

Chapter 1

Introduction to managerial accounting

Introduction

Chapter one covers the many roles that managerial accounting information plays in decision making. Because the emphasis in this text is decision making, students should have an understanding of the material in this chapter in order to be successful in the course.

Key concepts

- Accounting information includes both financial and non-financial information used by decision makers
- Financial accounting information is focused on the information needs of external users, while managerial accounting information is focused on the information needs of internal users
- Opportunity costs are relevant. Future costs that do not differ among alternatives are not relevant. Sunk costs are not relevant
- Establishing an ethical business environment encourages employees to act with integrity and conduct business in a fair and just manner

Learning objectives

- LO1** Describe the contemporary view of accounting information systems and describe and give examples of financial and non-financial accounting information.
- LO2** Compare and contrast managerial accounting with financial accounting and distinguish between the information needs of external and internal users.

LO3 Recognise the role of relevant factors in decision making.

LO4 Understand sources of ethical issues in business and the importance of maintaining an ethical business environment.

Lecture outline

A. Accounting information (LO1)

1. Accounting information is provided by the accounting information system (AIS). The AIS processes financial data resulting from accounting transactions. A disadvantage of the AIS is that it does not include non-financial information, such as the number of units on hand and the time it takes to manufacture a product.
2. Enterprise resource planning (ERP) systems have been developed in an attempt to address the shortcomings of traditional AISs. ERP systems integrate traditional AIS with other information systems to capture both quantitative and qualitative data, collect and organise that data into useful information, and transform that information into knowledge that can be communicated throughout an organisation.

Key concept

Accounting information includes both financial and non-financial information used by decision makers.

B. A comparison of financial and managerial accounting (LO2)

Key concept

Financial accounting information is focused on the information needs of external users, while managerial accounting information is focused on the information needs of internal users.

1. External users

- a. Stockholders, potential investors, creditors, governmental taxing agencies and regulators, suppliers, and customers are external users.
- b. Publicly held companies provide accounting information in the form of annual reports, registration statements, prospectuses, and other reports issued to shareholders, prospective investors, and government bodies such as the Australian Taxation Office (ATO) and the Australian Securities and Investment Commission (ASIC). ASIC and generally accepted accounting principles (GAAP) rules apply to this information. It is primarily financial, but it may include some non-financial and/or qualitative data.
- c. Many users need information to help them analyse the current and future profitability of an organisation. Others, such as the ATO, have very specific needs. Creditors want to assess a company's overall financial health and may be particularly interested in a company's cash flow or ability to repay its loans.
- d. Small companies and non-profit organisations also have external users.

2. Internal users

- a. Employees, teams, departments, regions, and top management are internal users of accounting information.

- b. Most of these users are involved in planning and controlling, which involves making decisions.
3. The functional areas of management
- a. The operations and production function: These managers need accounting information to make planning decisions affecting how and when products and services are produced.
 - b. The marketing function: Accounting information is needed to make marketing decisions such as establishment of a reasonable selling price and how changing a product's features will influence its cost.
 - c. The finance function: Accounting information helps finance managers make decisions about how to raise capital, as well as where and how it is invested.
 - d. The human resource function: Human resource managers make decisions regarding recruiting and staffing, designing compensation and benefit packages, ensuring safety and overall health of personnel, and providing training and development opportunities for employees. Accounting information can help these individuals make decisions after considering the costs and benefits of each option.
4. The information needs of internal and external users
- a. Exhibit 1.2 summarises the external and internal users of accounting information, the type of information typically needed by these users, and the source of the information.
 - b. In general, accounting information needed by internal users differs from that needed by external users in the following ways:
 - More flexible
 - Does not have to comply with GAAP or other rules
 - Forward looking

- Timely
- Emphasises segments, not necessarily the entire organisation.

5. The role of the managerial accountant

- a. Managerial accountants are no longer the 'bean counters' or 'number crunchers' in the organisation.
- b. The accounting function is now automated, and management accountants have become decision-support specialists.

C. Relevant factors and decision making (LO3)

1. Relevant costs are those costs that differ between alternatives.
2. Sunk costs are costs that have already been incurred. They are never relevant because they cannot be avoided.
3. Opportunity costs are benefits forgone by choosing one alternative over another. They are relevant costs for decision making.

Key concept

Sunk costs are not relevant. Future costs that do not differ among alternatives are not relevant. Opportunity costs are relevant.

D. Ethics and decision making (LO4)

1. In today's business environment, companies have to be aware not only of the economic impact of their decisions, but also of their ethical impact.
2. Business ethics results from the interaction of personal morals and the processes and objectives of business.

Key concept

Understand sources of ethical issues in business and the importance of maintaining an ethical business environment

Making it real

Ranking ethics

3. Ethics programs: Companies frequently create ethics programs to establish and help maintain an ethical business environment.

Making it real

Google won't be evil

4. Corporate wrongdoing
 - a. Even though companies establish ethics programs to encourage employee integrity, individuals engage in behaviours that are not only unethical but also fraudulent.
 - b. The case of Enron is one example where an ethics program was not effective.
5. Sarbanes-Oxley Act of 2002
 - a. It was passed as a response to corporate scandals which began with implosion of Enron in late 2001.
 - b. The law requires (1) management to assess whether internal controls over financial reporting (ICFR) are effective; (2) the company's external financial statement auditor to audit ICFR; and (3) companies to establish procedures to allow employees to make complaints about accounting and auditing matters directly to members of the audit committee.
6. Accounting Professional and Ethical Standards Board

- a. The major professional accounting bodies in Australia jointly subscribe to the guidelines of the Accounting Professional and Ethical Standards Board (APESB). These standards broadly define the ethical obligations of accountants in practice.
- b. There are five ethical principles: integrity, objectivity, professional competence and due care, confidentiality and professional behaviour.

End-of-chapter material: The following *concept questions*, *exercise questions* and *problem question* solutions relate to content from the end of this chapter and from the chapter review card. They help students affirm their understanding of the concepts studied in the chapter.

Concept questions* – from the chapter review cards

1. (LO 1 – Data, information, and knowledge)

Data include items such as sales invoices, purchase orders, customer lists, and inventory records. Data are facts and figures that have not been organised and transformed into information. Information is data that has been sorted, organised, processed, and summarised. Knowledge is information that is shared and exploited so that it adds value to an organisation.

2. (LO 2 – Managerial versus financial accounting)

The primary purpose of financial accounting is the preparation of general use financial statements for use by creditors, investors and other stakeholders outside the company. The primary purpose of managerial accounting is the generation of financial and non-financial information for use by managers in their decision-making roles within a company.

3. (LO 2 – Strategic and operational planning)

Operational planning involves the development of short-term objectives and goals. Strategic planning involves the development of long-range goals and objectives.

4. (LO 2 – Role of finance function)

The finance function is responsible for managing the financial resources of the organisation. Finance managers make decisions about how to raise capital as well as where and how it is invested.

5. (LO 3 – Role of the managerial accountant)

Advances in AISs and other changes (such as technology changes and the rapid pace of information transferral) in the past five or 10 years have resulted in the automation of traditional accounting functions involving data collection, data entry, and data reporting and a corresponding shifting of those functions from managerial accountants to clerical staff.

Consequently, many managerial accountants now focus on analysing information and creating knowledge from that information rather than collecting data.

6. (LO 3 – Sunk and opportunity costs)

Sunk costs are costs that have already been incurred. As a result, they cannot be avoided and are not relevant in decisions. Opportunity costs are benefits forgone by choosing one alternative over another and are relevant costs for decision-making purposes.

7. (LO 4 – Ethics)

As there is no one correct answer to this question, student responses will vary. You may wish to use this quote to initiate a group discussion about whether corporations have social responsibilities.

**Concept questions are found on the student review cards*

Exercises – from the end of the chapter

1. (LO 2 – Users of accounting information)

Note to instructors: Student responses will vary to this question. You may find that students will have difficulty identifying the types of information needed by these individuals and organisations because they lack experience with accounting. You may find that this question is useful as an in-class discussion exercise. Below are a few of the potential answers that students may provide.

- a. Financial statements, cash flow projections, sales projections, and budgets.
- b. Sales projections, financial statements, payroll analysis and related data, production budget, productivity data, and employment contracts for management.
- c. Production budget, labour budget, purchases budget, sales projection, and variance analysis (i.e., actual versus budgeted performance).
- d. Financial statements, management discussion and analysis, and filings made with the Australian Securities and Investment Commission by public companies.
- e. Production budget, sales projection, product cost reports, inventory reports, and shipping schedules.
- f. Financial statements, budgets, projections and analyses (e.g., sales, cash flow, market share, and inventory), variance analysis, and filings made with the Australian Securities and Investment Commission by public companies.

2. (LO 2 – Managerial versus financial accounting)

Managerial accounting

- Timeliness is critical
- Information is often less precise
- Future orientation
- Reports results by segments
- Highly customisable

Financial accounting

- Must follow AASB
- Focused on past performance
- Emphasises reporting on the whole company
- Information is often 'old'

3. (LO2 – Managerial versus financial accounting)

Interested in financial accounting information:

- Shareholders – to ensure profitability, liquidity, solvency
- Creditors – to observe liquidity and debt covenant adherence
- Regulators – company financial statement reporting
- Government - Tax reporting
- Analysts – Financial statements of the company
- Suppliers – cash flow position, to ensure propensity to pay on time
- Competitors - for benchmarking their own performance.

Interested in management accounting information:

- Managers – to better understand company budgets, operating and performance indicator information
- Employees – to work with performance targets, bonus plans and understand salary payment structures
- Creditors – budget cash flow projections to evidence debt repayment capacity
- Board of Directors – the budget position of Google.

4. (LO 2 – Types of business managers)

- a. Finance managers
- b. Marketing managers
- c. Human resource managers
- d. Operations/production managers

5. (LO2 – Types of business managers)

Production Manager's information needs:

1. Detailed production cost data
2. Employee efficiency ratios
3. Variance analyses
4. Budget target setting for factory costs (materials, labour and overheads)

Note: students will suggest a wide range of answers relating to financial numbers in a factory environment. These cost categorisations are acceptable and discussion should be encouraged where appropriate.

HR manager's information needs

1. HR spending budget
2. HR division targets
3. Variance analysis data for HR departmental staff

4. Training/Development expense information for the organisation

Note: students will suggest a wide range of answers relating to financial numbers in a HR division. These cost categorisations are acceptable and discussion should be encouraged where appropriate.

6. (LO 4 – Decision making and ethics)

Note to instructors: This question is loosely based on the facts surrounding the Ford Explorer/Firestone tyre rollover problems in 2000. As part of the discussion, you may want to discuss the role of risk in analysing and making decisions.

- a. Regardless of fault, Tall Grass Mowers (TGM) should immediately advise suppliers and consumers of the potential danger and try to either fix the problem or design a safeguard for the mower to protect users.
- b. Ideally, TGM should work hand in hand with the lawn mower manufacturer in order to pinpoint the problem and develop a solution.
- c. Stakeholders impacted include the customers who bought the mowers with the battery, retailers who sold the mowers to customers and the manufacturers of this mower. Both TGM and the lawn mower manufacturer have an ethical responsibility. TGM should alert the lawn mower manufacturer in an attempt to pinpoint the cause of the problem. Both companies should contact potential retailers and end consumers and immediately offer to replace the batteries (assuming that replacing the batteries with a different model fixes the problem). TGM could also pressure for a recall to be made, and testing to be done to see if it is actually their battery causing the problem.

Problems – from the end of the chapter

7. (LO 2 – Financial versus managerial accounting)

- a. Financial accounting is concerned with the preparation of general purpose financial statements used by external parties, while managerial accounting is concerned with generating financial and non-financial information used by internal parties.
- b. Each type of accounting exists to provide appropriate information to the relevant users. Not all individuals or organisations have the same information needs.
- c. Financial accounting information is primarily used by stockholders, creditors, and other external parties. Managerial accounting information is primarily used by managers and company employees.

You may also refer to the solution to Exercise question 2 from this chapter to succinctly appreciate the broad differences between management accounting and financial accounting.

8. (LO 3 – Decision making and relevant factors)

- a. The problem faced is basically one of choosing the 'best' flight. However, 'best' depends on a variety of individual factors, often qualitative, that will differ among students. For example, some students might prefer a fast flight irrespective of the quality of service, while others might prefer a longer flight if it offers better services.
- b. Although answers will vary, quantitative objectives might include purchasing the least expensive flight or purchasing a flight for less than a specific dollar value. Qualitative objectives might include making sure that you arrive on time, or other factors like having the greatest amount of leg room and in-flight amenities.
- c. Not all of the factors are relevant in choosing among flights. For example, since the cost of beverages is the same for flights 1, 2, and 3, it is not relevant in deciding among those flights. The costs of the other options are relevant since they differ between alternatives.

Qualitative factors include variables such as leg room, the probability of an on-time arrival, and access to in-flight amenities and food.

- d. The best choice will depend on the specific objectives identified by students. While flight 1 is certainly the cheapest, the number of connections and flight time are likely to increase the chances of a late arrival. If on-time arrival is a key objective, students might prefer flight 2 or flight 3. Finally, if you prefer speed of travel and maximum inclusions and don't mind paying a premium, you will choose flight 4.

9. (LO 3 and 4 – Decision making and ethics)

- a. Ken may identify the objectives of the dangers associated with the defective engine, including people getting hurt or killed and the legal risks and damage to the company reputation that such an accident would cause. The high cost of handling the problem, including a potential recall, is also an objective.
- b. Ken could notify his superiors of the problem with the seal and recommend that the company take immediate corrective action. Alternatively, Ken could choose to ignore the problem, noting that the seal is unlikely to leak, which would avoid costly remedial action.
- c. Knowing that the part may fail certainly requires the company to take some remedial action. At the very least, the company should inform the airplane manufacturers and the airlines that the problem exists. The company would then be in a position to work with these affected parties to share the cost of repairing or replacing the defective parts with non-defective ones.
- d. While cost is a consideration in most business decisions, the cost is not likely to be highly significant. The costs of a catastrophic event would be much greater to the company.

10. (LO3 – Considering costs in organisation decision making)

Factors that might have influenced Toyota's decision, includes:

- Cost of labour in Australia

- Level of government enthusiasm for supporting the market
- Profitability of Australian operations
- Opportunity costs – what else could Toyota be doing with the money put into this investment? Invest into manufacturing in another country?
- Opportunity cost – lost business in Australia or lower market share as Toyota is not a local producer anymore?
- Level of redundancy payments/closing costs required to terminate Toyota Australia manufacturing
- Lost jobs of local employees, many of whom have been employed in Toyota for many years.

This decision might have been ultimately financial in nature, but the non-financial aspects of the decision must have been considered as well.

Note: Students will identify a wide range of reasons, many outside those suggested above. These contributions should be encouraged.

11.(LO2 and LO4 – Ethics and the divide between financial and management accounting)

Financial accounting concerns the provision of predominantly compliance-based reporting of publically available numbers in many instances, to sources external to a firm. Management accounting refers to the internal generation of financial and non-financial information to sources predominantly inside a firm, e.g. the board of a firm, its management and employees.

The Clive Peeters fraud might be predominantly considered a management accounting and control failure. The problem has financial accounting ramifications, in that the pilfered amounts weaken the reported balance sheets and profit and loss statements, but the cause is managerial, in that there was a serious breakdown in the controls operating in Clive Peeters. The lack of segregation of duty, by giving one individual too much influence, drove the fraudulent behaviour. The perpetrator might have been discovered sooner, if there were additional layers of approval required prior to her cash transactions being actioned. Indirectly, we might possibly argue that the incentive system in Clive Peeters could have been structured better, so that she might have been more motivated to do the right thing in discharging her duties. Predominantly,

however, she must bear the majority of the responsibility for not discharging her tasks legally and ethically.

Note: Students will identify a wide range of reasons, many outside those suggested above. These contributions should be encouraged.

Cases – from end of chapter

12. (LO3 – Considering costs in organisation decision making)

A management accountant might be able to better identify how the Daily Grind might seek to remain profitable in business. This can be accomplished by:

- Better planning – Budget and planning systems, forecasts to better predict seasonal fluctuations in the local café market and therefore manage inventory holdings better, especially the food and beverage products that can have short lifespans. Management accountants might also provide better benchmarks against industry competitors and/or market leaders (e.g. Starbucks, Gloria Jeans, etc?).
- Better control – Provide targets for employees to attempt to attain, boosting their performance. Also, designing reward systems that do not cause employees to lower efforts once they reach their target, but continually strive to do better. For example, management accountants might identify more profitable coffee blends, or sizes, and provide management direction on beverages that they might incentivise staff to sell, as these beverages are higher margin.
- Better performance evaluation – Increasing the quality of evaluation and feedback when analysing performance, learning from performance measures that did/did not incentivise staff and changing the incentive reporting system in future periods where appropriate.

Management accountants can also supply non-financial performance information as part of an internal financial analysis. For example, customer satisfaction scores of café patrons, the effectiveness of training expenditures for baristas or

waiting staff, etc. These are all examples of information that management accountants might be able to supply to Daily Grind Café management.

Note: Students will identify a wide range of reasons, many outside those suggested above. These contributions should be encouraged and factored into a rich discussion.

13. (LO2 and LO4 – Ethics and the divide between financial and management accounting)

A management accountant can play an important role in shaping cost-benefit considerations in organisations. In BP, the likelihood of a devastating oil spill is very low, but mathematically probable. How much might BP be willing to outlay to seal and secure the underwater well even more securely than they had?

Management accountants can help organisations better understand the internal costs required to lower risk to nil/negligible levels.

Hypothetically, management accounting performance measures might be implicated in the actions/behaviours of managers. Is it possible that a better designed set of performance incentives might have caused BP management to adopt a more conservative stance to their prevention and monitoring activities for leaks? If performance metrics do not incentivise and reward tight preventive and monitoring activities, then management might be tempted to risk lowering them at the expense of an increase in the risk that substantial failure costs might arise.

Management accountants might be able to identify the true of costs of the spill, including plugging the leak, the clean-up, and compensation/regulatory costs. Management accountants are ideally equipped to cost real world phenomena, constructing budgets that help organisations to better understand the true cost of events, both financially and non-financially.

Note: This question is intended to be an open one, inviting much participation and contributions by students. These should be encouraged and factored into a rich discussion where possible.

Chapter 2

Product costing: Manufacturing processes, cost terminology and cost flows

Introduction

Chapter 2 begins with a description of the production process for both traditional manufacturing companies with inventory and manufacturing companies with little or no inventory. The chapter also provides an introduction to basic cost terminology applicable to manufacturing companies, merchandising companies, and service providers and concludes with a description of cost flows in each type of company. The chapter also discusses the impact of product and period costs on a company's income statement and balance sheet.

Key concepts

- Production processes require the combination of raw materials, labour and other items, such as electricity and supplies, to create finished goods
- Lean production and just-in-time (JIT) provide many benefits, including improved production quality and reduced processing time
- Manufacturing costs are incurred in the production facility, whereas non-manufacturing costs are incurred elsewhere in the company, such as in the marketing department
- Costs flow the same way that products flow through a production facility

- Product costs attach to the product and are expensed only when the product is sold, whereas period costs are expensed in the period in which they are incurred

Learning objectives

- LO1** – Describe basic production processes used by manufacturing companies.
- LO2** – Identify the key characteristics and benefits of lean production and JIT manufacturing.
- LO3** – Distinguish manufacturing costs from non-manufacturing costs and classify manufacturing costs as direct materials, direct labour or overhead.
- LO4** – Diagram the flow of costs in manufacturing, merchandising and service companies and calculate the cost of goods manufactured or selling goods and services.
- LO5** – Evaluate the impact of product costs and period costs on a company's income statement and balance sheet.

Lecture outline

A. Introduction

1. Costs are associated with the products and services produced and sold in all companies.
2. Manufacturing companies purchase raw materials from other companies and transform those raw materials into a finished product.
3. Merchandising companies sell products that someone else has manufactured.
4. Service companies do not sell a tangible product as their primary business.
5. There are many different reasons why it is very important to determine the cost of a product or service.

B. The production process (LO1)

1. The production process converts raw material into finished products. This process may be relatively simple or very complex. It could be primarily labour-based or machine-based. A company could choose to manufacture large quantities of goods at once or wait until a customer has ordered a product to produce it.

Key concept

Production processes require the combination of raw materials, labour and other items, such as electricity and supplies, to create finished goods.

2. Manufacturing in a traditional environment
 - a. In a traditional system, inventories are accumulated to serve as buffers in case of unexpected demand.
 - b. There are three different types of inventories: Raw materials inventory, work in process inventory (or WIP), and finished goods inventory.
 - c. The traditional system 'pushes' the products through the system.

C. Lean production and manufacturing in a JIT environment (LO2)

1. JIT (just-in-time) systems secure raw material and provide finished product when needed or just in time for production or sale.
2. JIT systems 'pull' the product through the system as opposed to pushing it through.
3. JIT systems reduce costs and increase efficiency.

Key concept

Lean production and JIT provide many benefits, including improved production quality and reduced processing time.

Making it real

Trico Australia

Making it real

How much is enough when disaster strikes?

D. Product costs in a manufacturing company (LO3)

1. Direct materials: Materials that can be directly and conveniently traced to a particular product or other cost object and that becomes an integral part of the finished product.
2. Direct labour: The labour cost (including fringe benefits) of all production employees who work directly on the product being made or service being provided.
3. Manufacturing overhead: All costs incurred in the factory that are not properly classified as direct material or direct labour. Overhead includes utilities, depreciation, rent, repairs and maintenance, insurance, and so on. Manufacturing overhead also includes indirect materials and indirect labour.
4. Non-manufacturing costs
 - a. These costs are incurred outside the plant or factory and typically are categorised as selling and administrative costs.
 - b. Examples include salaries of accounting personnel, salesperson commissions, advertising and depreciation on a copier used by personnel.
 - c. Non-manufacturing costs are called period costs.

Key concept

Manufacturing costs are incurred in the production facility, whereas non-manufacturing costs are incurred elsewhere in the company, such as in the marketing department.

E. Cost flows in a manufacturing company – traditional environment with inventory (LO4)

1. Storeroom to factory to finished goods to the customer.
2. Raw material to work in process to finished goods to cost of goods sold.
3. The Cost of goods sold model for a traditional manufacturing company with inventory

F. Cost flows in a manufacturing company – JIT environment

1. The physical flow of goods is streamlined by the use of manufacturing cells. The cost flow would be streamlined as well.

G. Merchandising companies and the cost of products

1. The product cost in this environment is just the purchase price of the goods to be sold. There is no WIP inventory. The sole inventory account is typically called merchandise inventory.

H. Service companies and the cost of service

1. The cost of services includes three components (direct material, direct labour and overhead).

Key concept

Manufacturing costs are incurred in the production facility, whereas non-manufacturing costs are incurred elsewhere in the company, such as in the marketing department.

2. Service companies will have very little direct material (although they can have some) but large amounts of direct labour and overhead.
- I. Product costs and period costs (LO5)
1. Product costs are also called inventoriable costs. These costs flow through the work in process inventory account and then are moved to the finished goods inventory account.
 2. Product costs remain with the product until sold, which means they are included in inventory until that time. Then these costs become expenses.
 3. Period costs are expensed in the period incurred and are not included in inventory.

Key concept

Costs flow the same way that products flow through a production facility.

Key concept

Product costs attach to the product and are expensed only when the product is sold, whereas period costs are expensed in the period in which they are incurred.

End-of-chapter material: The following *concept questions*, *exercise questions* and *problem question* solutions relate to content from the end of this chapter and from the chapter review card. They help students affirm their understanding of the concepts studied in the chapter.

Concept questions – from the chapter review cards

1. (LO1 – Inventory accounts – raw materials, WIP and finished goods)

Raw materials inventory is the inventory of materials needed for the manufacturing process but not yet put into production. Work-in-process inventory is the inventory of unfinished (partially finished) products. Finished goods inventory is the inventory of goods that have been completed and are waiting to be sold.

2. (LO1 and 2 – Comparison of traditional manufacturing environment and JIT)

JIT systems are called pull systems because they start with the customer order and products are pulled through the manufacturing process. In contrast, traditional systems are called push systems because raw materials, work in process and finished goods are pushed through the manufacturing process regardless of whether a customer has been identified for the finished product.

3. (LO2 – Description of JIT system)

A JIT system is one in which a customer order starts the manufacturing process and raw materials are purchased just in time to be used in production and goods are completed just in time to be shipped to customers.

4. (LO2 – JIT and lean production benefits)

Advantages of JIT and lean production manufacturing are likely to include:

1. A reduction in waste and scrap.
2. Improving the quality of products.
3. Lower overall production costs (although the costs of raw materials may increase in some cases).
4. Lower labour costs.
5. Inventory reduction.
6. Reduced processing time.
7. Increased manufacturing flexibility.

5. (LO2 – Applying lean production to a service company)

A bank might apply lean production techniques in an effort to reduce the time that customers wait in line to make deposits or conduct other business with a bank teller. This might include changing the process for counting money and cheques and reconfiguring the work space so that

tellers and other bank personnel can work more efficiently. Banks might also apply lean production techniques in an effort to reduce the amount of time it takes for customers to complete loan applications and for loans to be approved. This might include allowing customers to complete application forms online and streamlining the approval process to reduce the time from application to approval.

6. (LO 3 – Direct versus indirect costs)

Direct costs such as direct materials and direct labour can be directly and conveniently traced to a particular product or cost object and become an integral part of the finished product. Indirect costs such as indirect materials and indirect labour, while required in the manufacture of a product or provision of a service, cannot be conveniently and easily traced to the product or cost object.

7. (LO 3 – Manufacturing costs)

The three components of manufacturing costs are direct materials, direct labour and manufacturing overhead. Manufacturing overhead includes indirect materials used in the manufacturing process, indirect labour, and other costs associated with manufacturing a product, including but not limited to repairs and maintenance, supplies, utilities, rent, and items such as insurance, taxes, and depreciation on the manufacturing plant and equipment.

8. (LO 3 – Non-manufacturing costs)

Non-manufacturing costs include all costs incurred outside the factory and are categorised as selling and administrative costs. Non-manufacturing costs are also called period costs. Students should note that the same types of costs classified as manufacturing costs can be classified as non-manufacturing costs. For example, repairs and maintenance, supplies, utilities, rent, insurance, taxes and depreciation incurred outside the factory or plant would be classified as non-manufacturing costs.

9. (LO 4 – Cost flows in a manufacturing environment)

Manufacturing costs (i.e., direct materials, direct labour and manufacturing overhead) are combined in the production process in such a way as to become work-in-process inventory. After the production process is

completed the work-in-process inventory is transformed into finished goods inventory and is available to be sold to customers. Upon sale, the cost of finished goods inventory becomes part of the cost of goods sold for the period.

10.(LO 5 – Cost versus expense)

Although often used interchangeably, cost and expense are not synonymous terms. Costs can be classified in a number of ways including manufacturing (product costs) or non-manufacturing (period costs). Costs are incurred anytime resources are used up in providing goods and services. For example, direct material and direct labour costs are incurred when cash is spent to purchase materials or hire workers. On the other hand, expenses can be thought of as expired or used up costs. As you will recall, product costs are only expensed (as cost of goods sold) when the product is sold. On the other hand, period costs are expensed in the period in which they are incurred.

11.(LO 5 – Product vs period costs)

Manufacturing costs are called product costs because they attach to the product and are only expensed when the product is sold. Non-manufacturing costs are called period costs because they are expensed in the period in which they are incurred.

12.(LO 5 – The need for product costing)

Companies need to determine accurate product costs in order to determine if products should be produced and if so, what price should be charged for those products. Costing information is also used to help determine how much of a product to make and in forecasting cash disbursements.

Exercises – from the end of the chapter

1. (LO2 – JIT and lean production)

- a. decrease
- b. decreases
- c. increases
- d. increase
- e. decreases
- f. increases
- g. decreases

2. (LO2 – Features of lean production)

- a. True
- b. False
- c. False
- d. True
- e. True

3. (LO 3 – Product costs)

- a. Total product costs are \$90 000 and include direct materials used of \$41 000, direct labour of \$28 000, factory rent of \$12 000, and factory depreciation of \$9000.
- b. The product cost per unit is \$2.00 (\$90 000/45 000 units).

4. (LO 3 – Product costs)

- a. The cost of direct labour for each desk is \$60 (4 direct labour hours per desk × \$15 per hour).
- b. The total overhead costs were \$2620 and included factory rent, indirect materials and indirect labour.
- c. The total product costs were \$41 620 consisting of:

Direct material (500 units × \$18 per unit)	\$ 9000
Direct labour (500 units × \$60 per unit)	30 000
Manufacturing overhead	<u>2620</u>
Total product costs	<u>\$41 620</u>

5. (LO 3 – Types of manufacturing costs)

- a. IL
- b. DM
- c. IL
- d. MOH
- e. IL
- f. DL
- g. IM

6. (LO4 – Cost flows: Raw materials used)

Beginning raw materials inventory	\$ 25 000
Plus: Raw materials purchased	+120 000
Less: Ending raw materials inventory	<u>– 32 000</u>
Raw materials used in production	<u><u>\$113 000</u></u>

7. (LO4 – Cost flows: Raw materials used)

Beginning raw materials inventory	\$ 23 000
Plus: Raw materials purchased	<u>84 000</u>
Less: Ending raw materials inventory	<u>– 27 000</u>
Raw materials used in production	<u><u>\$80 000</u></u>

8. (LO4 – Cost of goods manufactured)

The cost of goods manufactured is:

Beginning inventory of work in process	\$ 25 000
Plus: Raw materials used in production	95 000 **
Plus: Direct labour	30 000
Plus: Manufacturing overhead	<u>50 000</u>
Subtotal	\$200 000
Less: Ending work in process	<u>(15 000)</u>
Cost of goods manufactured	<u><u>\$185 000</u></u>

** Calculation of raw materials used in production:

Beginning inventory of raw materials	\$ 40 000
Plus: Raw materials purchased	<u>75 000</u>
Raw material available for use	\$115 000
Less: Ending inventory of raw materials	<u>(20 000)</u>
Raw materials used in production	<u><u>\$ 95 000</u></u>

9. (LO 4 – Cost of goods sold)

The manufacturing cost per unit is \$2.38 calculated as follows:

$$[(24\,000 + 22\,000 + 6\,000 + 7\,500)/25\,000 \text{ units produced}] = \$2.38$$

Therefore, cost of goods sold is \$57 120 (24 000 units sold $\times$ \$2.38)

10.(LO 5 – Calculation of net income)

The corrected income statement is as follows:

Sales (55 000 units $\times$ \$11 per unit)	\$605 000
Less: Cost of goods sold (55 000 units $\times$ \$7 per unit)	<u>385 000</u>
Gross profit	\$220 000
Less: Selling and administrative expenses	<u>75 000</u>
Net income	<u>\$145 000</u>

11.(LO 5 – Calculation of net income)

Sales (5300 units $\times$ \$25 per unit)	\$132 500
Less: Cost of goods sold	
(\$128 000/8000 = \$16 per unit $\times$ 5300)	<u>84 800</u>
Gross profit	\$ 47 700
Less: Marketing and administrative expenses	<u>(18 900)</u>
Net income	<u>\$ 28 800</u>

12. (LO 5 – Calculation of net income)

Break 'Em Plates manufactures plates for breaking in wedding celebrations. In the first month of the year, the following costs were incurred:

Direct materials used	\$40 000
Direct labour	20 000
Factory rent	25 000
Factory equipment depreciation	10 000
Sales manager car depreciation	5 000
Marketing expenses	6 000
Administrative expenses	10 000

The company began the year with no work in process and no finished goods inventory. Although 9000 units were started and finished during the month, just 6000 were sold, for an average price of \$30 each.

Sales Revenue (6 000 plates * \$30)	\$180 000
Less Cost of Goods Sold (\$95 000/9 000 plates) * 6 000	<u>(\$63 333)</u>
Gross Profit	<u>\$116 667</u>
Less Sales, marketing & admin expenses	<u>(\$21 000)</u>
Net income	<u><u>\$42 333</u></u>

Problems – from the end of the chapter

13. (LO 3, 4, and 5 – Cost of goods manufactured, cost of goods sold and impact on financial statements)

- a. The cost of goods manufactured is \$305 000, as shown below.

Beginning inventory of work in process	\$ 20 000
Plus: Raw materials used in production	118 000 ¹
Plus: Direct labour	75 000
Plus: Manufacturing overhead	123 000 ²
Less: Ending work in process	<u>(31 000)</u>
Cost of goods manufactured	<u><u>\$305 000</u></u>

¹Raw Materials Used in Production

Beginning inventory of raw materials	\$ 10 000
Plus: Raw materials purchased	<u>125 000</u>
Raw material available for use	\$135 000
Less: Ending inventory of raw materials	<u>17 000</u>
Raw materials used in production	<u><u>\$118 000</u></u>

²Manufacturing Overhead

Indirect labour	\$ 40 000
Equipment maintenance	10 000
Factory insurance	12 000
Factory rent	30 000
Factory depreciation	20 000
Factory supplies	<u>11 000</u>
Total manufacturing overhead	<u><u>\$123 000</u></u>

- b. The cost of goods sold is equal to \$310 000, as calculated below.

Cost of goods sold equals:

Beginning finished goods inventory	\$ 30 000
Plus: Cost of goods manufactured	305 000
Less: Ending finished goods inventory	<u>(25 000)</u>
Cost of goods sold	<u><u>\$310 000</u></u>

- c. Advertising, selling, and administrative expenses are period or non-manufacturing costs. Therefore, they are excluded from the calculations of cost of goods manufactured and cost of goods sold.
- d. If raw materials and work-in-process inventories had decreased during the year, then the financial statements would be different. A decrease in the raw materials inventory would mean that more materials had been used than previously calculated. More materials used means higher total manufacturing costs for the period and ultimately higher cost of

goods sold. A decrease in work-in-process inventory would increase the cost of goods manufactured and cost of goods sold as well.

14. (LO 3, 4, and 5 – Direct vs indirect costs, impact on financial statements)

- a. Wood and springs would be direct materials while glue and stain are indirect materials. An argument could be made that the springs are also indirect materials.
- b. The finished goods inventory balance at the end of June is \$11 600 calculated as follows:

The cost of materials for 500 chairs is transferred from raw materials inventory to work in process:

Total material costs in WIP:

Springs [(\$15 000/1500 springs) × 2 springs per chair × 500 chairs]	\$10 000
Glue	1500
Stain	500
Wood (\$5000/1000 × 500 chairs)	<u>2500</u>
Total material costs	<u>\$14 500</u>

Eighty per cent of the chairs are finished (400/500) and their cost is transferred out of work in process and into finished goods.

$\$14\,500 \times 0.80 = \$11\,600$ transferred from work in process to finished goods. The cost of each finished chair is \$29 (\$11 600/400 chairs).

As chairs are sold, the cost of those chairs is transferred to cost of goods sold.

- c. If 380 of the chairs are sold, the cost of goods sold is \$11 020 (\$29 × 380 chairs).

- d. Balance in 30 June Work in process:

Beginning inventory, 1 June	\$ 0
Add: Total manufacturing costs	14 500
Less: Cost of goods manufactured	<u>(11 600)</u>
Ending inventory, 30 June	<u>\$ 2900</u>

15.(LO 4 and 5 – Basic cost flows, income statement)

a. Company #1

Direct materials used	\$ 9000
Direct labour	4000
Manufacturing	<u>11 000</u>
Total manufacturing costs	<u>\$24 000</u>

Beginning WIP + TMC – Ending WIP = Cost of goods manufactured

Let x = Beginning work in process:

$$x + \$24\,000 - \$6000 = \$21\,000$$

$$x + \$18\,000 = \$21\,000$$

$$x = \$3000$$

Beginning FG Inventory + CGM = Goods available for sale:

$$\$7000 + \$21\,000 = \$28\,000$$

Goods available for sale – Ending FG inventory = CGS

$$\$28\,000 - \$10\,000 = \$18\,000$$

Sales – Cost of Goods Sold = Gross margin

$$\$35\,000 - \$18\,000 = \$17\,000$$

Gross margin – Operating expense = Net income

$$\$17\,000 - \$7000 = \$10\,000$$

Company #2

DM + DL + MOH = TMC

Let x = Manufacturing overhead:

$$\$19\,000 + \$14\,000 + x = \$35\,000$$

$$\$33\,000 + x = \$35\,000$$

$$x = \$2000$$

CGM = Beginning WIP + Total Manufacturing Costs – Ending WIP

Let x = Cost of Goods Manufactured (CGM)

$$x = \$11\,000 + \$35\,000 - \$13\,500$$

$$x = \$32\,500$$

Ending FG Inventory = Beginning FG Inventory + CGM – CGS

Let x = Beginning Finished Goods Inventory

$$\$14\,000 = x + \$32\,500 - \$25\,500$$

$$x = \$7\,000$$

Goods Available for Sale = Beginning FG Inventory + CGM

$$\text{Goods Available for Sale} = \$7\,000 + \$32\,500$$

$$\text{Goods Available for Sale} = \$39\,500$$

Gross Margin = Sales – Cost of goods sold

$$\text{Gross Margin} = \$50\,000 - \$25\,500$$

$$\text{Gross Margin} = \$24\,500$$

Net Income = Gross Margin – Operating Expenses

$$\$15\,500 = \$24\,500 - \text{Operating Expenses}$$

$$\text{Operating Expenses} = \$9\,000$$

b. Company #1

Company #1

Income Statement

For the Period Ended 31 December

Sales	\$35 000
Less: Cost of goods sold	<u>18 000</u>
Gross Margin	\$17 000
Less: Operating expenses	<u>7000</u>
Net income	<u>\$10 000</u>

Company #2

Company #2

Income Statement

For the Period Ended 31 December

Sales	\$50 000
Less: Cost of goods sold	<u>25 500</u>
Gross Margin	\$24 500
Less: Operating expenses	<u>9000</u>
Net income	<u>\$15 500</u>

16. (LO 4 and 5 – Basic cost flows)

Home Cabinets manufactures and sells custom-ordered kitchen and bathroom cabinets. The company sells primarily to building contractors but occasionally deals directly with homeowners. Following is a summary of inventory and cost information for the year:

	Beginning Balance	Ending Balance
Raw materials inventory	\$10,000	\$15,000
Work in process inventory	15,000	12,000
Finished goods inventory	30,000	32,000

During the year, raw material purchases totalled \$350,000. Home Cabinets incurred \$200,000 in direct labour costs in the factory and \$175,000 in manufacturing overhead for the year.

- a. Calculate the amount of direct materials transferred to work in process during the year.

$$\begin{aligned} \text{Beg RM} + \text{RM purchased} - \text{End RM} &= \text{RM transferred to WIP} \\ \$10\,000 + \$350\,000 - \$15\,000 &= \boxed{\$345\,000} \end{aligned}$$

- b. Calculate total manufacturing costs for the year.

$$\begin{aligned} \text{Total manufacturing costs for the year (TMC):} \\ \text{DM } \$345\,000 + \text{DL } \$200\,000 + \text{OH } \$175\,000 &= \boxed{\$720\,000} \end{aligned}$$

- c. Calculate the total cost of goods manufactured for the year.

$$\begin{aligned} \text{Total cost of goods manufactured (COGM):} \\ \text{Beg WIP} + \text{TMC} - \text{COGM} &= \text{End WIP} \\ \$15\,000 + \$720\,000 - \text{COGM} &= \$12\,000 \\ \text{COGM} &= \boxed{\$723\,000} \end{aligned}$$

- d. Calculate the cost of goods sold for the year.

$$\begin{aligned} \text{Cost Of goods sold (COGS):} \\ \text{Beg FG} + \text{COGM} - \text{COGS} &= \text{END FG} \\ \$30\,000 + \$723\,000 - \text{COGS} &= \$32\,000 \\ \text{COGS} &= \boxed{\$721\,000} \end{aligned}$$

Cases – from end of chapter

17. (LO3 and 4 and 5 – Direct vs indirect costs, impact on financial statements)

Please read the Daily Grind Café case study, and identify the materials, labour and overhead costs in this case. How might an understanding of these costs aid your management of the business?

18. (LO3 and 4 and 5 – Cost of goods manufactured, cost of goods sold and impact on financial statements)

Tyler Manufacturing provides you with the following information:

Opening Inventories as at 1 June, 2014 for Work in process Inventory was \$9,000, and Opening Finished Goods inventory was \$11,000.

During June, the following transactions occurred:

(a) Purchases of materials: \$17,000

(b) Materials used:

Direct \$15,000

Indirect \$5000 \$20,000

(c) Factory Payroll Incurred

Direct labour – 6000 hours at \$15 per hour \$90,000

Indirect labour \$5,400

(d) Other factory overhead incurred during June amounted to \$16,200

(e) Overhead is applied to production at the rate of \$5.00 per direct labour hour.

(f) The closing balances of inventory accounts were as follows:

Work in Process \$13,000

Finished Goods \$22,000

(g) All goods are sold at a mark-up on cost of 60 per cent.

Prepare a Manufacturing Statement, Cost of Goods Sold Statement and Income Statement for the month of June.

Manufacturing Statement

RM used#	\$15 000
DL incurred	\$90 000
OH applied (6 000 hrs * \$5)	\$30 000
Total manufacturing cost this period	<u>\$135 000</u>
+ Beg WIP	\$9 000
End WIP	(\$13 000)
COGM	<u>\$131 000</u>

#Note: RM used = Beg RM + RM purchased – End RM

Cost of Goods Sold Statement

Beg Finished Goods	\$11 000
+ COGM	\$131 000
= Cost of Goods Avail. For Sale	\$142 000
End Finished Goods	(\$22 000)
Unadjusted COGS	\$120 000

Overhead adjustment

Applied Overhead (\$30 000, from COGM statement)	
Actual Overhead \$26 400	
Overhead overapplied by \$3600	
Adjusted COGS (\$120 000 -3 600)	\$116 400

Income Statement

Sales Revenue (1.6 * unadjusted COGS)	\$192 000
COGS	<u>(\$116 400)</u>
Gross Profit	\$75 600
Selling, General & Admin Expenses	\$0
Net Profit	<u>\$75 600</u>

Enrichment modules: Exercises and problems

Exercises

Module.Ex02.01 Direct and indirect labour LO3

Comfort Quilts manufactures decorative quilts and incurred the following wage and salary expenses for the most recent year.

Machine operators	\$100 000
Quality control supervisors	50 000
Fabric cutters	25 000
Factory janitor	8000
Company president	100 000

Required

Determine the amount of direct labour incurred during the year.

Module.Ex02.02 Raw material used LO3

Fun Central produces a variety of popular board games. The company has decided to strategically position itself in the industry with unique handcrafted game boards and game pieces. The company's controller has accumulated the following data regarding raw materials used in production.

Pounds of laminated corrugated material purchased	15 000
Board games produced	10 000
Average pounds of laminated corrugated material per board	0.80
Average cost per pound of laminated corrugated material	\$ 1.24
Board games sold during the period	7850

Required

Assuming the company did not have any laminated corrugated board at the beginning of the period, calculate the amount of raw material cost that is included in product cost for the period.

Module.Ex02.03 Manufacturing vs non-manufacturing costs LO3

The following costs were incurred by a manufacturer of breakfast cereals.

- a. Heat, water, and power used in the factory
- b. Cost of repairing mixing machines and ovens
- c. Wheat, sweetener, and colouring used in production
- d. Lease payments for salespersons' company cars
- e. Wax paper used to package cereals
- f. Cardboard boxes used to ship packaged cereals to grocery stores
- g. Overtime paid to office employees.

Required

Indicate whether each of the above costs is a manufacturing cost or a non-manufacturing cost.

Module.Ex02.04 Basic cost flows: Raw materials used LO4

At the beginning of the month, Chateo Inc. had raw materials of \$54 000. During the month, the company purchased an additional \$38 000 of raw materials. If the company used \$63 000 of the raw materials for the month's production needs, what is the company's ending raw materials inventory balance?

Module.Ex02.05 Basic cost flows: Raw materials used LO4

BMV Automotive Manufacturers had the following information available for the month of January related to their current production of sports cars.

	Beginning	Ending
Raw materials inventory	\$20 000	\$37 000
Work in process inventory	55 000	80 000
Finished goods inventory	10 000	3000

During the month of January, BMV purchased \$140 000 of raw materials.
How much raw material was used in January?

Module.Ex02.06 Cost of goods manufactured LO4

Shelly's Bakery had the following information available for the month of January:

	Beginning	Ending
Raw materials inventory	\$30 000	\$20 000
Work in process inventory	20 000	15 000
Finished goods inventory	15 000	20 000
Raw materials purchased	80 000	
Direct labour (2500 hrs @ \$12)	30 000	
Overhead	60 000	

Required

Calculate the cost of goods manufactured for the month.

Module.Ex02.07 Cost of goods sold LO4

Bell Computers, which produces made-to-order laptops, had the following summary cost information:

Direct materials used	\$18 000
Direct labour	21 000
Factory rent	5000
Equipment depreciation	7500
Marketing expense	12 000
Administrative expense	16 000
Shipping charges	4500
Number of units produced	20 000

Required

Calculate the cost of goods sold if 18 000 units are sold.

Module.Ex02.08 Cost of goods sold and merchandise available for sale in a merchandising company LO4

Dash Department Store features women's fashions. At the beginning of the year, the store had \$514 000 in merchandise. Total purchases for the year were \$463 000.

Required

- Calculate cost of goods sold for the year, assuming the year-end inventory was \$488 000.
- What was the total amount of merchandise available for sale during the year?

Module.Ex02.09 Cost of goods sold and sales for a merchandising company LO4

Roy's Selection is a local men's clothing store. Roy's buys clothing and accessories from manufacturers and marks them up by 55 per cent. Roy's began the year with \$155 000 worth of items (\$240 250 retail value) and