



## ACC2100 Exam Notes - Summary Management Accounting

Management Accounting (Monash University)

# INTRODUCTION TO MANAGEMENT ACCOUNTING

Management Accounting  
Cost Terms and Concepts  
Cost Behaviour, Cost Drivers and Cost Estimations  
Product Costing System  
Process Costing and Operation Costing  
Overhead Costs  
Activity-Based Costing  
Cost Volume Profit Analysis  
Information for decisions: Relevant Costs and Benefits  
Pricing and Product Mix Decisions  
Information for Capital Expenditure Decisions

## CHAPTER 1 – MANAGEMENT ACCOUNTING

### MANAGEMENT ACCOUNTING:

Refers to the processes and technique that focus on the effective and efficient use of organisational resources to support managers in their tasks of enhancing both customer value and shareholder value.

Customer value: value that a customer places on particular features of a product

Shareholder value: worth of the business from the shareholders' or owner's perspective.

Effectiveness: focuses managers on the successful achievement of an objective

Efficiency: focuses managers on achieving the objective with the least possible consumption of resources

Resources: not only the financial resources of the organisation but also non-financial (information, work processes, employees, committed customers and suppliers).

### MANAGEMENT ACCOUNTING SYSTEMS:

An information system that procedures the information required by managers to create value and manage resources (estimates of the costs of producing goods and services/measuring performance).

Level of Management:

- Senior managers need information that provides them with an overview of the entire organisation
- Middle managers require more detailed information about their areas of responsibility
- Operational managers will need information to help them manager their specific operations on day-to-day basis

### COMPARISON BETWEEN MANAGEMENT ACCOUNTING AND FINANCIAL ACCOUNTING:

Financial accounting: concerned with preparing and reporting accounting information for parties outside the organisation.

|                           | <b>Management Accounting</b>                                                                                                                                                                                                        | <b>Financial Accounting</b>                                                                              |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| Users of Information      | Internal: managers and employees at all levels                                                                                                                                                                                      | External: shareholders, creditors, banks, securities exchange, trade unions and government agencies      |
| Regulations               | No accounting standards or external rules are imposed. Information is generated to satisfy managers' information needs                                                                                                              | Accounting standards and corporations law regulate the content of external financial reports             |
| Source of data            | Both financial and non-financial data drawn from many sources – the core accounting system, physical and operational data from production systems, and market, customer and economic data from sources external to the organisation | Financial data almost exclusively drawn from the organisation's core transaction-based accounting system |
| Nature of the information | Past, current or future-oriented; subjective; <u>relevant</u> ; timely; and supplied at various levels of detail to suit managers' specific needs                                                                                   | Past, reliable, verifiable, not timely, not always relevant and highly aggregated                        |

Common between FA and MA (Costing system):

The costing system estimates the cost of goods and services, as well as the cost of organisational units, such as departments. Managers may need information about product costs for a range of strategic and operational purposes including setting prices, controlling operations and making decisions about the continuation of a particular product.

### BASIC STRATEGY CONCEPT:

1. Vision
  - o Describes the desired future state or aspiration of the organisation
2. Mission Statement
  - o Defines the purposes and boundaries of the organisation
3. Objectives
  - o Specific statements of what the organisation aims to achieve, often quantified and relating to a specific period of time
    - Eg. Profitability, growth, cost minimisation, product leadership, innovation, product quality
4. Strategies
  - o Specifies the direction that the organisation intends to take over the long term to achieve its mission and meet its objectives.
    - Business (competitive) strategy: concerned with the way that a business competes within its chosen market
    - Corporate strategy: making choices about the types of businesses in which the organisation as a whole will operate (divest and acquire/how best to finance and structure)
    - Strategy implementation: planning and managing the implementation of strategies

### CREATING SHAREHOLDER VALUE:

1. Competitive advantage:

- o Refers to advantages that a business may have over another, which are difficult to imitate. Competitive advantage can be gained through adopting a business strategy of cost leadership or product differentiation.
  - Cost Leadership: When a firm is a low-cost procedure, this allows the business to sell its goods or services at a lower price than competitors
  - Product differentiation: Firms can derive competitive advantage by offering goods or services that have characteristics that are different from those offered by competitors.

**MAINTAINING COMPETITIVE ADVANTAGE:**

1. Strategic planning:

- o Term given to long-term planning, usually undertaken by senior managers, normally within a 3-5 year timeframe. Strategic planning involves making corporate strategy decisions about the types of businesses and markets in which the organisation operates, and business (or competitive) strategy decisions about how the business is to compete within its particular markets.

2. Implementing strategies:

- o Performance measurement systems can be used to compare actual outcomes to budgets and other targets that focus on the organisation's strategic objectives

**EFFECTIVE RESOURCE MANAGEMENT:**

1. Planning:

- o Concerned with formulating the direction for future operations
- o Budget: example of a detailed plan that summarises the financial consequences of an organisation's operating activities for a specific future period, usually one year.
- o It involves more than formulating budgets: it includes formulating detailed schedules and timeliness for implementing the plans and selecting performance measures and targets to assess their success.

2. Controlling:

- o Involves putting in place mechanisms to ensure that operations proceed according to plan and that objectives are achieved.
- o Control systems: systems and procedures that provide regular information to assist with control.

**CONDITIONS AND MOTIVATIONS INFLUENCING MANAGEMENT ACCOUNTING DESIGN:**

1. Contingency theory:

- o Argue that the design of an organisation's management accounting system may be influenced by (i.e. is contingent on) a range of factors that reflect the context within which the organisation operates, including the external environment, technology, organisational structure, organisation size, strategy and organisational and national culture.

2. Institutional theory:

- o Managers may adopt certain management accounting practices to achieve legitimacy both within and beyond their organisation.

**KEY INFLUENCES ON MANAGEMENT ACCOUNTING:**

Changes in the business environment:

- Increased global competitiveness
- Rapid advances in technology
- Increasing pressures for accountability, including a focus on ethical/governance issues
- Increasing awareness of sustainability issues, especially climate change
- Increased reliance on strategic alliances
- Rising global mobility of labour
- Growth of the service sector
- Availability of big data

## COMPONENTS OF A MANAGEMENT ACCOUNTING SYSTEM:

1. Costing system:
  - o Estimates the *cost of goods or services* as well as the *cost of organisational units* such as departments
2. Budgeting system:
  - o Used to prepare a detailed plan showing the financial consequences of the organisation's operating activities for a specific future period. The system estimates planned *revenues* and *costs*
3. Performance measurement system:
  - o Measures performance by comparing actual results with some target
4. Cost management system
  - o Focuses on improving the organisation's cost effectiveness through understanding and managing the real causes of costs

## TRADITIONAL VERSUS MODERN MANAGEMENT ACCOUNTING

| Components                      | Traditional Systems                                                                                                          | Modern Systems                                                                                                                                                                                                                                                                                         |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Costing systems                 | Focuses on the costs of departments and products<br>Assume production volume is the only factor that can cause costs to vary | Focus on the costs of activities, products, customers and suppliers<br>Recognise that a range of factors can cause costs to vary                                                                                                                                                                       |
| Budgeting system                | Built around departments                                                                                                     | Built around departments and activities                                                                                                                                                                                                                                                                |
| Performance measurement systems | Monitor financial performance<br>Control what's going on inside the organisation                                             | Monitor performance across a <i>range of critical success factors</i> such as quality, delivery and sustainability not just financial performance<br>Also looks at what is happening <i>out</i> the organisation<br>Support the management of both <i>customer value</i> and <i>shareholder wealth</i> |
| Cost management                 | No separate system<br>Costs mainly controlled through the financial performance measurement system                           | Proactive approaches to managing resources and reducing costs, rather than just controlling them<br>Analyse real causes of costs and eliminate wasteful activities                                                                                                                                     |

## COST CLASSIFICATIONS

| Basis of Classification     | Cost Classification                                                                                                                                                                                                                     | Used to:                                                                                                                                                                            |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Behaviour                   | Variable <ul style="list-style-type: none"> <li>- Unit level</li> <li>- Engineered</li> </ul> Fixed <ul style="list-style-type: none"> <li>- Committed</li> <li>- Discretionary</li> </ul>                                              | <ul style="list-style-type: none"> <li>- Plan (budget) costs</li> <li>- Control costs</li> <li>- Make decisions</li> </ul>                                                          |
| Traceability                | Direct<br>Indirect                                                                                                                                                                                                                      | <ul style="list-style-type: none"> <li>- Estimate the cost of goods and services</li> <li>- Estimate the cost of organisational units, such as departments or activities</li> </ul> |
| Controllability             | Controllable<br>Uncontrollable                                                                                                                                                                                                          | <ul style="list-style-type: none"> <li>- Measure managers' performance</li> <li>- Control costs</li> </ul>                                                                          |
| Value Chain                 | Upstream: <ul style="list-style-type: none"> <li>- R&amp;D</li> <li>- Design</li> <li>- Supply</li> </ul> Downstream: <ul style="list-style-type: none"> <li>- Marketing</li> <li>- Distribution</li> <li>- Customer service</li> </ul> | <ul style="list-style-type: none"> <li>- Analyse cost structures and identify strategies</li> <li>- Measure performance</li> <li>- Control/manage costs</li> </ul>                  |
| Manufacturing/Product Costs | Direct material<br>Direct labour<br>Manufacturing overhead                                                                                                                                                                              | <ul style="list-style-type: none"> <li>- Estimate the cost of products</li> <li>- Estimate the cost of goods sold for the income statement, and inventory for balance</li> </ul>    |

|                       |                |                                              |
|-----------------------|----------------|----------------------------------------------|
|                       |                | sheet                                        |
| Timing of the expense | Product Period | - Prepare income statement and balance sheet |

## CLASSIFYING COSTS ACCORDING TO THEIR BEHAVIOUR

Level of activity:

- Refers to the level of work performed in the organisation.

Cost driver:

- The activity causes the cost and, for this reason, the level of activity

Variable costs:

- Costs that change in total, in direct proportion to a change in the level of activity or cost driver

Fixed cost:

- Cost that remains unchanged in total despite changes in the level of activity

## DIRECT AND INDIRECT COSTS:

Cost object:

- Simply an item for which management wants a separate measure of costs (activities, suppliers, products)

Direct cost:

- Cost that can be identified with, or traced to, a particular cost object in an economic manner

Indirect cost:

- A cost that cannot be identified with, or traced to, the cost object in an economic manner.

## CONTROLLABLE AND UNCONTROLLABLE COSTS:

Controllable costs:

- If a manager can control or significantly influence the level of a cost

Uncontrollable costs:

- Costs that a manager cannot significantly influence

## VALUE CHAIN:

The value chain is a set of linked processes or activities that begins with acquiring resources and ends with providing (and supporting) goods and services that customers value.

### 1. UPSTREAM COSTS

- o Research and development costs:
  - All the costs involved in developing new products or processes
- o Design costs:
  - All costs associated with designing a product, as well as the costs of designing the processes that will be used to produce the new product
- o Supplier costs:
  - Costs of sourcing and managing incoming parts, assemblies and supplies

### 2. PRODUCTION COSTS

- o Production costs include the costs incurred to collect and assemble the resources used to produce a product. (also referred to as manufacturing costs or factory costs)

### 3. DOWNSTREAM COSTS

- o Marketing costs:
  - Overall costs of selling products, such as salaries, commissions and travel costs of sales personnel, and the costs of advertising and promotion
- o Distribution costs:
  - Cover the costs of storing, handling and shipping finished products
- o Customer service costs:
  - All costs of serving customers, such as the costs of answering customer enquiries/warranty claims

## MANUFACTURING COSTS

Manufacturing costs include all costs incurred within the factory area, whereas costs incurred outside the manufacturing area are non-manufacturing costs

### 1. Direct material

- o Raw material that:
  - Is consumed in the manufacturing process
  - Is physically incorporated into the finished product
  - Can be traced to products in an economic manner

### 2. Direct labour

- o The cost of salaries, wages and labour on-costs for personnel who work directly on the manufactured product

### 3. Manufacturing overheads

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- o Indirect manufacturing costs:
  - Covers all manufacturing costs other than direct material and direct labour costs. It includes indirect materials and indirect labour (not classified as direct)
- o Support department:
  - Departments that do not work directly on producing products but are necessary for the manufacturing process to occur.
- o Overtime premium
  - Extra wages paid to an employee who works beyond normal working hours
- o Idle time
  - Time that is not spent productively by an employee due to such events as equipment breakdowns or new setups of production runs

## CONVERSION AND PRIME COSTS

Conversion costs: direct labour costs and manufacturing overhead

Prime cost: costs of direct material and direct labour

## PRODUCT COSTS FOR FINANCIAL ACCOUNTING REPORTS

1. Product cost (inventoriable cost):
  - o Cost assigned to goods that were either manufactured or purchased for resale. It is regarded as part of the asset inventory until the goods are sold.
2. Cost of goods sold expense:
  - o When goods are sold, the product cost is transferred from the inventory account to COGS
3. Period cost:
  - o All costs that are not product costs. (eg. Sales personnel, advertising, depreciation of office, salaries)
4. Selling expense:
  - o Costs of selling goods or services and the costs of distribution
5. Administrative expenses:
  - o Costs of running the business as a whole and include costs of senior management as well as a range of (non-manufacturing support services)

## COST FLOWS IN A MANUFACTURING BUSINESS:

To keep track of DM, DL and MOH, there are four steps:

1. When raw material is purchased, its cost is added to the '*raw material inventory*', an account that records the cost of all major materials purchased for manufacturing.
2. As direct material is consumed in production, its cost is removed from raw material and added to '*work in process inventory*' an account that records the cost of manufactured products that are not only partially completed at balance date. Similarly, the costs of direct labour and manufacturing overhead are accumulated in work in process inventory.
3. When products are finished, their costs are transferred from work in process inventory to '*finished goods inventory*', an account that records the cost of manufactured goods that are complete and ready for sale. The costs are then *stored* in finished goods until the products are sold
4. When products are sold, the costs of those products are transferred from finished goods inventory to the '*cost of goods sold*' account, which is an expense during the period when the sale is made.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <b>SCHEDULE OF COST OF GOODS MANUFACTURED</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  |
| <b>DIRECT MATERIAL</b><br>Raw material, 1 January<br><i>Add</i> Purchases of raw material<br>Raw material available for use<br><i>Less</i> Raw materials, 31 December<br>Raw material used<br><br><b>DIRECT LABOUR</b><br><br><b>MANUFACTURING OVERHEAD</b><br>Indirect material<br>Indirect labour<br>Depreciation on factory<br>Depreciation on equipment<br>Electricity<br>Insurance<br>Total manufacturing overhead<br><br><b>TOTAL MANUFACTURING COSTS</b><br>Work in process inventory, 1 January<br>Subtotal<br><i>Deduct</i> Work in process inventory, 31 December<br><b>COST OF GOODS MANUFACTURED</b> |  |
| <b>SCHEDULE OF COST OF GOODS SOLD</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |
| Finished goods inventory, 1 January<br><i>Add</i> Cost of goods manufactured<br>Cost of goods available for use<br><i>Less</i> Finished goods inventory, 31 December<br><b>COST OF GOODS SOLD</b>                                                                                                                                                                                                                                                                                                                                                                                                                |  |
| <b>INCOME STATEMENT</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  |
| Sales Revenue<br><i>Less</i> Cost of goods sold<br>Gross Profit<br><i>Less</i> Selling and administrative expenses<br>Profit before taxes<br>Income tax expense<br><b>NET PROFIT</b>                                                                                                                                                                                                                                                                                                                                                                                                                             |  |

## CHAPTER 3 – COST BEHAVIOUR

### COST BEHAVIOUR

The relationship between a cost and the level of activity that causes this cost (ie cost driver)

### COST ESTIMATION

The way an accountant determines the cost behaviour of a particular cost item

### COST PREDICTION

A forecast of a cost at a particular level of activity

### COST DRIVER

A term that is used to describe activities or factors that drive (or cause) costs

### VOLUME-BASED COST DRIVER

Assumes costs are driven, or caused, by the volume of production (or sales)

### NON-VOLUME-BASED COST DRIVERS

Cost drivers that are not directly related to production volume

### ACTIVITY BASED COSTING COST CLASSIFICATION:

1. Unit level costs:
  - o Relate to activities that are performed for each unit produced, such as the direct material costs (volume-based cost drivers)
2. Batch level costs:
  - o Activities that are performed for a group of product units, such as a production batch or a delivery load. The electricity costs or delivery costs are examples of batch level.
3. Product level costs:

- o Activities that are performed for specific products or product families and include the costs of researching, designing and supporting products.
- 4. Facility level costs:
  - o Costs that are incurred to run the business but are not caused by any particular product.

#### COST BEHAVIOUR PATTERNS

1. Variable costs:
  - o Costs that change, in total, in direct proportion to a change in activity
2. Fixed costs:
  - o Costs that remain unchanged in total as the level of activity varies
3. Step-fixed costs:
  - o Costs that remain fixed over a wide range of activity levels but jump to a different amount for levels outside that range.
4. Semivariable costs:
  - o Both fixed and variable components
5. Curvilinear costs:
  - o Behaviour pattern has a curved line.
    - Marginal cost: cost of producing one additional unit.
    - Relevant range: range of activity over which a particular cost pattern can be assumed to be valid

#### COST TYPES:

1. Engineered costs:
  - o Bears a defined physical relationship to the level of output
2. Committed costs:
  - o Results from an organisation's ownership or use of premises and its basic organisation structure (e.g. council rates, depreciation, cost of renting buildings, salaries)
3. Discretionary cost:
  - o Arises from a management decision to spend a particular amount of money for some purpose; and, like committed costs, discretionary costs do not exhibit simple causal relationships with any level of activity (eg. Amounts spent on R&D, advertising and promotion, management development programs)

#### COST ESTIMATION:

1. Managerial judgement
  - o Account analysis:
    - Managers estimate costs using their experience rather than any formal analysis. For example, they may make intuitive estimates of costs based on their knowledge of the company. Or sometimes managers may view the financial statements or the balances of accounts in the general ledger and classify cost items as fixed, variable or semi-variable costs.
2. Engineered method:
  - Study of processes that result in the incurrence of a cost.
  - o Task analysis:
    - Where employees are observed as they undertake work tasks.
3. Quantitative method:
  - o High-low method:
    - Cost function is calculated using only two data points. The observations with the highest and lowest levels of activity are used to calculate the variable cost and fixed cost components.
    - $$VC = \frac{\Delta \text{cost levels}}{\Delta \text{activity levels}}$$
    - $$\text{Cost} = FC + (x \times VC)$$
  - o Regression analysis:
    - Used to estimate the relationship between a dependent variable (cost) and independent variables (activity levels or cost drivers)

#### PROBLEMS IN ESTIMATING COST BEHAVIOUR:

1. Missing data
2. Outliers
3. Mismatched periods
4. Trade-offs in choosing the period
5. Allocated fixed costs
6. Inflation

#### WHY BUSINESSES RELY ON GUT FEELING OVER COST BEHAVIOURS:

- The accountant responsible for cost analysis may not have enough time or knowledge to use appropriate quantitative techniques
- The data required to estimate reliable cost functions may not exist
- There may be low priority given to cost behaviour and cost estimate within the business
- Cost estimates may be considered accurate enough for the firm's needs. Cost behaviour classification are often made to allow products to be costed.

#### ASSUMPTIONS UNDERLYING COST ESTIMATION:

1. Cost behaviour depends on one activity or a few independent variables. In reality, however, costs are affected by a host of factors including the weather, the mood of employees and the quality of the raw materials used
2. Cost behaviours are modelled as linear straight lines within the relevant range

## CHAPTER 4 – PRODUCT COSTING

### PRODUCT COSTING:

A **product costing system** accumulates product-related costs and uses a series of procedures to assign them to the organisation's final products.

Product-related costs include costs incurred during the production process, called **production costs**.

### PROCESS OF ALLOCATING OVERHEAD COSTS TO PRODUCTS:

1. Aggregating the overhead costs into cost pools
2. Identifying the overhead cost driver
3. Calculating a 'predetermined (or budgeted) overhead rate' per unit of cost driver
4. Applying manufacturing overhead costs to products at the predetermined overhead rate multiplied by quantity of cost driver consumes.

### DISPOSING OF UNDERAPPLIED OR OVERAPPLIED OVERHEAD:

1. Overapplied:
  - o Overhead applied to production is greater than the actual overhead costs incurred
2. Underapplied:
  - o Overhead applied is less than actual overhead costs

Two options of disposing of underapplied or overapplied overhead:

- Close the underapplied or overapplied overhead to cost of goods sold
- Prorate the underapplied or overapplied overhead to cost of goods sold, work in process inventory and finished goods inventory

### TYPES OF PRODUCT COSTING SYSTEMS:

1. Job costing systems:
  - o A costing system that assigns manufacturing (or product-related) costs to individual jobs. It is used by businesses that produce a wide range of products, individually or in relatively small, distinct batches.
  - o Job Order:
    - Each distinct product or batch of production
2. Process costing systems:
  - o Used by companies that produce very large quantities of a single product (or a small range of very similar products). Process costing can be used in service firms where services are repetitive, for example in a routine processing of cheques by a bank.
  - o Two main steps:
    - Estimating the costs of the production process or processes

- Calculating an average cost per unit by dividing the cost of the process by the number of units produced.

#### COMPARISON:

- Job costing systems assign costs to distinct production jobs that are significantly different. An average cost per unit of product is then calculated for each job.
- Process costing systems assign costs to one or more production processes. Because all units are identical or very similar, average costs for each unit of product are calculated by dividing the costs of the processes used to produce the product by the number of units produced.
- Many businesses produce products with some unique features and some common processes. These businesses use costing systems that have both job and process costing features.

#### JOB COSTING:

##### Job cost sheet:

- shows details of the costs of the direct material, direct labour and manufacturing overhead used to complete the job.

##### Bill of materials:

- lists all materials needed for the job

#### STEP 1 - Purchases:

|    |                        |     |
|----|------------------------|-----|
| DR | Raw Material Inventory | xxx |
| CR | Accounts Payable       | xxx |

#### STEP 2 – Transferring Direct Material to Jobs:

Material requisition form sent to accounting department.

##### Release of raw materials to production:

|    |                              |     |
|----|------------------------------|-----|
| DR | Working In Process Inventory | xxx |
| CR | Raw Materials Inventory      | xxx |

#### STEP 3 – Use of indirect material:

|    |                                  |     |
|----|----------------------------------|-----|
| DR | Manufacturing overhead           | xxx |
| CR | Manufacturing supplies inventory | xxx |

#### STEP 4 – Charging direct labour to jobs:

Time sheet: records the amount of time an employee spends on each production job

|    |                              |     |
|----|------------------------------|-----|
| DR | Working in process inventory | xxx |
| CR | Wages payable                | xxx |

#### STEP 5 – Accounting for indirect labour:

To add indirect labour costs to manufacturing overhead:

|    |                        |     |
|----|------------------------|-----|
| DR | Manufacturing overhead | xxx |
| CR | Wages payable          | xxx |

#### STEP 6 – Accounting for manufacturing overhead

|    |                          |     |
|----|--------------------------|-----|
| DR | Manufacturing overhead   | xxx |
| CR | Prepaid rent             | xxx |
| CR | Accumulated depreciation | xxx |
| CR | Accounts payable         | xxx |
| CR | Prepaid insurance        | xxx |

#### STEP 7 – Selling and Administrative costs

|    |                                  |     |
|----|----------------------------------|-----|
| DR | Selling and administrative costs | xxx |
| CR | Prepaid rent                     | xxx |
| CR | Wages payable                    | xxx |
| CR | Accounts payable                 | xxx |
| CR | Office supplies inventory        | xxx |

#### STEP 8 – Completion of production job

|    |                              |     |
|----|------------------------------|-----|
| DR | Finished goods inventory     | xxx |
| CR | Working in process inventory | xxx |

#### STEP 9 – Sale of a good

|    |                     |     |
|----|---------------------|-----|
| DR | Accounts receivable | xxx |
| CR | Sales Revenue       | xxx |
| DR | Cost of goods sold  | xxx |

CR                      Finished goods inventory                      xxx

#### STEP 10 – Under and Overapplied

Underapplied overhead:

DR      Cost of goods sold                      xxx

CR                      Manufacturing overhead                      xxx

Overapplied overhead:

DR      Manufacturing overhead                      xxx

CR                      Cost of goods sold                      xxx

### CHAPTER 5 – PROCESS COSTING

Two main steps in process costing:

1. Estimating the costs of production process or processes
2. Calculating an average cost per unit by dividing the cost of the process by the number of units produced

Equivalent units:

- o Amount of production inputs that have been applied to the physical units in production

Four steps for process costing:

Step 1: Analyse the physical flow of units

Step 2: Calculate the equivalent units (for direct material or conversion)

Step 3: Calculate the unit costs (that is, the cost per equivalent unit for direct material and conversion)

Step 4: Analyse the total costs (to determine the cost to be removed from work in process and transferred either to the next production department or to finished goods)

Two alternative sets of assumptions:

1. Weighted average method
2. First-in First-out method (FIFO)

#### WEIGHTED AVERAGE METHOD:

Averages the cost of opening work in process inventory with current production costs to determine the cost of completed production and closing work in process.

Step 1: Analyse the physical flow, weight average method

Physical units in beginning WIP + Physical units started – Physical units completed = Physical units in ending WIP

Step 2: Calculate the equivalent units, weight average method:

Equivalent units completed + equivalent units in ending WIP = Total equivalent units

|                              | Physical Units | % of completion with respect to conversion | Equivalent Units (Direct Material) | Equivalent Units (Conversions) |
|------------------------------|----------------|--------------------------------------------|------------------------------------|--------------------------------|
| Work in process, 1 Apr       | 20000          | 10%                                        |                                    |                                |
| Units started in April       | 380000         |                                            |                                    |                                |
| Total units to account for   | 400000         |                                            |                                    |                                |
| Units completed during April | 390000         | 100%                                       | 390000                             | 390000                         |
| Work in process, 30 April    | 10000          | 50%                                        | 10000                              | 5000                           |
| Total units accounted for    | 400000         |                                            |                                    |                                |
| Total equivalent units       |                |                                            | 400000                             | 395000                         |

Step 3: Calculate the unit costs, weighted average method:

|                             | Direct Material | Conversion | Total               |
|-----------------------------|-----------------|------------|---------------------|
| Work in process, 1 April    | 54600           | 4670       | 59270               |
| Costs incurred during April | 505400          | 141480     | 646880              |
| Total costs to account for  | 560000          | 146150     | 706150              |
| Equivalent units            | 400000          | 395000     |                     |
| Cost per equivalent unit    | \$1.40          | \$0.37     | =SUM(DM+Conversion) |

Step 4: Analyse the total costs:

|                                                                                                                                      |                 | Total  |
|--------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------|
| Cost of goods completed and transferred out during April:<br>(Number of Units transferred out) *<br>(Total cost per equivalent unit) | 390000 x \$1.77 | 690300 |
| Cost remaining in 30 April WIP:<br>(Number of equivalent units in DM) *                                                              | 100000 x \$1.40 | 14000  |

|                                                                                        |               |        |
|----------------------------------------------------------------------------------------|---------------|--------|
| (Cost per equivalent unit in DM)                                                       |               |        |
| Conversion:<br>(Number of equivalent units in Conv)<br>* (Cost per equiv unit of Conv) | 5000 x \$0.37 | 1850   |
| Total cost of 30 April WIP                                                             |               | 15850  |
| Check: Cost of goods completed                                                         |               | 690300 |
| Cost of 30 April WIP                                                                   |               | 15850  |
| Total costs accounted for                                                              |               | 706150 |

#### FIRST IN FIRST OUT METHOD:

The first-in first-out method of process costing, assumes that the oldest inventory is processed and completed first, before new inventory is commenced.

Step 1: Analyse the physical flow, FIFO

Physical units in beginning WIP + Physical units started – Physical units completed = Physical units in ending WIP

Step 2: Calculate the equivalent units, FIFO:

Equivalent units completed + equivalent units in ending WIP = Total equivalent units

|                                      | Physical Units | % of completion with respect to conversion | Equivalent Units (Direct Material) | Equivalent Units (Conversions) |
|--------------------------------------|----------------|--------------------------------------------|------------------------------------|--------------------------------|
| Work in process, 1 Apr               | 20000          | 10%                                        |                                    |                                |
| Units started in April               | 380000         |                                            |                                    |                                |
| Total units to account for           | 400000         |                                            |                                    |                                |
| Units completed during April         | 390000         | 100%                                       | 390000                             | 390000                         |
| Work in process, 30 April            | 10000          | 50%                                        | 10000                              | 5000                           |
| Total units accounted for            | 400000         |                                            |                                    |                                |
| Total equivalent units               |                |                                            | 400000                             | 395000                         |
| Less Equivalent units in 1 April WIP |                |                                            | 20000                              | 20000                          |
| New Equivalent Units                 |                |                                            | 380000                             | 393000                         |

Step 3: Calculate the unit costs, FIFO:

|                             | Direct Material         | Conversion              | Total               |
|-----------------------------|-------------------------|-------------------------|---------------------|
| Work in process, 1 April    |                         |                         | 59270               |
| Costs incurred during April | 505400                  | 141480                  | 646880              |
| Total costs to account for  |                         |                         | 706150              |
| Equivalent units            | 380000                  | 393000                  |                     |
| Cost per equivalent unit    | \$1.33                  | \$0.36                  | =SUM(DM+Conversion) |
| Calculation                 | $\frac{505400}{380000}$ | $\frac{141480}{393000}$ | \$ 1.33+ \$ 0.36    |

Step 4: Analyse the total cost, FIFO:

|                                                                                |                         | Total  |
|--------------------------------------------------------------------------------|-------------------------|--------|
| Cost of goods completed to finished during April                               |                         |        |
| 1. Cost of 1 April WIP which is transferred out first                          |                         | 59270  |
| 2. Cost incurred to complete 1 April WIP                                       |                         |        |
| Direct material: complete                                                      |                         | 0      |
| Conversion:                                                                    | 20000 x 90% x \$0.36    | 6480   |
| (Number of equiv units of conv) * (cost per equiv unit of conv)                |                         |        |
| 3. Cost incurred to produce units that were started and completed during April | (390000-20000) x \$1.69 | 625300 |
| (number of units) * (total cost per equiv unit)                                |                         |        |
| Total cost of goods completed and transferred out                              |                         | 691050 |
| Cost remaining in 30 April WIP                                                 |                         |        |
| Direct material:                                                               |                         |        |
| (Number of equiv units of DM) * (cost per equiv of DM)                         | 10000 x \$1.33          | 13 300 |
| Total cost of 30 April WIP                                                     |                         | 15100  |
| Check: Cost of goods completed and transferred out                             |                         | 691050 |
| Cost of 30 April WIP                                                           |                         | 15100  |
| Total costs accounted for                                                      |                         | 706150 |

## SPOILAGE:

Spoilage is the cost of these defective products and wasted resources that cannot be recovered by rework or recycling.

Step 1: Analyse the physical flow of units including spoiled units

|                              | Physical Units | % of completion with respect to conversion | Equivalent Units (Direct Material) | Equivalent Units (Conversions) |
|------------------------------|----------------|--------------------------------------------|------------------------------------|--------------------------------|
| Work in process, 1 Apr       | 20000          | 10%                                        |                                    |                                |
| Units started in April       | 380000         |                                            |                                    |                                |
| Total units to account for   | 400000         |                                            |                                    |                                |
| Units completed during April | 350500         | 100%                                       | 350500                             | 350500                         |
| Units spoiled during April   | 39500          | 25%                                        | 39500                              | 9875                           |
| Work in process, 30 April    | 10000          | 50%                                        | 10000                              | 5000                           |
| Total units accounted for    | 400000         |                                            |                                    |                                |
| Total equivalent units       |                |                                            | 400000                             | 365375                         |

Step 2: Calculate the equivalent units, including spoiled units

Step 4: Analyse of total costs

|                                                                                                |                 | Total  |
|------------------------------------------------------------------------------------------------|-----------------|--------|
| Cost of goods completed to finished during April:<br>(Number of units) * (Cost per equiv unit) | 350000 x \$1.80 | 630900 |
| Cost of spoiled units:                                                                         |                 |        |
| Direct material:                                                                               |                 |        |
| (Number of equiv units of DM) * (cost per equiv unit of DM)                                    | 39500 x \$1.40  | 55300  |
| Conversion:                                                                                    |                 |        |
| (Number of equiv units of Conv) * (cost per equiv unit of Conv)                                | 9875 x \$0.40   | 3950   |
| Total cost of spoiled units:                                                                   |                 | 59250  |
| Cost remaining in 30 April WIP                                                                 |                 |        |
| Direct Material:                                                                               |                 |        |
| (Number of equiv unit of DM) * (cost per equiv unit of DM)                                     | 10000 x \$1.40  | 14000  |
| Conversion:                                                                                    |                 |        |
| (Number of equiv unit of Conv) * (cost per equiv unit of Conv)                                 | 5000 x \$0.40   | 2000   |
| Total cost of 30 April WIP                                                                     |                 | 16000  |
| Check: Cost of goods completed and transferred out                                             |                 | 630900 |
| Cost of spoiled units                                                                          |                 | 59250  |
| Cost of 30 April WIP                                                                           |                 | 16000  |
| Total costs accounted for                                                                      |                 | 706150 |

Two types of spoilage:

1. Normal spoilage
  - o Spoilage is considered to be inherent in the production process and that occurs even under efficient operating conditions. This spoilage is a necessary part of the production process, which is unavoidable.
2. Abnormal spoilage
  - o Spoilage that should not occur under efficient operating conditions.
  - o DR Working in process: finishing department xxx
  - CR Loss on abnormal spoilage xxx
  - CR Work in process: mixing department xxx

## OPERATION COSTING

Operation costing:

- Assigns direct material costs to individual batches – a job costing approach
- Accumulates conversion costs by department (or operation or process), which are allocated to all units passing through the department – process costing approach

## CHAPTER 7 – OVERHEAD COSTS

OVERHEAD COSTS:

Referred to as indirect product costs, although many businesses also describe the indirect costs of responsibility centres as overheads.

MANUFACTURING OVERHEAD COSTS:

Manufacturing overhead costs are all manufacturing costs other than direct material and direct labour. They include production costs that:

- Are incurred for a variety of products and cannot be traced to individual products
- Could be traced to individual products, but it is not worth the trouble

- Could be traced to an individual product but are more appropriately treated as a cost of all output  
 Manufacturing overhead includes depreciation and insurance of the factory and manufacturing equipment, utility costs such as electricity as well as the costs of manufacturing support departments.

SUPPORT DEPARTMENT:

Departments that do not work directly on producing products but are necessary for the manufacturing process to occur.

NON MANUFACTURING COSTS:

Non-manufacturing costs are all costs incurred outside the manufacturing area. They include upstream costs, such as research and development, design and supply costs; and downstream costs, such as marketing distribution and customer service costs.

COST POOLS:

Cost pool is a collection of costs that are to be allocated to cost objects.

Cost object is an item that is assigned a separate measure of cost

Direct costs can be traced directly to cost objects

Indirect costs cannot be traced to cost objects; instead they are allocated

The general process of allocating costs in a cost pool to cost objects is called *cost allocation*

DETERMING COST ALLOCATION BASES:

A cost allocation base is some factor or variable that allows us to allocate costs in a cost pool to cost objects. Ideally, the allocation base should be selected on cause and effect grounds; that is, it should be a cost driver.

| Costs (or cost pools)                                                                                                                                      | Allocation base (or cost driver)                                                                                                                                                                                                                                                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Allocation to products                                                                                                                                     |                                                                                                                                                                                                                                                                                                 |
| - Manufacturing overhead                                                                                                                                   | - Units of output<br>- Input measures, for example direct labour hours, direct labour costs, machine hours, direct material costs                                                                                                                                                               |
| Allocation to responsibility centres                                                                                                                       |                                                                                                                                                                                                                                                                                                 |
| - Administration costs<br>- Occupancy costs<br>- Marketing costs<br>- Information technology costs<br>- Human resources costs<br>- Material-handling costs | - Number of employees in centre<br>- Floor area of centre<br>- Sales revenue generated by the centre<br>- Number of computer terminals in the centre<br>- Customer processing time in the centre<br>- Number of employees in the centre<br>- Number of kilograms of material used in the centre |

THREE APPROACHES TO OVERHEAD COSTS

1. Plant-wide overhead rate

$$Predetermined\ MOH\ rate = \frac{budgeted\ MOH}{budgeted\ level\ of\ cost\ driver}$$

$$Applied\ MOH = (predetermined\ MOH\ rate) \times (quantity\ of\ cost\ driver\ consumed)$$

2. Departmental overhead rates

$$Predetermined\ MOH\ rate = \frac{budgeted\ MOH\ for\ department}{budgeted\ level\ of\ cost\ driver\ for\ department}$$

3. Activity-based costing

LEVELS OF COST ALLOCATION TO RESPONSIBILITY CENTRES:

- At corporate level
- Within business units
- In the manufacturing plant

REASONS FOR ALLOCATING INDIRECT COSTS TO RESPONSIBILITY CENTRES:

1. To help managers understand the economic effects of their decisions
2. To encourage a particular pattern of resource usage
3. To support the product costing system

DIRECT METHOD FOR ALLOCATING SUPPORT DEPARTMENT COSTS:

Under the direct method, each support department’s costs are allocated among the production departments that consume part of the support department’s output. This method ignores the fact that some support departments provide services to other support departments.

## STEP DOWN METHOD FOR ALLOCATING SUPPORT DEPARTMENT:

The step-down method is a method of allocating support department costs that partially recognises services provided by one support department to another.

## CHAPTER 8 – ACTIVITY BASED COSTING

### FEATURES OF TRADITIONAL PRODUCT COSTING SYSTEMS:

- Direct material and direct labour costs are traced to products
- MOH costs are allocated to products using predetermined overhead rate for whole plant
- MOH rate is calculated using some measure of production volume, that is, using a volume-based cost driver
- Non-manufacturing costs are not assigned to products

### DISADVANTAGES OF TRADITIONAL COSTING:

- Assumes MOH is driven by volume of production
- Aggregates overhead costs to large cost pools

### CHOOSING AN OVERHEAD COST DRIVER:

→ what causes, or drives these manufacturing costs?

### CAUSES OF CHANGES IN COSTS:

- MOH costs are increasing and becoming less volume-driven
- Non-MOH costs is becoming a more substantial component of total costs
- Growing automation has increased MOH costs, relative to direct labour costs
- Greater product diversity has increased production complexity and this has led to an increased demand for manufacturing overhead support
- Many organisations are investing more resources in downstream areas such as customer service and marketing

### TRADITIONAL APPROACH RESULTING IN INACCURATE PRODUCT COSTS:

- Proportion of direct labour costs decreases
- Proportion of MOH costs increases
- Proportion of MOH costs not related directly to production volume increases
- Non-manufacturing costs that are product related become substantial
- Product diversity increases

### INDICATORS OF OUTDATED COSTING SYSTEM

| Indicator                                                                                                                                  | Probable cause                                                                         |
|--------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| - Production manager wants to drop products that the costing system claims are profitable                                                  | - These products use more production resources than is indicated by their product cost |
| - Profit margins on individual products are difficult to explain. For example, a product has a higher than expected cost, and lower margin | - The product costing system is distorting the product's costs                         |
| - Products that are difficult to make have high profit margins                                                                             | - Costing system understates the costs of making these products                        |
| - Competitors' prices appear unrealistically low                                                                                           | -                                                                                      |

### ACTIVITY-BASED COSTING

A methodology that can be used to measure both the cost of objects and the performance of activities. (improves allocation of MOH costs to products)

#### STEPS:

1. Measuring the cost of manufacturing overhead activities
2. Assigning the costs of manufacturing overhead activities to products

### THREE TYPES OF COST DRIVERS:

1. Resource drivers: used to estimate the cost of resources consumed by an activity
2. Activity drivers: used to estimate the cost of an activity consumed by cost objects
3. Root cause cost driver: underlying factors that cause activities to be performed and their costs to be incurred

### ACTIVITIES:

- Batch level activities: include inspection, set up and material-handling activities as they were performed for each batch of product
- Unit level activity: include machine-related activity as it must be performed for each production unit produced
- Product level activity: an activity performed to enable the production of an entire product line
- Facility level activity: an activity required to run the business.

#### BENEFITS OF ABC:

- The overhead costs are a significant portion of total costs, and a large part of overhead is not directly related to production volume
- The business has a diverse product range, and individual products use of support resources differs from their use of volume-based cost drivers
- Production activity involves diverse batch sizes and product complexity
- Proportion of product-related costs incurred outside manufacturing is increasing relative to manufacturing costs
- There are likely to be high costs associated with making inappropriate decisions based on inaccurate products
- Cost of designing, implementing and maintaining the ABC system is likely to be relatively low due to sophisticated IT support

#### WHY SOME FIRMS HAVE NOT ADOPTED ABC:

- Remain unaware of ABC
- Are uncertain about the potential benefits to be gained from ABC
- Understand the need for change but are concerned about the extensive resource requirements to implement ABC
- Are constraint by powerful behavioural factors that cause resistance to change

#### LIMITATIONS OF ACTIVITY-BASED COSTING:

- Facility level costs
- Use of average costs
- Complexity

### CHAPTER 18 – COST VOLUME PROFIT ANALYSIS

#### BREAK EVEN POINT:

Break even point is the volume of sales at which the total revenues and costs are equal. At this level of sales, there is no profit or loss; the operation breaks even.

#### FORMULAS:

Profit:

$$\text{Sales revenue} - \text{variable costs} = \text{cost}$$

Sales revenue:

$$(\text{Unit sales price} \times \text{sales volume} \in \text{units})$$

Variable costs:

$$(\text{Unit variable costs} \times \text{sales volume} \in \text{units})$$

Contribution margin:

$$\text{Sales revenue} - \text{variable costs} \quad \text{OR} \quad \text{Selling price} - \text{variable cost}$$

Contribution margin per MH:

$$\frac{\text{Total CM}}{\text{Total MH}}$$

Break even (single units):

$$\frac{\text{costs}}{\text{Contribution margin}}$$

Break even (multiple units):

$$\frac{\text{costs}}{\text{Weighted Average Contribution margin}}$$

Fixed costs:

$$\text{Sales volume} \in \text{units} \times \text{contribution margin}$$

Break event point (single dollars):

$$\frac{\text{costs}}{\text{Contribution margin}} \times \text{Selling Price}$$

Break event point (multiple dollars):

$$\frac{\text{costs}}{\text{Weighted Average Contribution margin}} \times \text{Selling Price}$$

Contribution margin ratio:

$$\frac{\text{Contribution margin}}{\text{Selling Price}}$$

#### GRAPHING COST VOLUME PROFIT:

Relevant range: range of sales volume for which the cost behaviour is assumed to be valid

1. Draw the axes of the graph
2. Draw the fixed cost lines
3. Draw the total cost line
4. Draw the total revenue line
5. Find the break event point (intersection of total revenue line and total cost line)

## SAFETY MARGIN

Safety margin is the difference between the *budgeted sales revenue* and the *break-even sales revenue*:

$$\text{Budgeted } d_{SR} - B E_{SV}$$

## CPV ANALYSIS WITH MULTIPLE PRODUCTS

Sales Mix: relative proportion of each type of product sold expressed in percentage

Weighted average unit contribution margin: average of the products' unit contribution margin

## INCOME TAX:

Target net profit after tax:  $(\text{target profit before tax}) \times (1 - t)$

Target net profit before tax:  $\frac{\text{target profit after tax}}{1 - t}$

Units required to earn NPAfterTax:  $\frac{\text{fixed costs} + \text{target profit before tax}}{\text{contribution margin}}$

## ASSUMPTIONS UNDERLYING CVP ANALYSIS:

- The behaviour of total revenue is linear (straight line)
- Behaviour of total costs is linear over the relevant range
- Costs can be categorised as fixed, variable or semi-variable
- For both variable and fixed costs, the sales volume is the only cost driver
- In the multiproduct organisations, the sales mix remains constant over the relevant range
- In manufacturing firms, the levels of all inventory at the beginning and end of the period are the same.

## GENERAL EQUATION:

$$\text{Profit} = \text{Revenue} - (\text{Unit level costs} + \text{Batch level costs} + \text{product level costs} + \text{order level costs} + \text{customer level costs} + \dots)$$

## CHAPTER 19 – RELEVANT COSTS AND BENEFITS

### DECISION MAKING PROCESS:

1. Clarify the problem
2. Specify the decision criterion
3. Identify alternative course of action
4. Collect information about relevant costs and benefits
5. Compare the costs and benefits of each alternative course of action
6. Select a course of action
7. Evaluate the effectiveness of the decision

## TACTICAL VERSUS LONG-TERM DECISIONS

Tactical decisions: do not usually require significant increases or decreases in capacity-related resources, such as factory space and equipment, and their impact may be short term. Tactical decisions can be changed quickly or reversed to take advantage of better opportunities that may arise. (e.g. whether to accept or reject a special order)

Long-term decisions: more strategic in nature, and may involve large outlays of (or decreases in) capacity-related resources. (e.g. acquisition of automated equipment)

#### DECISION TYPES:

- Whether to accept or reject a special order
- Whether to make or buy (or outsource) a product
- Whether to add or delete a product or depart
- Whether to sell or further process joint products

#### ELEMENTS OF 'RELEVANT INFORMATION':

1. Differs between alternative courses of action (different with or without)
2. Relates to the future
3. Provides a balance between timeliness and accuracy

#### IMPORTANCE OF PROVIDING ONLY RELEVANT INFORMATION:

- Costly process
- Costly to have managers' limited time spent on reading and processing information that is not relevant to a decision (waste of managerial resources)
- Information overload

#### IDENTIFYING RELEVANT COSTS AND BENEFITS

1. Sunk costs  
Costs that have already been incurred. (IRRELEVANT)
  - Carrying amount of equipment (acquisition *less* accumulated depreciation)
  - Cost of inventory on hand
2. Opportunity costs  
The potential benefit given up when the choice of one action precludes a different action. (RELEVANT)
3. Out-of-pocket costs  
Those incremental costs that will be incurred if a particular course of action is selected (RELEVANT)
4. Incremental costs (RELEVANT)
5. Avoidable costs  
Those costs that will not be incurred in the future if a particular decision is made (RELEVANT)
6. Unavoidable costs  
Those costs that will continue to be incurred, no matter which course of action is chosen (IRRELEVANT)

#### **SCENARIO ONE:** Accept or Reject a Special Order (tactical decision)

Incremental costs associated with the decision will often be the direct costs of producing the product for the special order  
Focuses on incremental benefits and costs

#### **SCENARIO TWO:** Make or Buy a Product

Focuses on avoidable and unavoidable costs

Unavoidable costs are incurred whether the product is manufactured in-house or by an external party

Opportunity costs are RELEVANT

#### OUTSOURCING:

Describes situations in which part of a manufacturing process, or another function normally undertaken within an organisation, is contracted to an outside business.

#### MISTAKES TO AVOID IN DECISION MAKING:

1. Sunk Costs
2. Unitised Costs
3. Allocated Costs
4. Opportunity Costs

## CHAPTER 20 - PRICING AND PRODUCT MIX DECISIONS

Major factors affecting pricing decisions:

- Market positioning
- Product cost
- Customer value (customer base decisions: (i) price and (ii) perceived benefit)
- Competitor behaviour
- Legal, political and ethical issues

Profit-maximising price and quantity:

- (i) Total revenue curve: relationship between total sales revenue and quantity sold
- (ii) Marginal revenue curve: shows the change in total revenue that accompanies a change in quantity sold
- (iii) Demand curve (average revenue curve): shows relationship between sales price and quantity of units demanded
- (iv) Total cost curve: relationship between total cost and the quantity produced and sold each month
- (v) Marginal cost curve: change in total cost that accompanies a change in quantity produced and sold

Price elasticity:

Defined as the impact of price changes on sales volume

Elastic: if price increase has a LARGE impact on sales volume

Inelastic: if price changes have little or no impact on sales quantity

Cross elasticity: extent to which a change in a product's price affect the demand for other substitute products

Limitation on economic model:

1. Firm's demand curve and marginal revenue curve are difficult to determine with precision (difficult to predict accurately the effects of price changes on the quantity demanded)
2. Marginal revenue-marginal cost paradigm is not valid for all forms of markets
3. Difficulty of measuring marginal cost

Pricing Strategies:

o Value-based pricing

Where customers' perceptions of the value of the product or service guide the pricing

o Economic-value pricing

Specifically estimates the cost and benefits experienced by the customer that extent beyond the initial purchase price.

Economic-value to the customer (EVC): price that customers are willing to pay for the product, given the price that they pay for the reference product and the added functionality and any operating cost reduction provided by the product.

|                          | Dolphin | SuperSwift | EVC    |
|--------------------------|---------|------------|--------|
| Purchase Price           | 25000   |            | 25000  |
| Additional Functionality |         | 3000       | 3000   |
| Startup cost             | 2000    | 3000       | (1000) |
| Post-purchase costs      | 5000    | 4000       | 1000   |
| Total EVC                |         |            | 28000  |

o Cost-based pricing

Formula:  $Price = Cost + (Markup\ percentage \times cost)$

OPTION ONE: Absorption cost pricing formula

- Provides a justifiable price that tends to be perceived as equitable by all parties
- Required for external financial reporting under AASB 102

OPTION TWO: Variable cost pricing formula

- Does not obscure the cost behaviour pattern by unitising fixed costs and making them appear variable
- Does not required allocation of fixed costs to individual product lines
- Variable cost data are exactly the type of information managers need when facing certain tactical short-term pricing decisions (whether to accept special order)

Determining Mark up:

PROFIT MARGIN:

Determining the profit margin in cost-plus pricing is to use return on investment (ROI) pricing which bases the profit margin on the firm's target return on investment.

Target Profit:  $Average\ invested\ capital \times target\ ROI = target\ profit$

MARK UP PERCENTAGE:

1. Cost-plus pricing based on absorption cost:

Formula:  $Mark\ up = \frac{(target\ profit) + (total\ selling \wedge administrative\ costs)}{annual\ volume \times absorption\ cost\ per\ unit}$

2. Cost-plus pricing based on total variable cost:

Formula:  $Mark\ up = \frac{(target\ profit + total\ annual\ FC)}{annual\ volume \times total\ VC\ per\ unit}$

General Formula:

$$\text{Mark Up} = \frac{\text{profit required}}{\text{annual volume} \times \text{cost base per unit used}} \times \text{cost base}$$

*Mark Up = i achieve target ROI + total annual costs not included*

#### TIME AND MATERIAL PRICING:

Under this approach, the company determines one charge for the labour used on a job (time charge) and another charge for the materials (material charge).

Time charges:

$$\text{hourly labour cost} + \frac{\text{annual overhead excluding handling} \wedge \text{storage}}{\text{annual labour hours}} + \text{hourly charge } i \text{ cover profit margin}$$

$$\text{Material charges: } \text{material cost incurred on job} + \left( \text{material cost} \times \frac{\text{annual material handling} \wedge \text{storage costs}}{\text{annual costs of materials used}} \right)$$

#### STRATEGIC PRICING OF NEW PRODUCTS:

1. Pricing strategy - Skimming pricing:  
The initial product price is set high, and short-term profits are reaped on the new product
2. Pricing strategy – Penetration pricing:  
The initial price is set relatively low. By setting a low price for a new product, management hopes to gain wide acceptance of the product and quickly attract a large market share.

#### COMPETITIVE BIDDING:

In a competitive bidding situation two or more companies submit sealed bids (or prices) to a potential buyer for a product, service or project. The buyer selects one of the companies on the basis of the bid price and the design specifications for the job.

#### LEGAL RESTRICTIONS ON SETTING PRICES:

Misusing market power by practising:

- Predatory pricing: which occurs when a company attempts to eliminate or substantially damage a competitor by reducing the price of its goods or services to a very low level
- Resale price maintenance: occurs when a supplier dictates the minimum price at which goods or services are to be resold by a buyer to the retail or wholesale market.
- Price-fixing arrangements: which are the fixing, controlling or maintenance of prices by competitors.

#### PRODUCT MIX DECISIONS:

Involves determining the most appropriate range of products (or services) to offer to customers. Tactical product mix decisions frequently involving changing the product mix temporarily, often because of some constraint on resources available, or because of unusual customer demands. Long-term product mix decisions are concerned with whether new products should be adopted or existing products discontinued.

Prices influence product profitability, which may influence decisions about whether to change the product mix.

#### LONG-TERM PRODUCT MIX DECISIONS:

When product profitability studies reveal loss-making products, firms can choose a range of alternative responses:

- The firm may choose to increase product prices
- Managers may implement various cost management techniques to try and reduce the cost of producing that product
- Firm may offer customers incentives (such as quantity discounts) to encourage them to purchase greater quantities of the product. This may have the effect of reducing some product costs per unit and hence improving product profitability

### CHAPTER 21 - CAPITAL EXPENDITURE DECISIONS

Capital expenditure (capital budgeting/capital investment) decisions require the evaluation of cash inflows and outflows over several years to determine the acceptability of the project. (*long term decisions*)

Cash outflows: initial cost of the project and any increases in costs that will be incurred as result of the project over its life.

Cash inflows: include cost savings and additional revenues and any proceeds of the sale of assets that result from the object.

#### METHODS USED TO ANALYSE CASH FLOWS:

- Payback method
- Accounting rate of return
- Discounted cash flow (DCF)

#### CAPITAL EXPENDITURE APPROVAL PROCESS

Six step process:

1. Project generation

2. Estimation and analysis of projected cash flows
3. Progress to approval
4. Analysis and selection of projects
5. Implementation of projects
6. Post-completion audit of projects

#### NET PRESENT VALUE METHOD:

##### Steps of NPV:

- Prepare a table showing the cash flows during each year of the proposed investment
- Calculate the present value of each cash flow, using the required rate of return. The required rate of return is the minimum acceptable rate of return on investment. It usually reflects the firm's cost of capital.
- Calculate the net present value (NPV) which sums the present values of cash flows
- If NPV is POSITIVE, this means the project is acceptable.

#### INTERNAL RATE OF RETURN METHOD:

A project's internal rate of return is the actual economic return earned by the project over its life.

Formula: 
$$p = \sum \frac{C_t}{(1+r)^n}$$

##### Steps of IRR:

- Prepare a table showing the cash flows during each year of the proposed investments
- Calculate the internal rate of return for the proposed investment
- If the internal rate of return is GREATER THAN the required rate of return, the project is acceptable

#### ADVANTAGES OF NPV:

- Easier to calculate NPV than IRR
- NPV adjusts for risk (it is not possible to include such a risk adjustment in the IRR because analysis solves for only a single average discount rate, the project's IRR)
- NPV always yields one answer.
- Reinvestment assumption

#### ASSUMPTIONS UNDERLYING DISCOUNTED CASH FLOW ANALYSIS:

1. The year-end timing of cash flows
2. The certainty of cash flows

#### LEAST-COST DECISIONS:

Rather than maximising the NPV of cash inflows minus cash outflows, the objective is to minimise the NPV of the costs to be incurred.

#### PROFITABILITY INDEX:

One criterion that managers use to rank investment proposals is called profitability index (excess present value index).

Formula: 
$$\text{Profitability Index} = \frac{\text{Present value of cash flows, exclusive of initial investment}}{\text{initial investment}}$$

#### PAYBACK METHOD:

The payback period of a capital investment proposal is the amount of time it will take for the cash inflows from the project to accumulate to an amount that covers the original investment.

Formula: 
$$\text{Payback Period} = \frac{\text{Initial investment}}{\text{annual cash flow}}$$

##### ADVANTAGES OF PAYBACK METHOD :

- Simplicity
- Screening investment projects
- Cash shortages
- Risk of a project

##### DISADVANTAGES OF PAYBACK METHOD:

- It ignore the time value of money
- It ignores cash flows beyond the payback period

#### ACCOUNTING RATE OF RETURN METHOD :

Accounting ROR method focuses on the incremental accounting profit that results from a project (accrual procedures).

Formula:  $\text{Accounting rate of return} = \frac{\text{average annual profit}}{\text{initial investment}}$  *of the project*

**ADVANTAGES OF ACCOUNTING ROR:**

- Screening investment projects
- Consistency with financial accounting methods
- Consistency with profit-based performance evaluation systems
- Consideration of the entire life of the project

**DISADVANTAGE OF ACCOUNTING ROR:**

- Does not consider time value of money

AFTER-TAX CASH INFLOW:  $(\text{incremental sales revenue} - \text{COGS}) \times (1 - \text{tax rate})$

DECREASE IN TAX INCOME:  $\text{Noncash expense} \times \text{tax rate}$

**LIMITATION OF TRADITIONAL CAPITAL EXPENDITURE ANALYSIS:**

- An unrealistic status quo
- Hurdle rates that are too high
- Time horizons that are too short
- The difficulty of gaining approval for large projects
- Greater uncertainty about operating cash flows
- Exclusion of benefits that are difficult to quantify

**BENEFITS OF TRADITIONAL CAPITAL EXPENDITURE ANALYSIS:**

- Synergistic effects of adopting multiple capital expenditure proposals
- Greater flexibility in the production process
- Shorter cycle times and reduced lead times
- Reduction of non-value-added costs

**DEFINITIONS:**