or F) for each of the following items:

Cost item	D or I	V or F
<b>A</b> Electricity costs of HEO office (bill covers entire office)		
<b>B</b> Costs of licence fees paid to filmmakers for access to their films for five years		
<b>C</b> Subscription to <i>Movie Trends</i> website for all staff for one year		
<b>D</b> Leasing of computer software used for financial budgeting at HEO office		
<b>E</b> Cost of popcorn voucher to be redeemed at a supermarket, provided free to all customers of HEO		
<b>F</b> Insurance policy for HEO office		
<b>G</b> Costs of royalty fees paid to a filmmaker who wishes to be paid per subscriber		

**2.20 \* Classification of costs, manufacturing sector**

**OBJECTIVES 1, 2, 3**

A vehicle assembly plant assembles two types of vehicle (dirt bikes and motorised buggies). Separate assembly lines are used for each type of vehicle.

**REQUIRED**

Classify each of the following cost items (A–G) as:

- a. direct or indirect (D or I) costs with respect to the total number of vehicles assembled (dirt bikes and motorised buggies)
- b. variable or fixed (V or F) costs with respect to how the total costs of the plant change as the total number of vehicles of each type assembled changes. (If in doubt, select on the basis of whether the total costs will change substantially if there is a large change in the total number of vehicles of each type assembled.)

You will have two answers (D or I; V or F) for each of the following items:

	Cost item	D or I	V or F
A	Cost of tyres used on motorised buggies		
B	Salary of public relations manager for the plant		
C	Salary of engineer who monitors design changes on the motorised buggies		
D	Freight costs of dirt bike engines shipped from overseas		
E	Electricity costs for the whole plant (single bill covers entire plant)		
F	Wages paid to temporary assembly-line workers hired in periods of high production (paid on hourly basis)		
G	Annual building insurance policy cost for the whole plant		

**2.21 \*\* Variable costs, fixed costs, total costs****OBJECTIVE 3**

Anna Leigh is getting ready to open a small restaurant. She is on a tight budget and must choose between the following long-distance telephone plans:

**Plan A:** Pay 10 cents per minute of long-distance calling.

**Plan B:** Pay a fixed monthly fee of \$15 for up to 240 long-distance minutes, and 8 cents per minute thereafter (if she uses fewer than 240 minutes in any month, she still pays \$15 for the month).

**Plan C:** Pay a fixed monthly fee of \$22 for up to 510 long-distance minutes and 5 cents per minute thereafter (if she uses fewer than 480 minutes, she still pays \$22 for the month).

**REQUIRED**

1. Draw a graph of the total monthly costs of the three plans for different levels of monthly long-distance calling.
2. Which plan should Leigh choose if she expects to make 100 minutes of long-distance calls? 240 minutes? 540 minutes?

**2.22 \*\* Variable costs and fixed costs****OBJECTIVES 3, 4**

Consolidated Motors (CM) specialises in producing one specialty vehicle. It is called Surfer and is styled to easily fit multiple surfboards in its back area and top-mounted storage racks. Consolidated has the following manufacturing costs:

Plant management costs	\$1 992 000 per year
Cost of leasing equipment	\$1 932 000 per year
Workers' wages	\$800 per Surfer vehicle produced
Direct materials costs:	
Steel	\$1400 per Surfer
Tyres; each Surfer takes 5 tyres (one spare)	\$150 per tyre
Environmental license, which is charged monthly based on the number of tyres used in production:	
0–500 tyres	\$ 40 040
501–1000 tyres	\$ 65 000
More than 1000 tyres	\$249 870

Consolidated currently produces 170 vehicles per month.

**REQUIRED**

1. What is the variable manufacturing cost per vehicle? What is the fixed manufacturing cost per month?
2. Plot a graph of the variable manufacturing costs and a second for the fixed manufacturing costs per month. How does the concept of relevant range relate to your graphs? Explain.
3. What is the total manufacturing cost of each vehicle if 80 vehicles are produced each month? 205 vehicles? How do you explain the difference in the manufacturing cost per unit?

**2.23 \*\* Variable costs, fixed costs, relevant range****OBJECTIVE 3**

Lolliland manufactures rock lollies in a fully automated process. The machine that produces lollies was purchased recently and can make 5000 per month. The machine costs \$6500 and is depreciated using straight-line depreciation over 10 years assuming zero residual value. Rent for the factory space and warehouse, and other fixed manufacturing overhead costs, total \$1200 per month.

Lolliland currently makes and sells 3900 rock lollies per month. Lolliland buys just enough materials each month to make the rock lollies it needs to sell. Materials cost \$0.40 per rock lolly.

Next year Lolliland expects demand to increase by 100%. At this volume of materials purchased, it will get a 10% discount on price. Rent and other fixed manufacturing overhead costs will remain the same.

**REQUIRED**

1. What is Lolliland's current annual relevant range of output?
2. What is Lolliland's current annual fixed manufacturing cost within the relevant range? What is the variable manufacturing cost?
3. What will Lolliland's relevant range of output be next year? How, if at all, will total fixed and variable manufacturing costs change next year? Assume that, if it needs to, Lolliland could buy an identical machine at the same cost as the one it already has.

**2.24 \* Cost drivers and value chain****OBJECTIVES 3, 6**

Beyond Mobile Phones (BMP) is developing a new touch-screen smartphone to compete in the mobile phone industry. The phones will be sold at wholesale prices to phone companies, which will in turn sell them in retail stores to the final customer. BMP has undertaken the following activities in its value chain to bring its product to market. Identify the customer need. (What do smartphone users want?)

- A. Perform market research on competing brands
- B. Design a prototype of the BMP smartphone
- C. Market the new design to mobile phone companies
- D. Manufacture the BMP smartphone
- E. Process orders from mobile phone companies
- F. Package the BMP smartphones
- G. Deliver the BMP smartphones to the mobile phone companies
- H. Provide online assistance to mobile phone users for use of the BMP smartphone
- I. Make design changes to the smartphone based on customer feedback

During the process of product development, production, marketing, distribution and customer service, BMP has kept track of the following cost drivers:

Number of smartphones shipped by BMP  
 Number of design changes  
 Number of deliveries made to mobile phone companies  
 Engineering hours spent on initial product design  
 Hours spent researching competing market brands  
 Customer-service hours  
 Number of smartphone orders processed  
 Number of mobile phone companies purchasing the BMP smartphone  
 Machine hours required to run the production equipment  
 Number of surveys returned and processed from competing smartphone users

**REQUIRED**

1. Identify each value-chain activity listed at the beginning of the exercise with one of the following value-chain categories:
  - a. Design of products and processes
  - b. Production
  - c. Marketing
  - d. Distribution
  - e. Customer service
2. Use the list of cost drivers above to find one or more reasonable cost drivers for each of the activities in BMP's value chain.

**2.25 \* Cost drivers and functions****OBJECTIVE 3**

The list of representative cost drivers in the right column of the table overleaf are randomised with respect to the list of functions in the left column. That is, they do not match.