



C9: Accounting and Finance Course

Module 1

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Acknowledgements

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About this course manual

How this course manual is structured

The course overview

The course overview gives you a general introduction to the course. Information contained in the course overview will help you determine:

- If the course is suitable for you
- What you will already need to know
- What you can expect from the course
- How much time you will need to invest to complete the course.

The overview also provides guidance on:

- Study skills
- Where to get help
- Course assignments and assessments
- Activity icons
- Units.

We strongly recommend that you read the overview *carefully* before starting your study.

The course content

The course consists of eight modules. Each module is broken down into units. Each unit comprises:

- An introduction to the unit content
- Unit outcomes
- New terminology
- Core content of the unit with a variety of learning activities
- A unit summary
- Assignments, as applicable.



Your comments

After completing the **C9: Accounting and Finance** Course, we would appreciate it if you would take a few moments to give us your feedback on any aspect. Your feedback might include comments on:

- Course content and structure
- Course reading materials and resources
- Course assignments
- Course assessments
- Course duration
- Course support (assigned tutors, technical help, and so on)

Your constructive feedback will help us to improve and enhance this course.



Course overview

Welcome to C9: Accounting and Finance Course

This course is designed for a management-oriented student, rather than a specialist in accounting. Although financial accounting, management accounting and finance can be seen as disciplines in their own right, it is difficult to undertake one without a rounded understanding of the other two. Therefore, a governing assumption is that the student will have undertaken the Financial Accounting pre-requisite course or otherwise have acquired grounding in financial accounting. This course will concentrate on management accounting and financial management.

The financial crisis of 2008 has raised a strong debate around the adequacy of corporate governance and ethical business practice. Although the student will be exposed to established techniques and tools for decision-making, there is a need to encourage an ethical approach to determining the strategic thrust of organisations. Hand-in-hand with this is the need to identify the determinants of an organisation's value and the associated risks such that the interests of all its stakeholders are recognised.

The management accounting will be addressed in the first half of the course and will teach understanding and skills in using data to produce decision-useful information for determining the likely profitability of a business undertaking or aspects thereof. The purpose is to prepare the student to conduct and take responsibility for strategic decisions. The second half of the course will focus on financial management and teach understanding and skills essential for the formation and monitoring of policy and practice that optimises the financial governance of an organisation. Throughout the course the student will be given opportunities to reflect on real-life situations and critique the subject matter.

It is intended that this course will provide students in the CEMBA/MPA with a solid understanding of management accounting and financial management. However, it is assumed that students seeking a detailed study of corporate finance will advance to the module E10 Corporate Finance.



C9: Accounting and Finance Course — is this course for you?

This course is intended for people who have sufficient knowledge in financial accounting with a pre-requisite or supplementary course before attempting to study the CEMBA/MPA course C9: Accounting and Finance Course.

Students should therefore be familiar with financial accounting theory and terminology and be able to interpret and analyse financial reports.

Course outcomes

Upon completion of C9: Accounting and Finance Course, you will be able to:



Outcomes

- *Demonstrate* knowledge and understanding of the role and applications of management accounting and their contribution to good governance.
- *Demonstrate* knowledge and understanding of the planning and control processes in management accounting and their contribution to strategic decision-making.
- *Demonstrate* knowledge and understanding of the management of resources with specific regard to budgeting and capital investment for planning and production decisions.
- *Demonstrate* knowledge and application of performance measurement with particular reference to setting strategic targets in a multinational corporate setting.
- *Demonstrate* knowledge and understanding of the need for financial management and its impact on the corporation, together with the ability to perform common financial and investment calculations.
- *Demonstrate* knowledge and application of securities for the strategic funding of corporate activities and the valuation thereof.
- *Demonstrate* knowledge and application of alternatives and techniques for the management of capital, and awareness of foreign exchange implications in a multinational setting.

Timeframe



How long?

This course will take you approximately 120 hours of study time.

[How much formal study time is required?]

[How much self-study time is expected/recommended?]



Study skills



Study skills

As an adult learner your approach to learning will be different from that of your school days: you will choose what you want to study, you will have professional and/or personal motivation for doing so and you will most likely be fitting your study activities around other professional or domestic responsibilities.

Essentially, you will be taking control of your learning environment. As a consequence, you will need to consider performance issues related to time management, goal setting, stress management, and so on. Perhaps you will also need to reacquaint yourself with areas such as essay planning, coping with exams and using the Web as a learning resource.

Your most significant considerations will be *time* and *space* — that is, the time you dedicate to your learning and the environment in which you engage in that learning.

We recommend that you take time now – before starting your self-study – to familiarise yourself with these issues. There are a number of excellent resources on the Web. A few suggested websites are:

- <http://www.how-to-study.com/>

The “How to study” web site is dedicated to study skills resources. You will find links to study preparation (a list of nine essentials for a good study place), taking notes, strategies for reading text books, using reference sources, test anxiety.

- <http://www.ucc.vt.edu/stdyhelp.html>

This is the web site of the Virginia Tech, Division of Student Affairs. Under “Cook Counselling Center” you will find links to time scheduling (including a “where does time go?” link), a study skill checklist, basic concentration techniques, control of the study environment, note taking, how to read essays for analysis, memory skills (“remembering”).

- <http://www.howtostudy.org/resources.php>

Another “How to study” web site with useful links to time management, efficient reading, questioning/listening/observing skills, getting the most out of doing (“hands-on” learning), memory building, tips for staying motivated, developing a learning plan.

The above links are our suggestions to start you on your way. At the time of writing, these Web links were active. If you want to look for more, go to www.google.com and type “self-study basics”, “self-study tips”, “self-study skills” or similar.

Need help?



Help

Is there a course web site address?

What is the course instructor's name? Where can s/he be located (office location and hours, telephone/fax number, e-mail address)?

Is there a teaching assistant for routine enquiries? Where can s/he be located (office location and hours, telephone/fax number, e-mail address)?

Is there a librarian/research assistant available? Where can s/he be located (office location and hours, telephone/fax number, e-mail address)?

Is there a learners' resource centre? Where is it located? What are the opening hours, telephone number, who is the resource centre manager, what is the manager's e-mail address)?

Who do learners contact for technical issues (computer problems, website access, etc.)

Assignments



Assignments

There are two assignments that you must complete for this course.

Assignment 1

Due date:	XX/XX/XXXX
Value:	25%
Format:	Eight assignment questions
Modules covered:	Modules 1–4

Assignment 2

Due date:	XX/XX/XXXX
Value:	25%
Format:	Essay (3000-3500 words)
Modules covered:	Modules 5–7



Assessments



Assessments

Date:	XX/XX/XXXX
Value:	50%
Format:	3 hours, closed book
Blocks covered:	All

Activities



Activities
















There are many activities that can help you review and apply what you learn. The answers to the activities are at the end of each module.

Getting around this course manual

Margin icons

While working through this course manual you will notice the frequent use of margin icons. These icons serve to “signpost” a particular piece of text, a new task or change in activity; they have been included to help you to find your way around this

A complete icon set is shown below. We suggest that you familiarise yourself with the icons and their meaning before starting your study.

			
Activity	Assessment	Assignment	Case study
			
Discussion	Terminology	Help	Note it!
			
Outcomes	Reading	Reflection	Study skills
			
Summary	How long?	Tip	



Module 1

Welcome to Module 1

This module introduces the purpose of management accounting, the goals of the organisation and the role of management accounting in good corporate governance. In addition the module identifies cost behaviour and how this is applied to absorption and variable costing and finally there is an introduction to the principles of activity-based costing (ABC).

Upon completion of this module you will be able to:



Outcomes

- *Understand* the role of management accounting and how this fits with the goals of the organisation.
- *Explain* how management accounting can add to corporate governance.
- *Identify* how costs behave.
- *Explain* the difference between absorption and variable costing.
- *Discuss* the principles of activity-based costing.
- *Explain* the difference between activity-based costing and absorption and variable costing.

Unit 1

Managing the organisation

Introduction

This unit is intended to provide students with an introduction to the nature and purpose of management accounting.

The unit comprises:

- An introduction to managing the organisation
- Management functions
- Corporate governance
- Business ethics

Upon completion of this unit you will be able to:



Outcomes

- *Explain* the difference between management accounting and financial accounting.
- *Describe* the purpose of management accounting.
- *Identify* the different functions of management.
- *Explain* the role of corporate governance in managing an organisation.
- *Identify* the different parties involved in the governance of an organisation.
- *Describe and explain* corporate governance principles.
- *Explain* the role of ethics in business.

Terminology



Terminology

Corporate governance:	The set of processes, customs, policies, laws, and institutions affecting the way an organisation is directed, administered or controlled.
Cost accounting:	The collection, assignment, and interpretation of costs.
Financial accounting:	The provision of financial information primarily for external users of the organisation.



Management accounting:

The provision of financial information primarily for internal users of the organisation.

Purpose and definition of management accounting

Comparison of financial and management accounting

There are two broad types of accounting information:

- **Financial accounting.** Geared toward external users of accounting information it provides information to present and potential shareholders and creditors such as banks or vendors, financial analysts, economists and government agencies. Because these users have different needs, the presentation of financial accounts is very structured and subject to many more rules than management accounting.
- **Management accounting.** Aimed more at internal users of accounting information it is used to provide information to employees, managers, owner-managers and auditors. Management accounting is concerned primarily with providing a basis for making management or operating decisions.

Although there is a difference in the type of information presented in financial and management accounts, the underlying objective is the same – to satisfy the information needs of the user.

The table below summarises the key differences between financial accounts and management accounts.

Financial accounts	Management accounts
Financial accounts describe the performance of a business over a specific period and the state of affairs at the end of that period. The specific period is often referred to as the "Trading Period" and is usually one year long. The period-end date is the "Balance Sheet Date".	Management accounts are used to help management record, plan and control the activities of a business and to assist in the decision-making process. They can be prepared for any period (for example, many retailers prepare daily management information on sales, margins and stock levels).
Limited liability companies are required by law to prepare and generally make available their financial accounts (sometimes in abbreviated form) to external users. The level of detail required in these accounts reflects the size of the business, with smaller companies generally being required to prepare only brief accounts.	There is no legal requirement to prepare management accounts, although few (if any) well-run businesses can survive without them.
The format of published financial accounts is determined by several different	There is no pre-determined format for management accounts. They can be as detailed or as brief as management

Financial accounts	Management accounts
regulatory elements: <ul style="list-style-type: none"> • Company law • Accounting standards • Stock exchange 	requires.
Financial accounts concentrate on the business as a whole rather than analysing the component parts of the business. For example, sales are aggregated to provide a figure for total sales rather than publish a detailed analysis of sales by product, market and so on.	Management accounts can focus on specific areas of a business's activities. For example, they can provide insights into performance of: <ul style="list-style-type: none"> • Products • Separate business locations (such as shops) • Departments or divisions
Most financial accounting information is of a monetary nature.	Management accounts usually include a wide variety of non-financial information. For example, management accounts often include analysis of: <ul style="list-style-type: none"> • Employees (such as number, costs and productivity) • Sales volumes (units sold) • Customer transactions (for example, number of calls received into a call centre)
By definition, financial accounts present a historic perspective on the financial performance of the business.	Management accounts largely focus on analysing historical performance. However, they also usually include some forward-looking elements, such as a sales budget or cash-flow forecast.

Figure 1 Differences between Financial and Management Accounts

Management functions

Managing requires numerous skill sets. Among those skills are vision, leadership and the ability to procure and mobilise financial and human resources. All of these tasks must be executed with an understanding of how actions influence human behaviour within, and external to, the organisation. Furthermore, good managers must have endurance to tolerate challenges and setbacks while trying to forge ahead. To successfully manage an operation also requires follow-through and execution. However, each management action is predicated upon some specific decision. Thus good decision-making is crucial to being a successful manager.



Decision-making

Consistently good decisions can only result from diligent accumulation and evaluation of information. This is where managerial accounting comes in – providing the information needed to assist the decision-making process. Managerial decisions can be categorised according to three interrelated business processes: planning, directing and controlling. Correct execution of each of these activities culminates in the creation of business value. Conversely, failure to plan, direct, or control could potentially lead to business failure.

Key elements to be focused on are:

- business value results from good management decisions
- decisions must occur across a spectrum of activities (planning, directing, and controlling)
- quality decision-making can only consistently occur by reliance on information.

We will now take a closer look at the components of planning, directing and controlling.

Planning

A business must plan for success. Planning is about thinking ahead – to decide on a course of action to reach desired outcomes. Planning must occur at all levels. Initially it occurs at the high level of setting strategy. It then moves to a broad-based plan about how to establish an optimum “position” to maximise the potential for the realisation of goals. Finally, planning must be undertaken from the perspective of the consideration of financial realities/constraints and anticipated monetary outcomes, in other words, budgets.

Strategy

A business typically invests considerable time and money in developing its strategy. Strategic planning ultimately defines the organisation. Specific strategy-setting can take many forms, but generally includes elements relating to the definition of core values, mission and objectives.

- **Core values.** An entity should clearly consider and define the rules by which it will play. Core values can cover a broad spectrum involving concepts of fair play, human dignity, ethics, employment, promotion, compensation, quality, customer service, environmental awareness and so on. If an organisation does not require its members to understand and focus on these important elements, it will soon find participants becoming solely “profit-centric”. This behaviour inevitably leads to a short-term focus and potentially illegal practices that provide the seeds of self-destruction. Remember that managements build business value by making the right decisions; and decisions about core values are essential.

- **Mission.** Many companies attempt to prepare a concise statement about their mission. For example:

At IBM, we strive to lead in the creation, development and manufacture of the industry's most advanced information technologies, including computer systems, software, networking systems, storage devices and microelectronics.

We translate these advanced technologies into value for our customers through our professional solutions and services businesses worldwide. (IBM Corporation 1994, 2011. Retrieved from <http://www.ibm.com/ibm/us/en/>)

Such mission statements provide a snapshot of the organisation and provide a focal point against which to match ideas and actions. They provide an important planning element because they define the organisation's purpose and direction.

- **Objectives.** An organisation must also consider its specific objectives.

The objectives of a business organisation must include delivery of goods or services while providing a return (that is, driving performance) for its investors. Without this objective, the organisation serves no purpose and will cease to exist.

Positioning

An important part of the planning process is positioning the organisation to achieve its goals. Positioning is a broad concept and depends on gathering and evaluating accounting information.

Cost-volume-profit analysis and scalability

In a subsequent module, we will discuss cost-volume-profit (CVP) analysis. It is imperative for managers to understand the nature of cost behaviour and how changes in volume impact profitability. In doing this we will calculate break-even points and how to achieve target income levels. We will also discuss different business models and the ability, or inability to bring them to profitability via increases in scale. Managers call upon their internal accounting staff to pull together information and make appropriate recommendations.

Global trade and transfer

The management accountant frequently performs significant and complex analysis related to global business activities. This requires in-depth research into laws about tariffs, taxes and shipping. In addition, global enterprises may transfer inventory and services between affiliated units in alternative countries. These transactions must be fairly and correctly measured to establish reasonable transfer prices (or potentially run the risk of contravening tax and other rules of the various countries involved). Once again, the management accountant assists with this task.



Branding, pricing, sensitivity, competition

In positioning a company's products and services, considerable thought must be given to branding and its impact on the business. To build a brand requires considerable investment with an uncertain payback. Frequently, the same product can be "positioned" as an elite brand via a large investment in up-front advertising, or as a basic consumer product that depends upon low price to drive sales. Information is needed to make these decisions, and management will probably enlist the internal accounting staff to prepare prospective information based upon alternative scenarios. Likewise, product pricing decisions must be balanced against costs and competitive market conditions, and sensitivity analysis is needed to determine how sales and costs will respond to changes in market conditions.

Decisions about positioning a company's products and services are quite complex. The prudent manager will need considerable data to make good decisions. Management accountants will be directly involved in providing such data. They will usually work side-by-side with management in helping them correctly interpret and utilise the information.

Budgets

A necessary planning component is budgeting. Budgets outline the financial plans for an organisation. There are various types of budgets, including:

- **Operating budgets.** A plan must provide definition of the anticipated revenues and expenses of an organisation. These operating budgets can become fairly detailed, to the level of mapping specific inventory purchases and staffing plans. Also, budgets sometimes delineate allowable levels of expenditures for various departments.
- **Capital budgets.** Operating budgets will also reveal the need for capital expenditures relating to new facilities and equipment. These longer-term expenditure decisions must be evaluated logically to determine whether an investment can be justified and what rate and duration of payback is likely to occur.
- **Financial budgets.** A company must assess financing needs, including an evaluation of potential cash shortages. These tools enable companies to meet with lenders and demonstrate why and when additional support may be needed.

Directing

To realise a plan requires the initiation and direction of numerous actions. Often, these actions must be well co-ordinated and timed. Resources must be ready and authorisations in place to enable people to act according to the plan. The managerial accountant has a major role in putting business plans into action. Information systems must be developed to allow management to understand the organisation. For example, management must know that inventory is available when needed, that productive

resources (human and machine) are scheduled appropriately and that transportation systems will be available to deliver output. In addition, management must be ready to demonstrate compliance with contracts and regulations. These are complex tasks. They cannot occur without strong information resources. A major element of management accounting is to develop information systems to support the ongoing direction of the business effort.

Managerial accounting supports the “directing” function in many ways. Areas of support include costing, production management and special analysis.

Costing

An effective manager understands how costs are captured and assigned to goods and services. Costing is such an extensive part of the management accounting function that many people refer to management accountants as cost accountants. But cost accounting is only a subset of managerial accounting applications. With that in mind, let’s focus on cost accounting.

- **Cost accounting.** This can be defined as the collection, assignment and interpretation of cost. In following modules we will discuss alternative costing methods. It is important to know what products and services cost to produce. The ideal approach to capturing costs is dependent on what is being produced.
- **Costing methods.** In some settings, costs may be captured by the job costing method. For example, a home builder would probably capture costs for each house constructed. The actual labour and material that goes into each house would be tracked and assigned to that specific home (along with some matching amount of overhead), and the cost of each home can be expected to vary considerably.

Some companies produce homogenous products in continuous processes. For example, consider the costing issues faced by the companies that produce the lumber, paint, bricks or other such homogenous components used in building a home. These types of items are produced in continuous processes where costs are pooled during production and output is measured in aggregate quantities. It is difficult to see specific costs attaching to each unit. Yet, it is important to make a cost assignment. To deal with these types of situations, accountants use *process costing methods*.

Now, let’s consider the architectural firms that design homes. Such organisations need to have a sense of their costs for the purposes of billing clients, but the firm’s activities are very complex. An architectural firm must engage in many activities that drive costs but do not produce revenues. For example, substantial effort is required to train staff, develop clients, bill and collect, maintain the office, print plans, visit job sites, consult



on problems identified during construction and so forth. The individual architects are probably involved in multiple tasks and projects throughout the day; therefore it becomes difficult to say exactly how much it costs to develop a set of blueprints for a specific client. The firm might consider tracing costs and assigning them to activities (for example, training or client development). Then an allocation model can be used to attribute activities to jobs, enabling a reasonable cost assignment. Such *activity-based costing* (ABC) systems can be used in many settings, but are particularly well suited to situations where overheads are high, and/or a variety of products and services are produced.

- **Costing concepts.** In addition to using alternative methods of costing, a good manager will understand different theories or concepts about costing. In a general sense, the approaches can be described as *absorption costing* and *direct costing* concepts.

In the absorption concept, a product or service is assigned its full cost, including amounts that are not easily identified with a particular item. Overhead items include facilities depreciation, utilities, maintenance and many other similar shared costs. With absorption costing, these overheads are schematically allocated among all units of output. In other words, output absorbs the full cost of the productive process. Absorption costing is required for external reporting purposes under generally accepted accounting principles (GAAP).

However, reliance on absorption costing numbers can sometimes lead to bad decisions. As a result, internal cost accounting processes in some organisations focus on a direct costing approach. Using direct costing, a unit of output will be assigned only its direct cost of production (for example, the direct materials, labour and overheads that occur with each unit produced). We will discuss the differences between absorption and direct costing, and consider how they influence the management decision process in a later module.

In summary, to properly direct an organisation requires a keen sense of the cost of products and services. Costing can occur by various methods and theories, and a manager must understand when and how these methods are best utilised to facilitate the decisions that must be made.

Analysis

Certain business decisions have recurrent themes, for example whether to outsource production and/or support functions, what level of production and pricing to establish, whether to accept special orders with private label branding or special pricing.

Managerial accounting provides models of calculations needed to support these types of decisions. Subsequent modules will provide insight into the logic and methods that are employed to manage these types of business decisions.

Controlling

Things rarely go exactly as planned, and management must be able to monitor and adjust for deviations. The managerial accountant is a major facilitator of this control process, including exploration of alternative corrective strategies to remedy unfavourable situations.

Monitor

Business managers must rely on systematic monitoring tools to maintain awareness of where the business is headed. Managerial accounting provides these monitoring tools, and establishes a logical basis for making adjustments to business operations.

- **Standard costs.** To assist in monitoring productive efficiency and cost control, managerial accountants may develop “standards”. These standards represent benchmarks against which actual productive activity is compared. Importantly, standards can be developed for labour costs and efficiency, materials cost and utilisation, and more general assessments of the overall deployment of facilities and equipment (the overhead).
- **Variiances.** Managers focus on standards, keeping a particularly sharp eye out for significant deviations from expectations. These deviations, or “variances”, may provide warning signs of situations requiring corrective action by managers. Accountants help managers focus on the exceptions by providing the results of variance analysis. This process of focusing on variances is also known as “management by exception”.
- **Flexible tools.** Great care must be taken in monitoring variances. For example, a business may have a large increase in customer demand. To meet demand, a manager may prudently authorise significant overtime. This overtime may result in higher than expected wage rates and hours. As a result, a variance analysis could result in certain unfavourable variances. However, this added cost was incurred because of higher customer demand and was perhaps a good business decision. Therefore, it would be unfortunate to interpret the variances negatively. To compensate for this type of potential misinterpretation of data, management accountants have developed various flexible budgeting and analysis tools. These evaluative tools “flex” or compensate for the operating environment in an attempt to sort out confusing signals.
- **Scorecard.** The traditional approach to monitoring organisational performance has focused on financial measures and outcomes. Increasingly, companies are realising that such measures alone are not sufficient. For example, such measures report on what has occurred and may not provide timely data to respond aggressively to changing conditions. As a result, many companies have developed more involved scoring systems. These scorecards are custom tailored to each position, and draw focus



on evaluating elements that are important to the organisation and under the control of an employee holding that position. For example, a fast food restaurant would want to evaluate response time, cleanliness, waste and similar elements for the front-line employees. These are the elements for which the employee would be responsible; presumably, success on these points translates to eventual profitability.

- **Balance.** When controlling via a scorecard approach, the process must be carefully balanced. The goal is to identify and focus on components of performance that can be measured and improved. In addition to financial outcomes, these components can be categorised as relating to business processes, customer development and organisational betterment. If these balanced scorecards are carefully developed and implemented, they can be useful in furthering the goals of an organisation. Conversely, if the elements being evaluated do not lead to enhanced performance, employees will spend time and energy pursuing tasks that have no linkage to creating value for the business.

In conclusion, managerial accounting is surprisingly broad in its scope of involvement. Before looking at these topics in more detail we will look at the related topics of corporate governance and ethics.

Corporate governance and responsibility

Introduction

One of the significant influences on how a company is managed is the system of corporate governance that is used.

Corporate governance is the set of processes, customs, policies, laws and institutions affecting the way an organisation is directed, administered or controlled. Corporate governance also includes the relationships among the many stakeholders involved and the goals for which the organisation is governed. The principal stakeholders are the shareholders, the board of directors, employees, customers, creditors, suppliers and the community at large.

Corporate governance is a complex subject. An important theme of corporate governance is to ensure the accountability of certain individuals in an organisation through mechanisms that try to reduce or eliminate the principal-agent problem. The principal-agent problem treats the difficulties that arise under conditions of incomplete and asymmetric information when a principal hires an agent.

The principal-agent problem is found in most employer-employee relationships, for example, when shareholders appoint the board of directors who then hire the top executives.

There has been renewed interest in the corporate governance practices of modern companies since 2001, particularly due to the high-profile collapses of a number of large United States firms such as Enron

Corporation and MCI Inc. (formerly WorldCom). In 2002, the United States federal government passed the Sarbanes-Oxley Act, intending to restore public confidence in corporate governance.

Parties involved in corporate governance

As stated above, the shareholder delegates decision rights to the manager to act in the principal's best interests. This separation of ownership from control implies a loss of effective control by shareholders over managerial decisions. Partly as a result of this separation between the two parties, a system of corporate governance controls is implemented to assist in aligning the incentives of managers with those of shareholders. With the significant increase in equity holdings of investors, there has been an opportunity for a reversal of the separation of ownership and control problems because ownership is not so diffuse.

A board of directors often plays a key role in corporate governance. It is the board's responsibility to endorse the organisation's strategy, develop directional policy, appoint, supervise and remunerate senior executives and ensure accountability of the organisation to its owners and authorities.

All parties to corporate governance have an interest, whether direct or indirect, in the effective performance of the organisation. Directors, workers and management receive salaries, benefits and reputation, while shareholders receive dividends and capital return. Customers receive goods and services; suppliers receive compensation for their goods or services. In return these individuals provide value in the form of natural, human, social and other forms of capital.

A key factor in an individual's decision to participate in an organisation, for example through providing financial capital, is trust that they will receive a fair share of the organisational returns. If some parties are receiving more than their fair return then participants may choose to not continue participating, leading to organisational collapse.

Corporate governance principles

Key elements of good corporate governance principles include honesty, trust and integrity, openness, performance orientation, responsibility and accountability, mutual respect and commitment to the organisation.

Of importance is how directors and management develop a model of governance that aligns the values of the corporate participants and then how they evaluate this model periodically for its effectiveness. In particular, senior executives should conduct themselves honestly and ethically, especially concerning actual or apparent conflicts of interest and disclosure in financial reports.

Commonly accepted principles of corporate governance include:



- **Rights and equitable treatment of shareholders.** Organisations should respect the rights of shareholders and help shareholders to exercise those rights. They can help shareholders exercise their rights by effectively communicating information that is understandable and accessible and encouraging shareholders to participate in general meetings.
- **Interests of other stakeholders.** Organisations should recognise that they have legal and other obligations to all legitimate stakeholders.
- **Role and responsibilities of the board.** The board needs a range of skills and understanding to be able to deal with various business issues and have the ability to review and challenge management performance. It needs to be of sufficient size and have an appropriate level of commitment to fulfil its responsibilities and duties.
- **Integrity and ethical behaviour.** Ethical and responsible decision-making is not only important for public relations, but it is also a necessary element in risk management and avoiding lawsuits. Organisations should develop a code of conduct for their directors and executives that promotes ethical and responsible decision-making. It is important to understand, though, that reliance by a company on the integrity and ethics of individuals is sometimes bound to failure. This happens for a number of reasons including individual morals and ethics being different from corporate morals and ethics; and individual motivation, including greed, which works to the detriment of the organisation.

Because of this, many organisations establish compliance and ethics programmes to minimise the risk of the firm stepping outside of ethical and legal boundaries.

- **Disclosure and transparency.** Organisations should clarify and make publicly known the roles and responsibilities of the board and management to provide shareholders with a level of accountability. They should also implement procedures to independently verify and safeguard the integrity of the company's financial reporting. Disclosure of material matters concerning the organisation should be timely and balanced to ensure that all investors have access to clear, factual information.

Business ethics

As mentioned in the section above, one of the key corporate governance principles is integrity and ethical behaviour.

Business ethics (also known as corporate ethics) examines ethical principles and moral or ethical problems that arise in a business environment. It applies to all aspects of business conduct and is relevant to the conduct of individuals and business organisations as a whole.

The range and quantity of business ethical issues reflects the degree to which business is perceived to be at odds with social values. Historically, interest in business ethics accelerated dramatically during the 1980s and 1990s, both within major companies and within academia. For example, today most major corporate websites lay emphasis on commitment to promoting non-economic social values under a variety of headings (for example, ethics codes, or social responsibility charters.). In some cases, companies have redefined their core values in the light of business ethical considerations (for example, BP's "beyond petroleum" environmental tag-line).

The globalisation of business has highlighted the issue of adhering to acceptable business practices in different parts of the world. Such issues include:

- the search for universal values as a basis for international commercial behaviour
- comparison of business ethical traditions in different countries
- comparison of business ethical traditions from various religious perspectives
- ethical issues arising out of international business transactions, for example, the fair trade movement and transfer pricing
- globalisation and cultural imperialism
- varying global standards, for example, the use of child labour
- the way in which multinationals take advantage of international differences, such as outsourcing production (for example, clothes) and services (for example, call centres) to low-wage countries
- the permissibility of international commerce with pariah states.



Activity 1.1



Activity

For the organisation that you are currently involved with:

1. List all of the areas where accounting information is used to help with decision-making.
2. Describe how the organisation is governed.
3. Does your organisation have a code of ethics? If so, how does the organisation ensure compliance with the code?
4. Are there any operational areas that may lead to an ethical dilemma? If so, how does the organisation deal with this type of situation?

Unit summary



Summary

In this unit you learned:

- the key differences between management accounting and financial accounting;
- the three critical roles of management are planning, directing and controlling;
- the importance of corporate governance; and
- the important role of business ethics.



Unit 2

Costing systems

Introduction

The objective of this unit is to discuss the various ways costs can be classified and then to look at two different methods of applying costs to products or services. Classification of the costs assists managers in the decision-making process, hence it is important to understand the classification of costs and the terms used to define costs.

The unit comprises three main sections:

1. Costing concepts and terminology
2. Absorption costing
3. Variable costing

Upon completion of this unit you will be able to:

- *Explain* different classifications of cost.
- *Describe* how costs behave.
- *Explain* the principles of absorption costing.
- *Explain* the principles of variable costing.
- *Identify* the differences between absorption and variable costing.



Outcomes

Terminology



Terminology

Differential cost:	A cost that differs between alternatives.
Direct labour:	A portion of labour cost that can be easily traced to a product.
Direct materials:	Raw material inputs that become an integral part of a finished product and can be easily traced to it.
Fixed costs:	Costs that remain constant in total for changes in activity within the relevant range.
Manufacturing overhead:	All manufacturing costs other than direct materials and direct labour.
Opportunity cost:	The potential benefit that is given up by selecting

one alternative over another.

Period cost:	Costs that are expensed in the time period in which they are incurred.
Product cost:	Costs that are added to units of product (“inventoried”) as they are incurred and are not treated as expenses until the units are sold.
Relevant range:	The range of activity within which the assumptions about variable and fixed costs are valid.
Sunk costs:	A cost that has already been incurred and that cannot be changed by any decision made now or in the future.
Variable cost:	A cost that is constant per unit of activity but changes in total as the activity level rises and falls.

Costing concepts and terminology

Introduction

In this section we will introduce some common costing concepts and terminology. As a manager you should become familiar with these concepts and an understanding of the common terminology that is applied in costing.

Cost classifications for preparing external financial statements

In this section we will deal with the problem of valuing inventories and determining cost of goods sold for external financial reporting purposes (for the income statement and balance sheet). To understand the nature of cost of goods sold we must be able to explain the difference between a manufacturing and a merchandising firm.

- **Manufacturing companies** convert raw materials into a product. The company then sells that product either to other companies or, less commonly, directly to individuals. Manufacturing includes the business of restaurants, movie studios, and other types of service companies as well as the more obvious examples of manufacturing such as automobile (cars) and clothing production.
- **Merchandising companies**, by contrast, buy finished products and resell the products to customers such as supermarkets.

To assist in understanding the valuation of inventories and determining cost of goods sold we first need to understand what categories of costs are parts of the value of inventories or cost of goods sold.



Manufacturing costs

These costs are incurred to make a product. Manufacturing costs are usually grouped into three main categories: direct materials, direct labour, and manufacturing overhead.

- **Direct materials** consist of those raw material inputs that become an integral part of a finished product and can be easily traced to it. Examples include the aircraft engines on a Boeing 777 aeroplane and the Intel processing chip in a personal computer.
- **Direct labour** consists of that portion of labour cost that can be easily traced to a product. Direct labour is sometimes referred to as “touch labour” since it consists of the costs of workers who “touch” the product as it is being made.
- **Manufacturing overhead** consists of all manufacturing costs other than direct materials and direct labour. These costs cannot be easily and conveniently traced to products. Examples include miscellaneous supplies such as rivets on a Boeing 777 aeroplane, supervisors, janitors and factory facility charges.
- **Prime versus conversion costs.** Prime cost consists of direct materials plus direct labour. Conversion cost consists of direct labour plus manufacturing overhead.

Non-manufacturing costs

In addition to manufacturing costs, many other costs are incurred by an organisation. Typically, for financial reporting purposes most of these other costs are classified as selling (marketing) costs and administrative costs. Selling and marketing and administrative costs are incurred in both manufacturing and merchandising firms.

- **Selling and marketing costs** include the costs of making sales, taking customer orders and delivering the product to customers. These costs are also referred to as order-getting and order-filling costs.
- **Administrative costs** include all executive, organisational and clerical costs that are not classified as production or marketing costs.

Period versus product costs

Costs can also be classified as period or product costs.

- **Period costs** are expensed in the time period in which they are incurred. All selling and administrative costs are typically considered to be period costs. In determining these costs the usual rules of accrual accounting apply. For example, administrative salary costs are “incurred” when they are earned and not necessarily when they are paid to employees.
- **Product costs** are added to units of product (“inventoried”) as they are incurred and are not treated as expenses until the units

are sold. This can result in a delay of one or more periods between the time in which the cost is incurred and when it appears as an expense on the income statement. Product costs are also known as inventorial costs. Generally, all manufacturing costs are treated as product costs.

Inventory valuation and cost of goods sold

In a manufacturing firm, raw material purchases are recorded in a raw materials inventory account. These costs are transferred to a work in process inventory account when the materials are released to the production departments. Other manufacturing costs – direct labour and manufacturing overhead – are charged to the work-in-process inventory account as incurred. As work in process is completed, its costs are transferred to the finished goods inventory account. These costs become expenses only when the finished goods are sold.

Schedule of cost of goods manufactured

Because of inventories still on hand at the end of the period, the cost of goods sold for a period is not simply the manufacturing costs incurred during the period. Some of the cost of goods sold may be for units completed in a previous period. And some of the units completed in the current period may not have been sold and will still be on the balance sheet as assets. The cost of goods sold is computed with the aid of a schedule of costs of goods manufactured, which takes into account changes in inventories. The schedule of cost of goods manufactured is not ordinarily included in external financial reports, but must be compiled by accountants within the company in order to arrive at the cost of goods sold.



Case study/Example

The following example demonstrates the link between the cost of goods manufactured and the cost of goods sold and the resulting income statement.

The cost of goods manufactured schedule is used to calculate the cost of producing products for a period of time. The cost of goods manufactured amount is transferred to the finished goods inventory account during the period and is used in calculating cost of goods sold on the income statement. The cost of goods manufactured schedule reports the total manufacturing costs for the period that were added to work-in-process, and adjusts these costs for the change in the work-in-process inventory account to calculate the cost of goods manufactured.



Bluewater Manufacturing Limited
Cost of goods manufactured schedule
For the year ended December 31, 20X0

Direct materials used

Beginning raw materials inventory	\$6,200
Add: cost of raw materials purchased	<u>\$49,400</u>
Total raw materials available	\$55,600
Less: ending raw materials inventory	<u>(\$5,800)</u>
Total raw materials used	\$49,800

Direct labour **\$125,600**

Manufacturing overhead

Indirect materials	\$4,100
Indirect labour	\$43,700
Depreciation – factory building	\$9,500
Depreciation – factory equipment	\$5,400
Insurance – factory	\$12,000
Property taxes – factory	<u>\$4,500</u>
Total manufacturing overhead	<u>\$79,200</u>

Total manufacturing costs **\$254,600**

Add: beginning work-in-process inventory \$10,200

\$264,800

Less: ending work-in-process inventory (\$9,800)

Cost of goods manufactured **\$255,000**

The cost of goods manufactured for the period is added to the finished goods inventory. To calculate the cost of goods sold, the change in finished goods inventory is added to or subtracted from the cost of goods manufactured.

Bluewater Manufacturing Limited
Income statement
For the year ended December 31, 20X0

Sales	\$427,000
Cost of goods sold	
Beginning finished goods inventory	\$14,500
Cost of goods manufactured	<u>\$255,000</u>
Total goods available for sale	\$269,500
Ending finished goods inventory	<u>(\$12,600)</u>
Cost of goods sold	<u>\$256,900</u>
Gross profit	\$170,100
Operating expenses	
Selling expenses	
Sales salaries	
Depreciation – sales equipment	
Total selling expenses	\$86,300
Administrative expenses	
Office salaries	
Depreciation – office equipment	
Insurance expense	
Office supplies expense	
Total administrative expenses	<u>\$58,400</u>
Total operating expenses	<u>\$144,700</u>
Income from operations	\$25,400
Interest revenue	<u>\$5,100</u>
Income before taxes	\$30,500
Income taxes	<u>\$10,675</u>
Net income	<u>\$19,825</u>



Cost classifications to describe cost behaviour

Managers often need to be able to predict how costs will change in response to changes in activity. The activity might be the output of goods or services or it might be some measure of activity internal to the firm, such as the number of purchase orders processed during a period.

While there are other ways to classify costs according to how they react to changes in activity, for the purposes of this section we will use the simple variable and fixed classifications.

- A variable cost is constant per unit of activity but changes in total as the activity level rises and falls.
- A fixed cost is constant in total for changes in activity within the relevant range. Note: just about any cost will change if there is a big enough change in activity. Fixed costs do not change for changes in activity that fall within the “relevant range”. When expressed on a per unit basis, a fixed cost is inversely related to the level of activity – the per unit cost decreases when activity rises and increases when the activity level falls.
- Relevant range is the range of activity within which the assumptions about variable and fixed costs are valid. In other words the relevant range is the anticipated activity level at which the organisation will perform. The relevant range is also applied when considering fixed costs. Many fixed costs are only fixed for a certain level of production. For example, a machine or manufacturing plant can reach capacity. To increase production beyond a certain level, additional machinery (or a new plant, or additional supervisors) must be deployed. This will cause a major step upward in the fixed cost. Fixed costs that behave in this fashion are also called step costs. The key point is to note that fixed costs are only fixed over some particular range of activity, and moving outside that range can significantly alter the cost structure.

Cost classifications for assigning costs

Managers often want costs to be assigned to *cost objects*, such as products, customers, or departments, for pricing or other purposes.

- A direct cost is a cost that can be conveniently and easily traced to a particular cost object, for example the materials and labour needed to produce a product.
- Indirect costs are everything else. There are two reasons why a cost would be considered indirect: either it is impractical or it is impossible to trace the cost to the cost object. Examples of indirect costs include rent, administrative expenses and utilities.

Cost classifications for decision-making

Every decision involves choosing from among at least two alternatives. Only those costs and benefits that differ between alternatives are relevant in making the selection.

- **Differential costs.** A differential cost is one that differs between two alternatives. The cost may exist in only one of the alternatives or the total amount of the cost may differ between the alternatives. In the latter case, the differential cost would be the difference between the cost under one alternative and the cost under the other alternative. Differential costs are also called incremental costs. Differential costs and opportunity costs (see below) should be the focus of decision-making. They are the only relevant costs and all others should be ignored. An example of differential costs would arise where a retailer is considering distributing its products via a third party rather than distributing the products themselves. In this situation the retailer would consider additional revenues and costs in the proposed arrangement compared with their current arrangement.
- **Opportunity costs.** An opportunity cost is the potential benefit that is given up by selecting one alternative over another. As the opportunity cost is the benefit foregone by choosing an alternative it is not an actual expenditure and it is rarely (if ever) shown on the accounting books of an organisation. It is, however, a cost that must be considered in decisions. For example, you are employed in a company that pays you \$30,000 per year. You are thinking about leaving the company and returning to school. Since returning to school would require that you give up \$30,000 salary. The foregone salary would be an opportunity cost of seeking further education.
- **Sunk cost.** A sunk cost is a cost that has already been incurred and that cannot be changed by any decision made now or in the future. Since sunk costs cannot be changed and therefore cannot be differential costs, they should be ignored in decision-making. For example, assume that a company paid \$50,000 several years ago for a special purpose machine. The machine was used to make a product that is now obsolete and is no longer being sold. Even though in hindsight the purchase of the machine may have been unwise, no amount of regret can undo that decision, plus it would not make sense to continue making the obsolete product to recover the original cost of the machine. In short, the \$50,000 originally paid for the machine has already been incurred and cannot be a differential cost in any future decision. For this reason, such costs are said to be sunk costs and should be ignored in decision-making.

Absorption costing

The practice of charging all costs both variable and fixed to operations, products or processes is termed as absorption costing.



Absorption costing is a costing system which treats all costs of production as product costs, regardless of whether they are variable or fixed. The cost of a unit of product under the absorption costing method consists of:

- direct materials, plus
- direct labour, plus
- variable overhead, plus
- a proportion of fixed overhead.

Absorption costing allocates a portion of fixed manufacturing overhead cost to each unit of product, along with the variable manufacturing cost. Because absorption costing includes all costs of production as product costs, it is frequently referred to as the full costing method.



Case study/example

A company has a job that is produced in a single cost centre (for example, a factory). A job has the following information:

- The direct material cost for the job was \$10,000.
- The direct labour cost for the job was \$10,000.
- Direct labour hours for the job were 1,000.

Therefore the direct costs for this job were \$20,000. However, in order to determine how much this job should be sold for, the overhead cost also needs to be covered.

The company has a total factory overhead of \$50,000 and the factory could generate a total of 15,000 labour hours.

Therefore, to allocate a portion of the total overhead to this job we would divide the overhead (\$50,000) by the labour hours (15,000) and multiply by the number of hours spent on the job (1,000) giving an overhead cost of \$3,333. This then gets added to the prime cost (direct cost) for a total production cost of \$23,333.

Variable costing

Variable costing is a costing system under which those costs of production that vary with output are treated as product costs. This would usually include:

- direct materials, plus
- direct labour, plus
- variable portion of overhead.

Fixed manufacturing cost is not treated as a product cost under variable costing. Rather, fixed manufacturing cost, like selling and administrative expenses, is charged off in its entirety against revenue each period. In other words, it is treated as a period cost. Consequently the cost of a unit

of product in inventory or cost of goods sold under this method does not contain any fixed overhead cost.

Using the same information as the absorption costing example above, only the direct material of \$10,000 and the direct labour of \$10,000 would be included for a total production cost of \$20,000 (compared with \$23,333 under absorption costing).

Variable costing is sometimes referred to as direct costing or marginal costing.

To complete this summarised comparison of absorption and variable costing, we need to consider briefly the handling of selling and administrative expenses. These expenses are never treated as product costs, regardless of the costing method in use. Thus under either absorption or variable costing, both variable and fixed selling and administrative expenses are always treated as period costs and deducted from revenues as incurred.

Comparison between absorption and variable costing

Treatment of costs

A summary of the treatment of the various costs comparing absorption and variable costing is shown in Figure 2 below.

Cost classifications – absorption versus variable costing		
Absorption costing	Type of cost	Variable costing
Product cost	Direct materials Direct labour Variable manufacturing overhead	Product cost
	Fixed manufacturing overhead	
Period cost	Variable selling and administrative expenses	Period cost
	Fixed selling and administrative expenses	

Figure 2 Cost classifications summary

Format of income statements

The formats for profit reporting are different for variable costing and absorption costing.



Absorption costing	Variable costing
Revenues	Revenues
<i>minus</i>	<i>minus</i>
Cost of goods sold	Variable manufacturing
<i>equals</i>	<i>minus</i>
Gross margin	Variable sell & admin
<i>minus</i>	<i>equals</i>
Variable sell & admin	Contribution margin
<i>minus</i>	<i>minus</i>
Fixed sell & admin	Fixed manufacturing
<i>equals</i>	<i>minus</i>
<u>Profit</u>	Fixed sell & admin
	<i>equals</i>
	<u>Profit</u>

Figure 3 Differences between Absorption costing and variable costing reports

The profit figures under the two approaches will not always be the same.

The difference between the two income-measurement approaches is essentially the difference in the timing of the charge to expense for fixed factory overhead cost.

In the absorption costing method, fixed factory overhead is first charged to inventory; thus it is not charged to expense until the period in which the inventory is sold and included in cost of goods sold (as an expense).

In contrast, in the variable costing method, fixed factory overhead is charged to expense immediately, and only variable manufacturing costs are included in product inventories.

Therefore, if inventories increase during a period (that is, production exceeds sales), the variable costing method will generally report less operating income than will the absorption costing method; when inventories decrease, the opposite effect will take place.

We will demonstrate this with some examples at the end of this section.



Case Study/Example

To illustrate the computation/calculation of unit product costs under both absorption and variable costing, consider the following example.

A small company that produces a single product has the following cost structure.

Number of units produced	12,000
Variable costs per unit:	
Direct materials	\$4
Direct labour	\$8
Variable manufacturing overhead	\$2
Variable selling and administrative expenses	\$6
Fixed costs per year:	
Fixed manufacturing overhead	\$60,000
Fixed selling and administrative expenses	\$20,000

The unit product cost under the absorption costing method is calculated as follows:

Unit product cost absorption costing method	
Direct materials	\$4
Direct labour	\$8
Variable manufacturing overhead	\$2

Total variable production cost	\$14
Fixed manufacturing overhead (\$60,000 / 12,000)	\$5

Unit product cost	\$19
	=====

The unit product cost under the variable costing method is calculated as follows:



Unit product cost variable costing method	
Direct materials	\$4
Direct labour	\$8
Variable manufacturing overhead	\$2

Unit product cost	\$14
	=====

Note: the \$60,000 fixed manufacturing overhead will be charged off in total against income as a period expense along with selling and administrative expenses.

Under absorption costing, all production costs, variable and fixed, are included when determining the unit product cost. Thus if the company sells a unit of product and absorption costing is being used, then \$19 (consisting of \$14 variable cost and \$5 fixed cost) will be deducted on the income statement as cost of goods sold. Similarly, any unsold units will be carried as inventory on the balance sheet at \$19 each.

Under variable costing, all variable costs of production are included in product costs. Thus if the company sells a unit of product, only \$14 will be deducted as cost of goods sold, and unsold units will be carried in the balance sheet inventory account at only \$14. In addition, total fixed costs of \$60,000 will be expensed in the period.



Case study/example

We now look at a more complex example that illustrates the effect on overall profit when:

- sales = production,
- sales are less than production, and
- sales are greater than production.

For the above three scenarios assume the following (per unit).

Direct materials	2.5 lbs @ \$4.00 = \$1.00
Direct labour	0.5hr @ \$16.00 = \$8.00
VOH	0.5 hr @ \$4.00 = \$2.00
FOH	\$40,000 total divided by 16,000 units) = \$2.50
Actual output	16,000 units
Variable S&A	\$6.00 per unit
Fixed S&A	\$60,000
Selling price	\$40.00

Scenario 1. The respective income statements if actual sales equal the actual production of 16,000 units.

<u>Absorption costing</u>		<u>Variable costing</u>	
Revenue (\$40)(16000)	640,000	Revenue (\$40)(16000)	640,000
Cogs (\$22.50)(16000)*	<u>360,000</u>	Vbl Mfg (\$20)(16000)	320,000
GM (\$17.50)(16000)	280,000	Vbl S+A (\$6)(16000)	<u>96,000</u>
Vbl S+A (\$6)(16000)	96,000	CM	224,000
Fx S+A	<u>60,000</u>	Fx Mfg	40,000
Profit	<u>\$124,000</u>	Fx S+A	<u>60,000</u>
		Profit	<u>\$124,000</u>

Figure 3

Note: Each unit has a cost of \$22.50 which is equal to: \$10 + \$8 + \$2 + \$2.50.

Note: When sales equals production, profit under absorption costing and direct costing are equal.

Scenario 2. The respective income statements if actual sales are 12,000 units and the actual production is 16,000 units.

<u>Absorption costing</u>		<u>Variable costing</u>	
Revenue (\$40)(12000)	480,000	Revenue (\$40)(12000)	480,000
Cogs (\$22.50)(12000)	<u>270,000</u>	Vbl Mfg (\$20)(12000)	240,000
GM (\$17.50)(12000)	210,000	Vbl S+A (\$6)(12000)	<u>72,000</u>
Vbl S+A (\$6)(12000)	72,000	CM (\$14)(12000)	168,000
Fx S+A	<u>60,000</u>	Fx Mfg	40,000
Profit	<u>\$78,000</u>	Fx S+A	<u>60,000</u>
		Profit	<u>\$68,000</u>

Figure 4

Note: When production exceeds sales, absorption profit exceeds variable costing profit.

Scenario 3. The respective income statements if actual sales are 18,000 units and the actual production is 16,000 units.

<u>Absorption costing</u>		<u>Variable costing</u>	
Revenue (\$40)(18000)	720,000	Revenue (\$40)(18000)	720,000
Cogs (\$22.50)(18000)	<u>405,000</u>	Vbl Mfg (\$20)(18000)	360,000
GM (\$17.50)(18000)	315,000	Vbl S+A (\$6)(18000)	<u>108,000</u>
Vbl S+A (\$6)(18000)	108,000	CM (\$14)(18000)	252,000
Fx S+A	<u>60,000</u>	Fx Mfg	40,000
Profit	<u>\$147,000</u>	Fx S+A	<u>60,000</u>
		Profit	<u>\$152,000</u>

Figure 5



Note: When sales exceed production, variable costing profit exceeds absorption profit.

Analysis of the above scenarios:

- Absorption unit cost is higher than variable unit cost.
- Output-level (production-volume) variance exists only under absorption costing.
- Absorption costing uses business functions to classify costs, for example, manufacturing, marketing and administration.
- Variable costing uses cost behaviour to classify costs, e.g. variable and fixed.

Reconciliation of the profit differences in Scenarios 2 and 3.

General formula:

Absorption Profit – Variable Profit = (fixed overhead per unit) * (units produced – units sold)

or (fixed overhead per unit) * (change in inventories).

Scenario 2 $78,000 - 68,000 = 2.50(16,000 - 12,000) = \$10,000$

Scenario 3 $147,000 - 152,000 = 2.50(16,000 - 18,000) = -\$5,000$

Summary of costing comparison

Variable and absorption costing differ in only one respect: how to account for fixed manufacturing costs. Under variable costing, fixed manufacturing costs are excluded from inventorial costs and are a cost of the period in which they are incurred. Under absorption costing, these costs are inventorial and become a part of cost of goods sold in the period when sales occur.

Under variable costing, reported operating income is driven by the unit level of sales. Under absorption costing, reported operating income is driven by the unit level of production as well as by the unit level of sales.

Although absorption costing is the required inventory method for external reporting in most countries, many companies use marginal (variable) costing for internal reporting.

Activity 1.2



Activity

1. Hawkins Electronics Limited manufactures a portable radio designed for mounting on the wall of the bathroom. The following list represents some of the different types of costs incurred in the manufacture of these radios.

Classify each of the items as product (inventoriable) cost or period (non-inventoriable) costs for the purpose of preparing external financial statements.

- a. The plant manager's salary.
- b. The cost of heating the plant.
- c. The cost of heating executive offices.
- d. The cost of printed circuit boards used in the radios.
- e. Salaries and commissions of company salespersons.
- f. Depreciation on office equipment used in the executive offices.
- g. Depreciation on production equipment used in the plant.
- h. Wages of janitorial personnel who clean the plant.
- i. The cost of insurance on the plant building.
- j. The cost of electricity to light the plant.
- k. The cost of electricity to power plant equipment.
- l. The cost of maintaining and repairing equipment in the plant.
- m. The cost of printing promotional materials for trade shows.
- n. The cost of solder used in assembling the radios.
- o. The cost of telephone service for the executive offices.



2. Lee Company, which has only one product, has provided the following data concerning its most recent month of operations:

Selling price	\$95
Units in beginning inventory	100
Units produced	6,200
Units sold	5,900
Units in ending inventory	400

Variable costs per unit:

Direct materials	\$42
Direct labour	\$28
Variable manufacturing overhead	\$1
Variable selling and administrative	\$5

Fixed costs:

Fixed manufacturing overhead	\$62,000
Fixed selling and administrative	\$35,400

The company produces the same number of units every month, although the sales in units vary from month to month. The company's variable costs per unit and total fixed costs have been constant from month to month.

Required:

- What is the unit product cost for the month under variable costing?
- What is the unit product cost for the month under absorption costing?
- Prepare an income statement for the month using the contribution format and the variable costing method.
- Prepare an income statement for the month using the absorption costing method.
- Reconcile the variable costing and absorption costing net incomes for the month.

Unit summary



Summary

In this unit you learned:

- that costs can be classified in a number of different ways
- the difference between period and product costs
- the difference between fixed and variable costs
- the relevant costs for decision-making
- that absorption costing allocates a proportion of fixed overheads to a product cost
- that variable costing does not allocate any fixed overheads to product costs.



Unit 3

Activity-based costing

Introduction

In the previous unit we described two different costing techniques – absorption and variable costing. In this unit we will describe another costing system called activity-based costing (ABC).

An ABC system involves identifying the activity that causes the incurrence of a cost, so an ABC system provides managers with more accurate information on which to base decisions.

Upon completion of this unit you will be able to:



Outcomes

- *Describe* a typical ABC system.
- *Explain* the components of an ABC system.
- *Identify* activities and cost drivers.
- *Explain* the advantages and disadvantages of ABC.
- *Explain* the difference between traditional costing systems and ABC.

Terminology



Terminology

Activity:	Major tasks performed in an organisation.
Cost driver:	Has a direct and positive relationship with the cost that is being attributed to the product or service.
Cost pool:	Accumulations of expenditure under a category which describes a particular activity.
Resource driver:	Measures the amount of resources used by an activity.

Conceptual overview of activity-based costing

Activity-based costing (ABC) is a management accounting information system that identifies the various activities performed in an organisation, collects costs on the basis of the underlying nature and extent of those activities, and assigns costs to products and services based on those activities. ABC should improve the quality of management accounting information in situations where conventional overhead allocation methods may produce misleading results.

ABC focuses on activities as the fundamental cost objects. It uses the cost of these activities as the basis for assigning costs to such other cost objects as products, services or customers. The distinctive feature of ABC is that it focuses on activities as the fundamental cost objects whereas traditional costing (absorption and variable costing described in the previous units) focuses on the product or service as the cost object. Under traditional costing, the assumption is made that products/services consume resources. Under ABC, products/services consume activities and activities consume resources.

The ABC terminology

Some terminology was given in the Terminology section and in this section we expand on those terms. ABC uses a number of unique terms, the most common of which are:

- **Activity.** This is discussed in more depth in the next section; however, activities are major tasks performed in an organisation, for example, receiving goods, inspecting goods and storing goods. In the first stage of an ABC system, the costs of the activities are calculated then the costs of the activities are traced to product or services using a relevant cost driver.
- **Resources.** All activities consume resources. Typical examples of resources are labour, materials, rent, depreciation, power, travel and entertainment, insurance, supplies, and repairs and maintenance.
- **Resource driver.** A resource driver measures the amount of resources used by an activity. Examples include the number of cubic metres for space and number of employees for salaries and wages.
- **Cost driver.** A cost driver has a direct and positive relationship with the cost being attributed to the product or service. An increase in volume of the cost driver increases the cost allocated to the product or service. We need to determine cost drivers because we need to accurately measure costs. An example of a cost driver is labour hours. As labour hours increase, so do the labour costs. If we have a product that uses labour, the number of labour hours is the cost driver to allocate labour cost to the product. It is easy to determine cost and cost drivers with labour costs (and direct materials) because these costs are direct costs. It



is more subjective to identify cost drivers that drive overhead costs.

- **Cost pool.** Cost pools represent accumulations of expenditure under a category which describes a particular activity. For example, a cost pool titled “quality assurance” is managed by personnel from operations, sales and administration. The cost of all quality assurance activities are assigned to the cost pool, regardless of the department in which the activities are carried out.
- **Cost object.** Information about a cost object assists management’s decision-making. Examples of cost drivers are products, services, customers and divisions. For example, XPT Ltd has three factories in different locations, each manufacturing pencils. It has eight major customers who purchase about 90 per cent of the total annual production. XPT buys the graphite from one supplier and the balsa wood from three different suppliers, depending upon such factors as price, deliverability and quality of the wood.

To promote sales, XPT Ltd begins an extensive advertising campaign in professional journals. How many cost objects can you identify in this case? The following list is not exhaustive.

Cost objects	Decision-making/other uses
Pencils	Pricing/external reporting (ER)
Graphite	Stock costing/ER
Customers	Contribution to profits/marketing strategies
Wood	Stock costing/pricing/ER
Sales personnel	Contribution to profits/bonus calculations/decision analysis, for example, add or remove staff
Factories	Performance measurement by factory

Identifying activities

ABC assumes that activities cause costs. It is helpful to think of activities at different levels.

- **Unit-level activities** are those that have a one-to-one correspondence with a unit of output. For example, a telescope manufacturer may have to perform some final calibration to each finished product (whether it is an entry-level scope or an advanced device). Therefore, calibration may be seen as an activity.
- **Batch-level activities** are those that must be performed, but can relate to one or more units of output. In some cases, shipping can be seen as an excellent example of a batch process. Assume that

Books R US is an online bookstore. Some customers order only one book while others may order a dozen books at a time. In each case the customer's books must be packaged and shipped. Roughly the same activity is required independent of how many books are put in a box.

- **Product-level activities** are carried out at the product level, no matter the volume of production. Product design, marketing and so forth are activities that have a one-to-one correspondence with the number of end products.
- **Customer-level activities** can take many forms. These include technical support help lines, catalogues and sales calls. You would generally expect this category to grow as the customer base expands.
- Other activity levels might also be appropriate. Some businesses will identify **market-level activities**. For example, most global companies contract with an independent customs broker within each market served. Therefore the cost of customs brokerage services can be seen as a function of markets served. There are also **entity-sustaining activities**. A publicly listed company will incur costs of producing and distributing their annual report to shareholders and other interested parties. The associated costs of this exercise could be classified as entity-sustaining.

The identification of activities is unique to each company. The above "levels" provide a frame of reference that is helpful in considering the important activities of an organisation.

Identifying cost drivers

A cost driver is the unit of an activity that causes the change of an activity cost. A cost driver is any activity that causes a cost to be incurred.

In traditional costing, the cost driver to allocate indirect cost to cost objects is volume of output. With the change in business structures, technology and thereby cost structures it was found that the volume of output was not the only cost driver. Some examples of indirect costs and their drivers are:

- **maintenance costs**, which are indirect costs, with the possible driver being the number of machine hours.
- **handling raw-material costs**, which are indirect costs, and may be driven by the number of orders received.
- **inspection costs** that are driven by the number of inspections or the hours of inspection or production runs.

Generally, the cost driver for short-term indirect variable costs may be the volume of output/activity; but for long-term indirect variable costs, the cost drivers will not be related to volume of output/activity.



Advantages and disadvantages of activity-based costing

Advantages of ABC

Traditional costing methods divide costs into product costs and period costs. The period costs include selling, general and administrative items and are charged against income in the period incurred. Product costs comprise direct materials, direct labour and factory overhead. These are traced/allocated to production under both job and process costing techniques.

However, some managers reject this methodology as conceptually flawed. For example, it can be argued that the cost of a finished product should include not only the cost of direct materials, but also a portion of the administrative cost necessary to buy the raw materials (for example, many companies have a separate administrative unit in charge of all purchasing activity, such as writing specifications, obtaining bids and issuing purchase orders). Conversely, the cost of a plant security guard is part of factory overhead, but some managers fail to see a correlation between that activity and a finished product; after all, the guard will be needed no matter how many units are produced.

Activity-based costing attempts to overcome the perceived deficiencies in traditional costing methods by more closely aligning activities with products. This requires abandoning the traditional division between product and period costs, instead seeking to find a more direct linkage between activities, costs and products.

This means that products will be charged with the costs of manufacturing and non-manufacturing activities. It also means that some manufacturing costs will not be attached to products. This is quite a departure from traditional thought.

Another benefit of ABC is that a product is only charged with the cost of capacity used. Idle capacity is isolated and not charged to a product or service. Under traditional approaches, some idle capacity may be incorporated into the overhead allocation rates, thereby potentially distorting the cost of specific output. This may limit the ability of managers to truly understand and identify the best business decisions about product pricing and targeted production levels.

Disadvantages of ABC

One limitation of ABC is that external reporting must be based on traditional absorption costing methods. Absorption costing requires the traditional division between product costs and period costs, with inventory absorbing all manufacturing costs and none of the period costs. As a result, ABC may produce results that differ from those required under generally accepted accounting principles (GAAP). Therefore, ABC is usually viewed as supplemental in nature. It is used for internal management decision-making, but it may not be suitable for public reporting.

The fact that ABC is not GAAP usually means that a company that wishes to benefit from ABC must develop two costing systems — one for external reporting and one for internal management. Some companies feel they have enough to do without working through two costing methods.

Another disadvantage of ABC is that it is usually more complex than other approaches. Rather than applying all factory overhead on some simple basis, such as labour hours, it requires the development of numerous cost pools that must be individually allocated. In other words, ABC is a more intensive technique, and the costs to implement and then maintain the system may not be worth the trouble.

ABC example



Case study/example

The following example will be used to demonstrate the principles of ABC and then to highlight the different outcomes compared with the absorption costing technique.

Y Limited manufactures and sells a wide range of machine tools. The company uses absorption costing for both external reporting as well as for individual product information for decision-making. However, on the advice of the company's financial consultants, management decided to trial a system of ABC, while still retaining the traditional costing system.

The following information has been obtained from the company's management accountant:

- Production overhead application rate per direct labour hour for absorption costing used for all products manufactured is \$20.00.
- Activity cost pools, cost drivers identified, costs and driver units used for the ABC system:
 - **Production Expenses**

Activity cost pools	Cost driver identified	Cost (\$)	Driver units
Purchasing	No. purchase orders	1,200,000	3,000
Materials handling & storage	No. of components used	1,000,000	5,000,000
Machine set-up	No. of setups	1,350,000	9,000
Quality control	No. of batches	800,000	3,200
Labour & other overhead	No. machine hours	10,650,000	500,000
Packaging	No. of units	2,500,000	625,000

- **Marketing Expenses**

Activity cost pools	Cost driver identified	Cost (\$)	Driver units
Delivery expenses	No. of sales orders	400,000	4,000
Sales commissions	Sales dollars	2,000,000	40,000,000
After sales service	No. of service calls	500,000	10,000

- Data for two of the many products produced by the company is provided below:



○ **Per unit data**

Products	X	Z
Price	\$80	\$400
Direct materials costs	\$20	\$120
Direct wages	\$15	\$60
Labour hours	1 hour	4 hours

○ **Other data**

Products	X	Z
No. purchase orders	200	200
No. of components used	450,000	100,000
No. of set-ups	50	1,000
No. of batches	50	200
Total machine hours	30,000	8,000
No. of units produced & sold	30,000	2,000
No. of sales orders	300	400
Sales dollars	\$2,400,000	\$800,000
No. of service calls	50	500

We will now calculate the cost drivers per unit for each activity cost pool identified, as follows:

Activity cost pool	Cost driver	Cost \$	Driver units	Cost per driver unit \$
Purchasing	No. of purchase orders	1,200,000	3,000	400.00
Material handling & storage	No. of components used	1,000,000	5,000,000	0.20
Machine set up	No. of set ups	1,350,000	9,000	150.00
Quality control	No. of batches	800,000	3,200	250.00
Labour & other overhead	No. machine hours	10,650,000	500,000	21.30
Packaging	No. of units	2,500,000	625,000	4.00
Delivery expenses	No. of sales orders	400,000	4,000	100.00
Sales commissions	Sales dollars	2,000,000	40,000,000	0.05
After sales service	No. of service calls	500,000	10,000	50.00

Now we can prepare income statements for products X and Z using ABC (ignore costs not allocated to products) and calculate the gross margin percentage for X and Z.

	X			Z		
	Units	Price \$	Value \$	Units	Price \$	Value \$
Sales	30,000	80	2,400,000	2,000	400	800,000
Production costs						
Direct materials	30,000	20	600,000	120		240,000
	Cost per Driver Unit \$	Driver Units	Cost \$	Driver Units		Cost \$
Overhead costs						
Purchasing	400.00	200	80,000	200		80,000
Materials handling & storage	0.20	450,000	90,000	100,000		20,000
Machine set up	150.00	50	7,500	1,000		150,000
Quality control	250.00	50	12,500	200		50,000
Labour & other overhead	21.30	30,000	639,000	8,000		170,400
Packaging	4.00	30,000	120,000	2,000		8,000
Total			1,549,000			718,400
Gross margin			851,000			81,600
Marketing costs						
Delivery expenses	100.00	300	30,000	400		40,000
Sales commissions	0.05	2,400,000	120,000	800,000		40,000
After sales service	50.00	50	2,500	500		25,000
Total			152,500			105,000
Net profit			698,500			(23,400)
Gross margin percent			35.46%			10.20%
Net margin percent			29.10%			-2.93%

So from the above we can see the performance of both products are significantly different. The gross margin for X is 35.46 per cent compared to 10.2 per cent for Y while the net margins are 29.1 per cent and -2.93 per cent respectively.

We can compare the above ABC product income statements with those prepared under a traditional absorption costing methodology. The following are the product income statements for X and Y to gross margin:

Income statements - absorption costing						
				X \$		Z \$
	Sales			2,400,000		800,000
	Costs					
		Materials	600,000		240,000	
		Labour	450,000		120,000	
		Overheads	600,000		160,000	
				1,650,000		520,000
	Gross margin			750,000		280,000
	Gross margin percent			31.25%		35.00%



Note: In the absorption costing income statement:

- Labour costs have been calculated as 30,000 units x 1 hour x \$15 per hour, total \$450,000 for X and 2,000 units x 4 hours x \$15 per hour, total \$120,000 for Z.
- Overheads are calculated using a pre-determined rate of \$20 per direct labour hour. So for X this equals 30,000 units x 1 hour x \$20 per hour, total \$600,000 and for Z, 2,000 units x 4 hours x \$20 per hour, total \$160,000.

The following table compares the results of the two costing methods.

Gross margin – method	Product X	Product Z
ABC	35.46%	(2.93%)
Absorption costing	31.25%	35%

Figure 6

The following general comments can be made from the above example:

- The two products (out of several manufactured) shows that the product costing system in this company suffers from the problems associated with overhead allocation under traditional costing. Management is receiving incorrect product cost and margin information that does lead to incorrect pricing and product portfolio management strategy decisions, which could have adverse effects on the market share of the company.
- ABC, by tracing costs to products on the basis of activity cost drivers, has provided far more accurate product cost and margin information for better pricing and product portfolio management decisions. It should enable the company to better manage its production and marketing effort.

In addition, the process of setting up an ABC system directs management's attention towards value adding and non-value adding activities, as well as cost drivers. This information should enable improvements to production processes and cost control.

Activity 1.3



Activity

1. Explain how ABC differs from traditional costing methods.
2. DEM manufactures and sells medical equipment. DEM uses an activity-based costing system. Direct materials and direct labour costs are accumulated separately along with information concerning four manufacturing overhead cost drivers (activities). Assume that the direct labour rate is \$20 an hour and that there were no beginning inventories. The following information was available for 2010, based on an expected production level of 400,000 units for the year:

Activity (cost driver)	Budgeted Cost for 2010	Cost driver used as allocation base	Cost allocation rate
	\$		\$
Materials handling	3,600,000	Number of parts used	\$1.50 per part
Milling and grinding	8,800,000	Number of machine hours	\$11.00 per machine hour
Assembly and inspection	6,000,000	Direct labour hours worked	\$5.00 per labour hour
Testing	1,200,000	Number of units tested	\$3.00 per unit

The following production, costs and activities occurred during the month of September:

Units produced/tested	Direct materials costs	Number of parts used	Machine hours	Direct labour hours
50,000	\$3,500,000	275,000	95,000	160,000

Required:

- a. Calculate the total manufacturing costs and the cost per unit produced and tested during September using the ABC approach.
 - b. Explain the advantages of the ABC approach relative to using a single predetermined overhead application rate based on direct labour hours.
3. Williams Industries manufactures and sells tables. The company uses an activity-based costing system. Direct materials and direct labour costs are accumulated separately along with information concerning three manufacturing overhead cost drivers (activities). Assume that the direct labour rate is \$15 an hour and that there were no beginning inventories. The following information was available for 2010, based on an expected production level of 50,000 units for the year:

Activity (cost driver)	Budgeted Cost for 2010	Cost driver used as allocation base	Cost allocation rate
	\$		\$
Materials handling	250,000	Number of parts used	\$0.20 per part
Cutting and lathe work	1,750,000	Number of parts used	\$1.40 per part
Assembly and inspection	4,000,000	Direct labour hours	\$20.00 per labour hour



The following production, costs and activities occurred during the month of July:

Units produced/tested	Direct materials costs	Number of parts used	Direct labour hours
3,200	\$107,200	70,400	13,120

Required:

- Calculate the total manufacturing costs and the cost per unit produced and tested during July using the activity-based costing approach.
- Assume, instead, that Williams Industries applies manufacturing overhead on a direct labour hours basis (rather than using the activity-based costing system described above). Calculate the total manufacturing cost and the cost per unit of the tables produced during July (hint: you will need to calculate the predetermined overhead application rate using the total budgeted overhead cost for 2010).
- Compare the per-unit cost figures calculated in (a) and (b). Which approach do you think provides better information for manufacturing managers? Explain your answer.

Unit summary



Summary

In this unit you learned that:

- An ABC system attempts to assign costs to activities undertaken within an organisation.
- There are different levels of activity within every organisation.
- Compared to traditional costing systems, ABC is more complex, however it does provide more accurate information to decision makers.
- There are numerous advantages and disadvantages for ABC compared with traditional costing systems.



Activity feedback

Activity 1.1

Your answers will depend on the organisation you choose.

Activity 1.2

1. Classify each item as product (inventorial) cost or period (non-inventorial) costs for the purpose of preparing external financial statements.
 - a. Product.
 - b. Product.
 - c. Period.
 - d. Product.
 - e. Period.
 - f. Period.
 - g. Product.
 - h. Product.
 - i. Product.
 - j. Product.
 - k. Product.
 - l. Product.
 - m. Period.
 - n. Product.
 - o. Period.

2. Lee Company

Answers for (a.) and (b.), unit product costs:

Variable costing:

Direct materials	\$42
Direct labour	\$28
Variable manufacturing overhead	<u>\$1</u>
Unit product cost	<u>\$71</u>

Absorption costing:

Direct materials	\$42
Direct labour	\$28
Variable manufacturing overhead	\$1
Fixed manufacturing overhead	<u>\$10</u>
Unit product cost	<u>\$81</u>

Answers for (c.) and (d.), income statements:

Variable costing income statement

Sale	\$560,500
Less variable expenses:	
Variable cost of goods sold:	
Beginning inventory	\$7,100
Add variable manufacturing costs	<u>\$440,200</u>
Goods available for sale	\$447,300
Less ending inventory	<u>\$28,400</u>
Variable cost of goods sold	\$418,900
Variable selling and administrative	<u>\$29,500</u>
	<u>\$448,400</u>
Contribution margin	\$112,100
Less fixed expenses:	
Fixed manufacturing overhead	\$62,000
Fixed selling and administrative	<u>\$35,400</u>
	<u>\$97,400</u>
Net income	<u>\$14,700</u>



Absorption costing income statement	
Sales	\$560,500
Cost of goods sold:	
Beginning inventory	\$8,100
Add cost of goods manufactured	<u>\$502,200</u>
Goods available for sale	\$510,300
Less ending inventory	<u>\$32,400</u>
	<u>\$477,900</u>
Gross margin	\$82,600
Less selling and administrative expenses:	
Variable selling and administrative	\$29,500
Fixed selling and administrative	<u>\$35,400</u>
	<u>\$64,900</u>
Net income	<u>\$17,700</u>

Answer for (e.), reconciliation:

Variable costing net income	\$14,700
Add fixed manufacturing overhead costs	
deferred in inventory under absorption costing	\$3,000
Deduct fixed manufacturing overhead costs	
released from inventory under absorption costing	<u>\$0</u>
Absorption costing net income	<u>\$17,700</u>

Activity 1.3

1. Explain how ABC differs from traditional costing methods.
 - Both ABC and traditional costing methods allocate overhead to cost objects, but the methods of doing this differ.
 - ABC allocates overhead to a cost object (product, service, customer, department and so on) by tracing the cost-causing activities of an organisation directly to a cost object. This results in activities (and their associated costs) being allocated into cost pools and then each cost pool is traced to a cost object.
 - Some complex ABC systems can have several hundred activities and multiple cost pools. The result is a more accurate reflection of the cost object's consumption of cost-causing activities.

- Traditional overhead allocation models also trace overhead to a cost object, however they typically use a single overhead driver (such as direct labour hours, or machine hours). The result is often a distorted amount of overhead applied to the cost object. This can be a significant problem in firms where competition is high and/or overhead is a significant proportion of the total cost.

2. DEM

- Calculate the total manufacturing costs and the cost per unit produced and tested during September.

	Activity	Cost driver used as allocation base	Cost allocation rate		Allocated cost
			\$		
	Materials handling	Number of parts used	1.50 per part	275 000 parts	\$412 500
	Milling and grinding	Number of machine hours	11.00 per hour	95 000 MH	\$1 045 000
	Assembly and inspection	Direct labour hours worked	5.00 per hour	160 000 DLH	\$800 000
	Testing	Number of units tested	3.00 per unit	50 000 units	\$150 000
					<u>\$2 407 500</u>

Total cost:

Direct material	\$3,500,000
Direct labour	
(160,000 x \$20)	3,200,000
Manufacturing overhead	<u>2,407,500</u>
Total cost	<u>\$9,107,500</u>
Units produced	50,000
Cost per unit	\$182.15

- Explain the advantages of the ABC approach relative to using a single predetermined overhead application rate based on direct labour hours.

Multiple allocation rates, as used in ABC costing, overcome the problem of unitising fixed costs since in smaller cost pools an appropriate variable activity can be found. The cost allocations are closer to economic reality and so are more accurate. This is likely to result in more competitive behaviour and better decision-making.



3. Williams Industries

- a. Calculate the total manufacturing costs and the cost per unit produced and tested during July using the activity-based costing approach.

	Activity (cost driver)	Cost driver used as allocation base	Overhead Cost allocation rate		Allocated cost
			\$		\$
	Materials handling	Number of parts used	0.20 per part	70 400 parts	14 080
	Cutting and lathe work	Number of parts used	1.40 per part	70 400 parts	98 560
	Assembly and inspection	Direct labour hours	20.00 per hour	13 120 DLH	<u>262 400</u>
					<u>\$375 040</u>

Total cost:

Direct material	\$107,200
Direct labour (13,120 x \$15)	\$196,800
Manufacturing overhead	<u>\$375,040</u>
Total cost of 50,000 tables	<u>\$679,040</u>
Cost per table	\$13.58

- b. Assume instead that Williams Industries applies manufacturing overhead on a direct labour hours basis (rather than using the activity-based costing system described above). Calculate the total manufacturing cost and the cost per unit of the tables produced during July.

Predetermined overhead absorption rate:

Estimated overhead/DLH = \$6,000,000/200,000 (hours calculated from assembly and inspection allocation = \$30 per hour

Total cost:

Direct material	\$107,200
Direct labour (13,120 x \$15)	\$196,800
Overhead (13,120 x \$30)	<u>\$393,600</u>
Total cost of 50,000 tables	<u>\$697,600</u>
Cost per table	\$13.95

- c. Compare the per-unit cost figures calculated in a) and b). Which approach do you think provides better information for manufacturing managers? Explain your answer.

In this situation, the result is not that significant (only 2.7 per cent between the ABC cost per unit of \$13.58 and the absorption costing rate of \$13.95) but in many other instances, this is not the case. A cost benefit analysis is



always conducted before installing a new system. One of the risks to be assessed is the consequences of making the wrong decision.