

Eighth Edition

MANAGEMENT AND COST ACCOUNTING

**Alnoor Bhimani Charles T. Horngren
Srikant M. Datar Madhav V. Rajan**



MANAGEMENT AND COST ACCOUNTING



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MANAGEMENT AND COST ACCOUNTING

Eighth Edition

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In memory of Charles T. Horngren 1926–2011

Chuck Horngren revolutionised cost and management accounting. He loved new ideas and introduced many new concepts. He had the unique gift of explaining these concepts in simple and creative ways. He epitomised excellence and never tired of details, whether it was finding exactly the right word or working and reworking assignment materials.

He combined his great intellect with genuine humility and warmth and a human touch that inspired others to do their best. He taught us many lessons about life through his amazing discipline, his ability to make everyone feel welcome, and his love of family.

It was a great privilege, pleasure, and honour to have known Chuck Horngren. Few individuals will have the enormous influence that Chuck had on the accounting profession. Fewer still will be able to do it with the class and style that was his hallmark. He was unique, special and amazing in many, many ways and, at once, a role model, teacher, mentor and friend.

He is deeply missed.

Alnoor Bhimani

London School of Economics and Political Science

Srikant M. Datar

Harvard University

Madhav V. Rajan

University of Chicago

AB: For all women who bring balance to the world

SD: Swati, Radhika, Gayatri, Sidharth

MVR: Gayathri, Sanjana, Anupama

BRIEF CONTENTS

Contents	ix
Guide to the case studies	xvi
Preface	xix
Authors' acknowledgements	xxii

PART I

Management and cost accounting fundamentals

1 The manager and management accounting	2
2 An introduction to cost terms and purposes	33
3 Job costing	59
4 Process costing	90
5 Cost allocation	128
6 Cost allocation: joint-cost situations	157
7 Income effects of alternative stock-costing methods	183
Part I Case study problems	212

PART II

Accounting information for decision making

8 Cost-volume-profit analysis	220
9 Determining how costs behave	247
10 Relevant information for decision making	287
11 Activity-based costing	318
12 Pricing issues and customer profitability analysis	351
13 Capital investment decisions	387
Part II Case study problems	417

PART III

Planning and budgetary control systems

14 Motivation, budgets and responsibility accounting	422
15 Flexible budgets, variances and management control: I	459
16 Flexible budgets, variances and management control: II	490
17 Measuring yield, mix and quantity effects	524
Part III Case study problems	549

PART IV	Management control systems and performance issues	
18	Control systems and transfer pricing	556
19	Control systems and performance measurement	585
	Part IV Case study problems	615
PART V	Strategy, quality, time and emerging issues	
20	Strategy, the balanced scorecard and quality	622
21	Accounting, time and efficiency	660
22	Emerging issues: digitalisation and sustainability	702
	Part V Case study problems	725
	Appendix A: Solutions to selected exercises	741
	Glossary	807
	Index	820
	Publisher's acknowledgements	831

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CONTENTS

Guide to the case studies	xvi	The many meanings of product costs	48
Preface	xix	Classification of costs	48
Authors' acknowledgements	xxii	Summary	49
		References	50
		Assessment material	51
PART I			
Management and cost accounting fundamentals			
CHAPTER 1			
The manager and management accounting			
Management accounting, financial accounting and cost accounting	2	The building block concept of costing systems	60
Accounting systems and management controls	3	Job-costing and process-costing systems	60
Costs, benefits and context	8	Job costing in service organisations using actual costing	62
Value creation	12	Normal costing	64
• <i>Concepts in action: How the Internet of Things, artificial intelligence and big data make the unknown visible at Rolls-Royce</i>	13	Job costing in manufacturing	66
Digitalisation and management accounting	17	An illustration of a job-costing system in manufacturing	68
Summary	18	Budgeted indirect costs and end-of-period adjustments	76
Appendix: Professional ethics	21	• <i>Concepts in action: Better job costing through big data and data analytics</i>	77
References and further reading	22	Summary	80
Assessment material	23	References	81
	25	Assessment material	82
CHAPTER 2			
An introduction to cost terms and purposes			
Costs in general	33	CHAPTER 3	
Direct costs and indirect costs	34	Job costing	59
Cost drivers and cost management	35	The building block concept of costing systems	60
Cost behaviour patterns: variable costs and fixed costs	36	Job-costing and process-costing systems	60
Total costs and unit costs	37	Job costing in service organisations using actual costing	62
• <i>Concepts in action: Reducing fixed costs and managing profit growth at Porsche</i>	40	Normal costing	64
Financial statements, business sectors and the recognition of costs	41	Job costing in manufacturing	66
	43	An illustration of a job-costing system in manufacturing	68
		Budgeted indirect costs and end-of-period adjustments	76
		• <i>Concepts in action: Better job costing through big data and data analytics</i>	77
		Summary	80
		References	81
		Assessment material	82
		CHAPTER 4	
		Process costing	90
		Illustrating process costing	91
		Case 1: Process costing with no opening or closing work-in-progress stock	92
		Case 2: Process costing with no opening but a closing work-in-progress stock	93
		Case 3: Process costing with both some opening and some closing work-in-progress stock	97
		Weighted-average method	98
		First-in, first-out method	101
		Comparison of weighted-average and FIFO methods	104
		Standard-costing method of process costing	105
		Transferred-in costs in process costing	109
		• <i>Concepts in action: Hybrid costing for Adidas customised 3D printed shoes</i>	110
		Hybrid-costing systems	115
		Summary	116

Appendix: Operation costing	117	Effect on financial statements	198
Reference	120	Summary	200
Assessment material	121	Appendix: Breakeven points in variable and absorption costing	200
		Assessment material	203

CHAPTER 5

Cost allocation

Purposes of cost allocation	129
Cost allocation and costing systems	130
Indirect-cost pools and cost allocation	131
Allocating costs from one department to another	133
Allocating costs of support departments	137
Support department cost-allocation methods	137
Allocating common costs	143
Cost-allocation bases and cost hierarchies	144
Is the product-costing system broken?	146
Summary	146
References and further reading	147
Assessment material	148

CHAPTER 6

Cost allocation: joint-cost situations

Meaning of joint products and by-products terms	158
Why allocate joint costs?	159
Approaches to allocating joint costs	160
<ul style="list-style-type: none"> • Concepts in action: <i>Big Data joint products and by-products create new business opportunities</i> 	162
<ul style="list-style-type: none"> • Concepts in action: <i>Chicken processing: costing on the disassembly line</i> 	168
No allocation of joint costs	168
Irrelevance of joint costs for decision making	169
Accounting for by-products	171
Summary	174
References and further reading	174
Assessment material	175

CHAPTER 7

Income effects of alternative stock-costing methods

PART A: Stock-costing methods	184
Variable costing and absorption costing	184
Comparison of variable costing and absorption costing	188
Performance measures and absorption costing	194
<ul style="list-style-type: none"> • Concepts in action: <i>Can ESPN avoid the cord-cutting 'death spiral'?</i> 	196
PART B: Denominator-level concepts and absorption costing	196
Alternative denominator-level concepts	196

PART I Case study problems

101 The European Savings Bank	212
102 The ethical dilemma at Northlake	214
103 Electronic Boards plc	216

PART II

Accounting information for decision making

CHAPTER 8

Cost-volume-profit analysis

Revenue drivers and cost drivers	221
CVP assumptions	222
The breakeven point	222
The PV graph	226
Impact of income taxes	227
Sensitivity analysis and uncertainty	228
<ul style="list-style-type: none"> • Concepts in action: <i>Can cost-volume-profit analysis help Whole Foods escape the 'whole paycheck' trap?</i> 	229
Cost planning and CVP	230
Effects of revenue mix on profit	232
Not-for-profit organisations and CVP	233
Contribution margin and gross margin	233
Summary	235
Appendix: Decision models and uncertainty	235
Reference and further reading	238
Assessment material	239

CHAPTER 9

Determining how costs behave

General issues in estimating cost functions	248
The cause-and-effect criterion in choosing cost drivers	251
Cost estimation approaches	251
Steps in estimating a cost function	253
Evaluating and choosing cost drivers	258
Cost drivers and activity-based costing	260

• Concepts in action: Activity-based costing and cost estimation	260	ABC and department-costing systems	336
Big data, machine learning and cost analysis	261	Implementing ABC systems	337
Non-linearity and cost functions	262	• Concepts in action: Do banks provide 'free' services?	338
Learning curves and non-linear cost functions	263	ABC and the organisational context	339
• Concepts in action: Learning curves and the falling price of renewable energy	267	Summary	341
Summary	268	References and further reading	341
Appendix: Regression analysis	269	Assessment material	342
References and further reading	278		
Assessment material	279		
		CHAPTER 12	
		Pricing issues and customer profitability analysis	351
		Major influences on pricing	352
		Costing and pricing for the short run	353
		Costing and pricing for the long run	355
		• Concepts in action: Pricing and digitalisation at H&M	358
		Target costing for target pricing	358
		Achieving the target cost per unit for Provalue	362
		Cost-plus pricing	364
		• Concepts in action: Target pricing for the Indian car market	364
		Life-cycle product budgeting and costing	367
		Customer profitability analysis	371
		Customer revenues	371
		Customer costs	372
		Customer profitability profiles	374
		• Concepts in action: Zara uses target pricing to become the world's largest fashion retailer	377
		Summary	377
		References and further reading	378
		Assessment material	379
		CHAPTER 13	
		Capital investment decisions	387
		Stages of capital budgeting	388
		• Concepts in action: Capital budgeting for sustainability at Johnson & Johnson	391
		Discounted cash flow methods	392
		Sensitivity analysis	397
		Relevant cash flows in discounted cash flow analysis	398
		Payback method	400
		Accounting rate of return method	402
		Managing the project	403
		Income tax factors	404
		Capital budgeting and inflation	405
		Summary	406
		References and further reading	407
		Assessment material	408
CHAPTER 10			
Relevant information for decision making	287		
Information and the decision process	288		
The concept of relevance	289		
An illustration of relevance: choosing output levels	291		
Outsourcing and make-or-buy decisions	293		
• Concepts in action: Costs, outsourcing and politics	294		
Opportunity costs, outsourcing and capacity constraints	297		
• Concepts in action: Outsourcing versus automation at Nike	300		
Product-mix decisions under capacity constraints	301		
• Concepts in action: Slashing cost at LEGO	302		
Customer profitability and relevant costs	302		
Irrelevance of past costs and equipment-replacement decisions	305		
Summary	307		
Appendix: Linear programming	307		
References and further reading	311		
Assessment material	312		
CHAPTER 11			
Activity-based costing	318		
Undercosting and overcosting	319		
Costing system at Plastim Limited	320		
Refining a costing system	323		
Activity-based costing systems	324		
Implementing activity-based costing	328		
Comparing alternative costing systems	333		
• Concepts in action: Mayo Clinic uses time-driven activity-based costing to reduce costs and improve care	334		
From activity-based costing to activity-based management	334		

PART II Case study problems

201 Permaclean Products plc

417

417

An illustration of journal entries using standard costs	477
Benchmarking and variance analysis	478
Summary	480
References and further reading	481
Assessment material	482

PART III

Planning and budgetary control systems

CHAPTER 14

Motivation, budgets and responsibility accounting

422

Major features of budgets	423
Roles of budgets	424
Types of budget	428
Financial planning models	437
• Concepts in action: <i>P.F. Chang's and internet-based budgeting</i>	438
Kaizen budgeting	438
Activity-based budgeting	438
Budgeting and responsibility accounting	440
Responsibility and controllability	441
Summary	443
Appendix: The cash budget	443
References and further reading	449
Assessment material	450

CHAPTER 15

Flexible budgets, variances and management control: I

459

Static budgets and flexible budgets	460
Static-budget variances	461
Steps in developing a flexible budget	462
Flexible-budget variances and sales-volume variances	463
Price variances and efficiency variances for inputs	465
Impact of stocks	471
• Concepts in action: <i>Starbucks maintains a focus on direct-cost variances</i>	471
Management uses of variances	472
• Concepts in action: <i>Chipotle's required focus on material cost variances</i>	474
Flexible budgeting and activity-based costing	475

CHAPTER 16

Flexible budgets, variances and management control: II

490

Planning of variable- and fixed-overhead costs	491
Developing budgeted variable-overhead rates	492
Variable-overhead cost variances	493
Developing budgeted fixed-overhead rates	497
Fixed-overhead cost variances	498
Production-volume variance	498
Integrated analysis of overhead cost variances	500
Different purposes of manufacturing overhead cost analysis	501
Journal entries for overhead costs and variances	503
• Concepts in action: <i>Variance analysis and standard costing: helping Sandoz manage overhead costs</i>	505
Engineered, discretionary and infrastructure costs	505
Financial and non-financial performance measures	506
Actual, normal and standard costing	507
Activity-based costing and variance analysis	510
Summary	514
Reference and further reading	515
Assessment material	516

CHAPTER 17

Measuring yield, mix and quantity effects

524

Input variances	525
Direct materials yield and mix variances	525
Direct manufacturing labour yield and mix variances	530
Revenue and sales variances	532
Variance analysis for multiple products	533
Summary	540
Assessment material	541

PART III Case study problems

549

301 Zeros plc	549
302 Instrumental Ltd	551

PART IV**Management control systems and performance issues****CHAPTER 18****Control systems and transfer pricing** 556

Management control systems	557
Evaluating management control systems	557
Organisational structure and decentralisation	558
Choices about responsibility centres	561
Transfer pricing	561
An illustration of transfer pricing	562
Market-based transfer prices	565
Cost-based transfer prices	566
Negotiated transfer prices	569
A general guideline for transfer-pricing situations	569
Transfer pricing and tax considerations	570
• Concepts in action: <i>The European Commission thinks Apple's transfer price arrangements are unfair</i>	572
Summary	572
References and further reading	573
Assessment material	574

CHAPTER 19**Control systems and performance measurement** 585

Financial and non-financial performance measures	586
Different performance measures	587
• Concepts in action: <i>Running pharmas can prove challenging and CEO compensation can fall!</i>	593
Alternative definitions of investment	593
Alternative performance measures	594
Choosing targeted levels of performance and timing of feedback	597
Distinction between managers and organisational units	598
• Concepts in action: <i>Performance measurement at Unilever</i>	600
Performance measures at the individual activity level	601
Environmental and ethical responsibilities	602
Strategy and levers of control	603

Summary	605
References and further reading	605
Assessment material	607

PART IV Case study problems 615

401 BBR plc	615
-------------	-----

PART V**Strategy, quality, time and emerging issues****CHAPTER 20****Strategy, the balanced scorecard and quality** 622

Strategy and strategic management accounting	623
• Concepts in action: <i>Strategic renewal at Puma</i>	625
The balanced scorecard	626
Quality improvement and reengineering at Chipset	626
The four perspectives of the balanced scorecard	627
Aligning the balanced scorecard to strategy	628
Features of a good balanced scorecard	630
Evaluating the success of a strategy	632
• Concepts in action: <i>Barclays turns to the balanced scorecard</i>	632
Costs of quality under the balanced scorecard	635
The internal-business-process perspective: analysing quality problems	640
The learning-and-growth perspective: quality improvements	642
• Concepts in action: <i>Does Mercedes really stand for quality? What about Toyota?</i>	645
Summary	646
References and further reading	647
Assessment material	649

CHAPTER 21**Accounting, time and efficiency** 660

Just-in-time systems	661
Major features of JIT production systems	661
• Concepts in action: <i>Just-in-time live-concert recordings</i>	663

Enterprise resource planning (ERP) systems	665	The digitalised enterprise control loop	708
• Concepts in action: <i>How big data and machine learning helps with stock management</i>	666	Management accounting and sustainability	709
Backflush costing	666	Context and communication remain key	715
Managing goods for sale in retail organisations	674	• Concepts in action: <i>Corporates that prioritise sustainability</i>	715
Challenges in estimating stock-related costs and their effects	679	Alternative definitions of investment	716
Just-in-time purchasing	681	Summary	717
Stock costs and their management in manufacturing organisations	684	References and further reading	717
Theory of constraints	686	Assessment material	719
Balanced scorecards and time-based measures	688	PART V Case study problems	725
Summary	689	501 High-Tech Limited	725
References and further reading	690	502 Tanner Pharmaceuticals and the price of a new drug	732
Assessment material	691	503 Osram	736
CHAPTER 22			
Emerging issues: digitalisation and sustainability	702	Appendix A: Solutions to selected exercises	741
Digitalisation is changing data	703	Glossary	807
Digital technologies are changing accounting	705	Index	820
		Publisher's acknowledgements	831

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Case number	Case details	Short/long	Manufacturing/service	Budgeting	Pricing	Ethical issues	Environmental issues	Activity-based costing	Behaviour/organisation factors	Cash flow	Costing system	Profit/loss measurement	ROI	Transfer pricing system	Management control system	Balanced scorecard	Performance measurement	Variance	Market assessment/competitor analysis	Tableau de bord	Strategic issues	Profitability	Country/area of origin
	PART 1																						
101	The European Savings Bank: Legal and ethical issues involved in software piracy.	short	SS			•			•														Europe
102	The ethical dilemma at Northlake: How far does the notion of 'different costs for different purposes' extend?	mid	M			•	•														•		Canada
103	Electronic Boards plc: Design of costing systems for a firm operating in a high-tech environment. Simplistic vs complex costing.	short	M	•				•	•		•						•				•		N/A
	PART II																						
201	Permaclean Products plc: Analysis of costs and price-demand information using past sales data to make decisions on product pricing.	mid	M		•						•	•										•	UK
	PART III																						
301	Zeros plc: Use of ROI to measure divisional performance. Use of costing systems to produce meaningful profit statements.	mid	M	•	•				•		•	•	•				•					•	UK
302	Instrumental Ltd: Analysis of budgeted vs actual performance for different organisational functions. Considers strategic vs operational issues.	mid	M	•	•					•	•	•					•	•			•		UK

Case number	Case details	Short/long	Manufacturing/service	Budgeting	Pricing	Ethical issues	Environmental issues	Activity-based costing	Behaviour/organisation factors	Cash flow	Costing system	Profit/loss measurement	ROI	Transfer pricing system	Management control system	Balanced scorecard	Performance measurement	Variance	Market assessment/competitor analysis	Tableau de bord	Strategic issues	Profitability	Country/area of origin
	PART IV																						
401	BBR plc: Transfer-pricing problem where divisional interests are pitted against total corporate profitability.	mid	M	●	●	●			●		●	●		●			●	●					UK
	PART V																						
501	High-Tech Ltd: Importance of strategy and cost allocation within the IT manufacturing industry. Considers just-in-time inventory systems.	long	M & SS		●			●	●		●	●			●	●			●	●	●		UK/France
502	Tanner Pharmaceuticals and the price of a new drug: Issues of pharmaceutical drug prices in the light of competitive strategy.	mid/long			●							●									●		USA
503	Osram: Analysis of potential savings made by newer, more efficient consumables as opposed to traditionally used ones.	mid/long	M	●	●						●	●							●			●	Germany

PREFACE

Accounting influences our lives. Whether or not one uses accounting information, accounting alters our social, economic and physical environment. And of course, it impacts organisations and altering what we do and the decisions we make. Corporate action regarding new product developments, pricing strategy, staff recruitment and salary levels are usually directly influenced by accounting information. At times, accounting motivates certain types of managerial behaviours and discourages others. This book is about understanding the preparation and use of management and cost accounting information, taking account of how it influences decisions. But accounting is not a pre-given in form or process and in this sense accounting is also continuously being reshaped by its context. The book therefore also extensively discusses how different factors alter accounting techniques and processes.

As we'll see in Chapter 1, management accounting is concerned with providing managers with financial and other types of information so they can pursue diverse goals. Cost accounting, which is sometimes used interchangeably with management accounting, is more concerned with information on the acquisition and consumption of resources. We want to address issues relating to the design, use and role of accounting information in the management of organisational activities. We will do this by balancing technical detail with enterprise insight so we can focus on how to best support management action.

Management and cost accounting is a dynamic discipline which differs across firms, nations, industrial settings and management functions. It entails the application of different techniques, which must constantly adapt given the fast pace of changes facing enterprises today. Consequently, the book covers a comprehensive suite of techniques and areas including job costing and process costing, cost-volume-profit relationships, capital investment decisions, budgetary control and responsibility accounting. It looks also at quality costing, throughput issues, non-financial performance measures and strategic analysis. But we are especially concerned with the forces that impact these management accounting practices right now. So all these techniques are discussed in the context of changes witnessed by organisations on an ongoing basis. We argue that the most significant force affecting firms today is technological change and innovation. Digital technologies are rapidly impacting business models and organisational processes and they are doing so in a deep and extensive way. This new edition of the book is thus packed with coverage on how organisations are being digitally transformed and what this implies for management accountants. We look at numerous illustrations of companies using 'big data' and analytics as they draw insights from digitised data. We consider how the 'Internet of Things', robotics, artificial intelligence and other digital innovations are impacting management accounting information deployment. Aside from the digitalisation of enterprises, we consider also the relevance of sustainability and environmental concerns which influence how firms deploy management accounting information.

New to the 8th edition

To ensure currency and coverage of modern applications of management accounting, we have added new material in this edition. Environmental issues have been of concern to organisations for decades but the past few years have demonstrated much more active engagement by business in this light. We have therefore introduced across several chapters, discussions and illustrations of companies which have extensively invested in sustainability initiatives and indicators of their performance in this domain. Chapter 1 discusses why this has become such a priority for many

enterprises and subsequent chapters provide numerous illustrations of how companies approach sustainability factors affecting their pursuits and activities. Chapter 22 in particular reflects the significance of sustainability issues tied to management accounting with a new title for the whole chapter and wide-ranging content revisions and new coverage areas. Technological changes and digitalisation have likewise evolved and altered organisational functions and processes in the very recent past. The rise of increasingly advanced digital applications such as blockchain systems, the Internet of Things, smart contracts and artificial intelligence are altering not only what management accountants must report on but the very mechanisms of reporting and the growing divisions between machine versus human decision making. This is reshaping the work and roles played by management accounting in organisations. The impact of digital technologies is fast transforming the field and most chapters discuss aspects of the nature and forms of such changes. From Chapter 1 through, especially to Chapter 22, we identify how the digital technologies are altering the substance of management accounting and the relevance of conventional as well as new accounting and control tools deployed by firms.

Also included in this edition are novel illustrations and survey results of management accounting mechanisms and corporate concerns. We have tried to ensure the inclusion of company-relevant examples and illustrations of changing management and cost accounting practices. While general aspects of different topics and issues are extensively covered, we also discuss situational and organisational adaptations of generic techniques to ensure that you understand the applicability of management accounting approaches. To achieve this, we have numerous case studies used by many business schools across the globe. We ensure that the reality of enterprise management is reflected in the book and so, rather than accord a separate chapter to consider strategic, organisational and behavioural aspects of management accounting, we integrate this throughout chapters in the book. We further cover global themes that are of relevance to managers in modern enterprises in terms of corporate responsibility and ethical issues.

We draw comfort in observing that other management accounting writers try to use our approach of practical examples, case studies and coverage of research findings, while also sharing our preference for the format and structure adopted here. We sharpen this by providing the very latest in corporate examples, survey findings and case studies. This ensures that you gain familiarity with concepts that are of relevance and concern to enterprises today.

Deciding on the sequence of chapters in a management and cost accounting textbook that spans introductory through to relatively detailed analysis of material is a challenge we have met successfully. Professors tend to have a preferred way of organising their course material. The five-part structure of this book and the sequencing of chapters have been designed to facilitate flexibility and diversity in the teaching of different topic areas and the use of the text for a range of courses and levels. An outline of the coverage and component chapters of each part is given in the part openers.

Assessment material

This book includes a high quantity and broad range of assessment material to further facilitate the use of the text on a diverse range of courses:

- **Review questions:** These short questions encourage students to review and/or critically discuss their understanding of the main topics and issues covered in each chapter, either individually or in a group.
- **Exercises:** These comprehensive questions are graded and grouped by their level of difficulty: basic, intermediate and advanced. Each question is preceded by a note of its topic coverage and an indication of the time it should take to complete. Where appropriate, the exercises include questions taken from examinations of several professional accountancy bodies. Fully worked solutions to a selection of exercises in each chapter (identified by an asterisk) are provided in Appendix A.

Case study problems

At the end of each of the five parts are problem-based illustrative cases. Each is more substantive and typically more demanding than the end-of-chapter exercises, integrating topics from several chapters in each of the core parts of the text, allowing you to apply your understanding of accounting concepts, issues and techniques within a broader organisational context, and to develop your critical thinking and analytical skills. The questions which follow the case material include some aspects suitable for group discussion/assignment.

Glossary

This comprises an alphabetical listing of all the key terms, including a concise definition, so allowing revision of all the key concepts and techniques in the text.

Academic supplements

Academics and lecturers who adopt this text are provided with a range of additional materials to assist in the preparation and delivery of courses. These include:

- complete, downloadable Instructor's Manual with teaching ideas and solutions to end-of-chapter exercises not given in the text;
- suggested teaching notes to all case study problems;
- editable PowerPoint slides, organised by chapter, allowing you to provide a lecture or seminar presentation (and/or to print handouts). These incorporate colourful graphics, outlines of chapter material, text exhibits, additional examples and graphical explanations of difficult topics;
- solutions to additional questions and spreadsheet problems.

This text is supported by its own MyLab Accounting which is an environment that gives unlimited opportunities for practice and assessment using a range of questions, and which provides timely feedback. Updates to MyLab Accounting include alignment of the questions to match new content in the book and the addition of over 100 exercises that are new to this edition to improve coverage across the most important topics. In addition to the useful self-study suggestions in the Study Plan, and the vast range of exercises (over 800) to select from, a better mix of questions has been incorporated into MyLab Accounting for this edition, allowing teaching staff to better test students' performance using a greater variety of question types. Finally, four new short videos explaining essential concepts can be used within teaching to consolidate your students' understanding or support self-study and revision.

For access to MyLab Accounting, students need both a course ID and an access card (see the advert on the inside front cover of the book).

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November 2022*

Lecturer Resources

For password-protected online resources tailored to support the use of this textbook in teaching, please log in as an educator on our website www.pearson.com and search for this textbook, where you will find a tab providing instructor resources.



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- The Institute of Chartered Accountants of Scotland
- The Chartered Institute of Management Accountants
- The Institute of Chartered Accountants in Ireland

PART I

Management and cost accounting fundamentals

The first part of the book is intended to provide an introduction to fundamental concepts and ideas in management and cost accounting. Chapter 1 considers the role of accounting and accountants in organisations. Chapters 2–7 discuss relevant technical and broader organisational issues in the design and functioning of cost systems. Specifically, Chapter 2 provides an introduction to costing terminology and its aims. Chapters 3 and 4 discuss what might be considered ends of a continuum in costing systems: job order costing and process costing. Chapter 5 addresses fundamental cost allocation issues while Chapter 6 deals with joint-costing situations. The final chapter in this part discusses absorption costing and variable costing as two distinct approaches to stock costing.

Chapter 1	The manager and management accounting	2
Chapter 2	An introduction to cost terms and purposes	33
Chapter 3	Job costing	59
Chapter 4	Process costing	90
Chapter 5	Cost allocation	128
Chapter 6	Cost allocation: joint-cost situations	157
Chapter 7	Income effects of alternative stock-costing methods	183
Part I	Case study problems	212

CHAPTER 1

The manager and management accounting

Former accountants have headed many large companies across the world, including PepsiCo, Coca-Cola, BT, Siemens, 3i, Shell, Rolls-Royce, Vodafone, Burger King, Royal Bank of Scotland, Asda and Nike. Finance leaders' roles in organisations change continuously. More than half of Chief Executive Officers (CEOs) of FTSE 100 (a share index of the 100 companies listed on the London Stock Exchange with the highest market value) have a background in accounting or financial management (Global Accounting Network, 2022) and 30% of Fortune 500 (the 500 largest US industrial corporations by revenue) CEOs spend the first four years of their careers developing a strong foundation in finance. In the financial sector, almost a quarter of CEOs previously held the role of CFO (Amato, 2022). The rapid rise of accounting and finance executives is unrivalled by other corporate roles. This is partially because they help guide companies at the most senior level, offering strong analytical skills, organisational acumen, a dedication to continuous improvement and widening stakeholder engagement.

Across virtually all organisations, accountants' duties involve management planning, control and decision making, although the enterprise context determines the specific accounting and financial management responsibilities they must deliver on. The demands on accounting and finance professionals always differ and there is no one-size-fits-all in management accounting. Recently, many accountants have broadened their activities to include risk management, business strategy, sustainability objectives and digital transformation roles. CPA Canada, a national organisation representing the Canadian accounting profession, with 210,000 qualified members, considers that its members must be 'broad-minded, forward-thinking professionals who undertake appropriate analysis, exercise good judgment, communicate effectively and act to protect the public interest' (CPA Canada 2022). Managers in all companies, whether small or large, must understand how revenues and costs behave or they risk losing control of the performance of their firms. But this is not sufficient and managers' use of management accounting information must go beyond this to include making decisions about research and development, production planning, budgeting, pricing, and the products or services to offer customers. Strategic action in enterprises is increasingly informed by management accounting input.

Learning objectives

After studying this chapter, you should be able to:

- Differentiate management accounting from financial accounting
- Recognise the growing role of strategy in management accounting processes
- Identify five broad purposes of accounting systems
- Understand how accounting can influence planning, control and decision making
- Distinguish between the score-keeping, attention-directing and problem-solving functions of management accounting
- Recognise that economic benefits, costs as well as contextual and organisational process issues are relevant to accounting systems design and operation
- Assess how companies add value
- Understand why digitalisation is management accounting's key challenge today

How managerial activities and decisions link to accounting intelligence continuously evolves. This book addresses questions such as: What types of decisions do managers make? How can accounting help managers make these decisions? Are managerial needs proactively being met by management accounting solutions? In this first chapter, we look at some dimensions of the role of management accounting in modern enterprises, why management accounting is subject to continual change and what digital technologies imply for the field. A consideration of these issues will give us a framework for studying the succeeding chapters.

Management accounting, financial accounting and cost accounting

A distinction is often made in practice between management accounting and financial accounting. **Management accounting** measures, analyses and reports financial information and non-financial information that are intended primarily to assist managers in fulfilling the goals of the organisation. A management accounting system is an important facet of overall organisational control, as is discussed later in this book. CIMA Global sees management accounting as an integral part of management. It considers management accounting as combining accounting, finance and management with leading-edge techniques that drive successful businesses. Individual managers often require the information in an accounting system to be presented or reported differently. Consider, for example, sales order information. A sales manager at Porsche may be interested in the total amount of sales in Euros to determine the commissions payable to salespeople. A distribution manager at Porsche may be interested in the sales order quantities by geographic region and by customer-requested delivery dates to ensure vehicles get delivered to customers on time. A manufacturing manager at Porsche may be interested in the quantities of various products and their desired delivery dates so that they can develop an effective production schedule. To simultaneously serve the needs of all three managers, Porsche creates a database consisting of small, detailed bits of information that can be used for multiple purposes. For instance, the sales order database will contain detailed information about a product, its selling price, quantity ordered, and delivery details (place and date) for each sales order. The database stores information in a way that allows different managers to access the information they need.

Many managers now use data analytic techniques to gain insights into the data they collect. This is popularly referred to as ‘big data’ and is associated with machine learning and artificial intelligence. The most common application of machine learning and artificial intelligence is in making predictions. For example, using historical purchase data and other characteristics of a customer, a company like Netflix predicts which movie a particular customer might like and recommends that movie to the customer. Netflix then obtains feedback on whether the customer liked the movie or not and incorporates this feedback into the model, improving and refining it. In this sense the machine learns from its correct and incorrect predictions and is seen as acting intelligently. The vast quantity and variety of data have led to the development of many new prediction techniques.

Professional management accountants apply the principles of accounting and financial management to create, protect, preserve and increase value for the shareholder of for-profit and not-for-profit enterprises in the public and private sectors. They might engage in the identification, generation, presentation, interpretation and use of relevant information relevant to:

- develop, communicate and implement strategies
- plan long-, medium- and short-term operations
- determine capital structure and fund that structure
- design reward strategies for executives and shareholders
- coordinate design, operations and marketing decisions and evaluate performance

- control operations and ensure the efficient use of resources
- measure and report financial and non-financial information to stakeholders
- implement corporate governance procedures, risk management and internal controls
- explore the potential for managerial and organisational value creation.

Management accounting information and reports do not have to follow set principles or rules. The key questions are always: (1) how will this information help managers do their jobs better; (2) do the benefits of producing this information exceed the costs; and (3) does the information recognise what is specific about the organisational context?

Financial accounting and management accounting have different goals. **Financial accounting** focuses on external reporting that is directed by authoritative guidelines. Organisations are required to follow these guidelines in their financial reports to outside parties. Financial accounting is guided by prescribed accounting standards. Principles define the set of revenue and cost measurement rules and the types of items that are classified as assets, liabilities or owners' equity in balance sheets which form the standards applicable. Sources of authority for accounting regulation differ across countries. In Spain, for instance, the Instituto de Contabilidad y Auditoria de Cuentas (ICAC) has been appointed by the government for this purpose. In the UK, the Financial Reporting Council (FRC) has the authority to issue accounting standards. The FRC's regulator views its objective to 'regulate auditors, accountants and actuaries' and to 'set the UK's corporate governance and stewardship codes' (FRC, 2022). Its work is aimed at 'investors and others who rely on company reports, audit and high-quality risk management'.

In France, the Autorité des Normes Comptable (ANC), a public body, oversees accounting legislation, whereas in Denmark, the Førentingen af Statsautoriserede Revisører (FSR), a professional accounting body, oversees the setting of accounting standards. Other bodies which are concerned with accounting standards include: in Australia, the Australian Accounting Standards Board (AASB); in China, the China Accounting Standards Committee (CASC); and in South Africa, the South Africa Accounting Standards Board. While conceptions of how accounting information should be reported can have a high degree of national specificity, across the world over 140 national jurisdictions use International Financial Reporting Standards (IFRS) which are issued by the IFRS Foundation and the International Accounting Standards Board (IASB).

In contrast to adhering to financial reporting standards, management accounting is not restricted by accounting principles. For example, a car manufacturer may present a particular estimated 'value' of a brand name (say, the Volvo brand name) in its *internal* financial reports for marketing managers, although doing so does not have to accord with the legal framework within which externally oriented financial reports can be prepared in Sweden.

While the work of management accountants and financial accountants tends to be organisation-specific, some broad differences generally exist. They may be categorised as follows:

- *Regulations.* Management accounting reports are generally prepared for internal use and no external regulations govern their preparation. Conversely, financial accounting reports are generally required to be prepared according to accounting regulations and guidelines imposed by law and the accounting profession.
- *Range and detail of information.* Management accounting reports may encompass financial, non-financial and qualitative information which may be very detailed or highly aggregated. Financial accounting is usually broad-based, lacking detail and intended to provide an overview of the position and performance of an organisation over a time period. It tends to focus on financial information.
- *Reporting interval.* Management accounting reports may be produced frequently – on an hourly, daily or weekly basis, possibly to span several years. The interval covered by management accounting information will be dictated by the decision-making and control needs of the information users. Conversely, financial accounting reports are produced annually. Some large companies also produce semi-annual and quarterly reports.

- *Time period.* Management accounting reports may include historical and current information, but also often provide information on expected future performance and activities. Financial accounting reports provide information on the performance and position of an organisation for the past period. They tend to be backward-looking.

Exhibit 1.1 outlines the major differences between management accounting and financial accounting. Note, however, that reports such as balance sheets, income statements and statements of cash flows are common to both management accounting and financial accounting.

Cost accounting measures and reports financial and non-financial information related to the organisation's acquisition or use of resources. It provides information for both management accounting and financial accounting. For example, calculating the cost of a product is a cost accounting function that meets both the financial accountant's stock-valuation needs and the management accountant's decision-making needs (such as deciding how to price products and choosing which products to promote). However, today most accounting professionals take the perspective that cost information is part of the management accounting information collected to make management decisions. Thus, the distinction between management accounting and cost accounting is not so clear-cut, and we often use these terms interchangeably in the book.

A central task of managers is cost management. We use the term **cost management** to describe the actions managers undertake in the short-run and long-run planning and control of costs that increase value for customers and lower the costs of products and services. An important component of cost management is the recognition that prior management decisions often commit the organisation to the subsequent incurrence of costs. Consider the costs of handling materials in a production plant. Decisions about plant layout and the extent of physical movement of

Exhibit 1.1

Major differences between management and financial accounting

	Management Accounting	Financial Accounting
Purpose of information	Help managers make decisions to fulfil an organisation's goals	Communicate an organisation's financial position 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 2024 prepared in 2023)	Past-oriented (reports on 2023 performance prepared in 2024)
Rules of measurement and reporting	Internal measures and reports do not have to follow relevant accounting standards but are based on cost-benefit analyses	Financial statements must be prepared in accordance with relevant accounting standards and be certified by external, independent auditors
Time span and type of reports	Varies from hourly information to 15 to 20 years, with financial and non-financial reports on products, departments, territories, and strategies	Annual and quarterly financial reports, primarily on the company as a whole
Behavioural implications	Designed to influence the behaviour of managers and other employees	Primarily reports economic events but also influences behaviour because manager's compensation is often based on reported financial results

materials required for production are usually made before production begins. These decisions greatly influence the level of day-to-day materials handling costs once production begins. For this reason, cost management has a broad focus. It typically includes the continuous reduction of costs and encompasses the whole life cycle of the product from product conception to deletion. Cost management is often carried out as a key part of general management strategies and their implementation. Examples include enhanced customer satisfaction programmes, quality initiatives and more efficient supplier relationships management via the internet. In other words, cost management is not only about reducing costs. Cost management also includes making decisions to incur additional costs with the goal of enhancing revenues and profits. Whether or not to enter new markets, implement new organisational processes, and change product designs are also cost management decisions. Information from accounting systems helps managers to manage costs, but the information and the accounting systems themselves are not cost management.

Ultimately, management accounting's primary purpose is to enhance value creation within both private and public sector organisations. The management accountant must make use of a sound body of knowledge, as well as abide by ethical guidelines (discussed in the appendix of this chapter). Of particular relevance is the growing contribution which management accountants make to strategic financial management information production and analysis and to strategic management action itself.

Strategic decisions and management accounting

Many organisations seek to be more expansionist, entrepreneurial, risk taking and innovative as a conscious move away from inwardly focused management techniques. Entirely new markets are emerging for products and services and avant-garde innovative firms are reaping significant benefits through innovative management approaches and a growing focus on action through focused strategic information.

A company's strategy specifies how the organisation matches its own capabilities with the opportunities in the marketplace. In other words, strategy describes how an organisation creates value for its customers while distinguishing itself from its competitors. A business might be thought to follow one of two broad strategies (we consider this further in Chapter 20). Some companies, such as EasyJet and Carrefour, follow a cost leadership strategy. They profit and grow by providing quality products or services at low prices and by judiciously managing their costs. Other companies, such as Apple and Bang & Olufsen, follow a product differentiation strategy. They generate profits and growth by offering differentiated or unique products or services that appeal to their customers and are often priced higher than the less popular products or services of their competitors.

Deciding between these strategies is a critical part of what managers do. Management accountants work closely with managers in various departments to formulate strategies by providing information about the sources of competitive advantage, such as (1) the company's cost, productivity or efficiency advantage relative to competitors; or (2) the premium prices a company can charge over its costs from distinctive product or service features.

Management accounting information helps managers focus on strategic issues by answering questions such as the following:

- *Who are our most important customers, and what critical capability do we have to be competitive and deliver value to our customers?* After Amazon's success selling books online, management accountants at Waterstones, a British book retailer, outlined the costs and benefits of several alternative approaches for enhancing the company's information technology infrastructure and developing the capability to sell books online. A similar cost-benefit analysis led Toyota to build flexible computer-integrated manufacturing plants that enable it to use the same equipment efficiently to produce a variety of cars in response to changing customer tastes.
- *What is the bargaining power of our customers?* Kellogg Company, for example, uses the reputation of its brand to reduce the bargaining power of its customers and charge higher prices for its cereals.

- *What is the bargaining power of our suppliers?* Management accountants at Dell Computers consider the significant bargaining power of Intel, its supplier of microprocessors, and Microsoft, its supplier of operating system software, when considering how much it must pay to acquire these products.
- *What substitute products exist in the marketplace, and how do they differ from our product in terms of features, price, cost and quality?* Hewlett-Packard, for example, designs, costs and prices new printers after comparing the functionality and quality of its printers to other printers available in the marketplace.
- *Will adequate cash be available to fund the strategy, or will additional funds need to be raised?* Tesla CEO Elon Musk's bid to buy Twitter with a \$46.5 billion takeover offer in April 2022 included debt and equity commitment letters filed with the US Securities and Exchange Commission.

Research reveals that companies that emphasise creating long-term value for shareholders are likely to outperform those that focus on preserving shareholder value in the short term. Companies whose primary focus is on internal control and value preservation do not increase their stock market valuations as effectively as those that look outside for opportunities to create value. Outperformers in business are those with the strategic and external awareness to evolve and change when the need arises. Studies have also revealed that performance-based pay, focusing on highly tangible near-term measurable variables damages the creation of longer-term shareholder value. Management accounting information is called upon not only to help managers make balanced decisions in the face of organisational challenges and the opportunities their environments bring, but increasingly also to monitor and evaluate strategic progress.

The trend for professional institutes of management accounting has been to reorient the field towards strategic management information preparation and analysis and the actual participation of management accountants in such activities. Operational accounting techniques and issues continue to be relevant, but their roles are being recast in the context of their contributions and relationships with organisation-wide financial management and strategic concerns.

The shift towards managerial and strategic engagement rather than just acting as providers of largely financial information about enterprises allows management accountants to align their work to the changing business and organisational landscape. The beginning of the millennium has seen a radical shift in the economic context in which companies operate. Early in the twentieth century, the Ford Motor Company demonstrated the ability of mass production to lower the price of a product by 60% or more. This enabled consumption to move its focus away from elite consumers to the masses. Today, another transformation is taking place away from mass consumption to a focus on individuals. Consumers, in many sectors, are building platforms, tools and relationships which enable a high degree of personalisation. Companies such as Amazon, eBay, Apple, YouTube and Meta fall into this new category. Digital interactive technologies allow consumers greater self-determination. A smartphone allows the user to define the experience desired from the device at very low cost. Assets, information, relationships and management are now 'distributed' as the internet, mobile computing, wireless broadband and new software applications have been created. As products and technology offer different experiences to the consumer, management accountants need to adapt to understand, control and manage attendant cost structures.

Many established management accounting concepts that were developed to serve traditional industrial and service sectors continue to find usage across many enterprises, but the manner in which they are deployed is being reshaped. Many firms are pursuing digital transformation initiatives, which can involve the use of different technologies such as cloud computing, the **Internet of Things**, **big data** and **artificial intelligence (AI)**. Consider Virgin Holidays, which uses AI to test its email marketing approach. In one campaign, the company tested different subject lines and text within emails to work out what was most effective. This enabled insights into how best to promote holidays including questioning whether a big promotion (such as 50% off) requires the message to lead in any communications sent. The AI-generated insights revealed that the best results came from emails that had messages like 'Book before Monday' or offered a getaway from stress at