TUTORIAL ACTIVITY
Part (a) Attempt questions 1-26, on page 25 of Horngren (2014) et al.

1-26 (15 min.) Management accounting guidelines

1. Cost-benefit approach
2. Behavioural and technical considerations
3. Different costs for different purposes
4. Cost-benefit approach
5. Behavioural and technical considerations
6. Cost-benefit approach
7. Behavioural and technical considerations
8. Different costs for different purposes
9. Behavioural and technical considerations

TUTORIAL ACTIVITY
Part (b) Attempt question 2-41, on page 72 of Horngren (2014) et al.

2-41 (15–20 min.) Terminology, interpretation of statements (continuation of 2-40)

1. Prime costs and conversion costs:
   - Direct materials used: A$108 million
   - Direct manufacturing labour costs: 42 million
   - Prime costs: A$150 million

   - Direct manufacturing labour costs: A$42 million
   - Indirect manufacturing costs: 63 million
   - Conversion costs: A$105 million

2. Inventoriable costs (in millions) for Year 2015:

<table>
<thead>
<tr>
<th>Plant utilities</th>
<th>A$9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indirect manufacturing labour</td>
<td>27</td>
</tr>
<tr>
<td>Depreciation—plant and equipment</td>
<td>6</td>
</tr>
<tr>
<td>Miscellaneous manufacturing overhead</td>
<td>15</td>
</tr>
<tr>
<td>Direct materials used</td>
<td>108</td>
</tr>
<tr>
<td>Direct manufacturing labour</td>
<td>42</td>
</tr>
<tr>
<td>Plant supplies used</td>
<td>4</td>
</tr>
<tr>
<td>Property tax on plant</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total inventoriable costs</strong></td>
<td><strong>A$213</strong></td>
</tr>
</tbody>
</table>

   Period costs (in millions) for Year 2015
   - Marketing, distribution, and customer-service costs: A$94

3. Design costs and R&D costs may be regarded as product costs in case of contracting with a governmental agency. For example, if the Air Force negotiated to contract with Lockheed to build a new type of supersonic fighter plane, design costs and R&D costs may be included in the contract as product costs.

4. Direct materials used = A$108,000,000 ÷ 2,000,000 units = A$54 per unit
   Depreciation on plant and equipment = A$6,000,000 ÷ A$2,000,000 units
   = A$3 per unit

5. Direct materials unit cost would be unchanged at A$54 per unit. Depreciation unit cost would be A$6,000,000 ÷ 3,000,000 = A$2 per unit. Total direct materials costs would rise by 50% to A$162,000,000 (A$54 per unit × 3,000,000 units). Total depreciation cost of A$6,000,000 would remain unchanged.
6. In this case, equipment depreciation is a variable cost in relation to the unit output. The amount of equipment depreciation will change in direct proportion to the number of units produced.

   (a) Depreciation will be A$2 million (2 million × A$1) when 2 million units are produced.

   (b) Depreciation will be A$3 million (3 million × A$1) when 3 million units are produced.

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**Tutorial Activity**

**Part (c) Attempt questions 3-20 and 3-12, on pages 114-115 of Horngren (2014) et. al.**

3-12 Frequently encountered problems when collecting cost data on variables included in a cost function are:

1. The time period used to measure the dependent variable is not properly matched with the time period used to measure the cost driver(s).
2. Fixed costs are allocated as if they are variable.
3. Data are either not available for all observations or are not uniformly reliable.
4. Extreme values of observations occur from errors in recording costs, from non-representative periods, or from observations outside the relevant range.
5. A homogeneous relationship between the individual cost items in the dependent variable cost pool and the cost driver(s) does not exist.
6. The relationship between the cost and the cost driver is not stationary.
7. Inflation has occurred in a dependent variable, a cost driver, or both.

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3-20 **(15 min.) Account analysis method:**

1. **Variable costs:**
   - Car wash labour: A$260,000
   - Soap, cloth, and supplies: 42,000
   - Water: 38,000
   - Electric power to move conveyor belt: 72,000
   
   **Total variable costs**
   - A$412,000

2. **Fixed costs:**
   - Depreciation: A$64,000
   - Salaries: 46,000
   
   **Total fixed costs**
   - A$110,000

Some costs are classified as variable because the total costs in these categories change in proportion to the number of cars washed in Matt’s operation. Some costs are classified as fixed because the total costs in these categories do not vary with the number of cars washed. If the conveyor belt moves regardless of the number of cars on it, the electricity costs to power the conveyor belt would be a fixed cost.

2. **Variable costs per car** = \( \frac{A$412,000}{80,000} \) = A$5.15 per car

   **Total costs estimated for 90,000 cars** = A$110,000 + (A$5.15 × 90,000)
   = A$573,500
3-21 (15 min.) Estimating a cost function, high–low method

1. The electricity cost is variable because, in each month, the cost divided by the number of kilowatt hours equals a constant A$0.30. The definition of a variable cost is one that remains constant per unit.

   The telephone cost is a mixed cost because the cost neither remains constant in total nor remains constant per unit.

   The water cost is fixed because, although water usage varies from month to month, the cost remains constant at A$60.

2. The month with the highest number of telephone minutes is June, with 1440 minutes and A$98.80 of cost. The month with the lowest is April, with 980 minutes and A$89.60. The difference in cost (A$98.80 – A$89.60), divided by the difference in minutes (1440 – 980) equals A$0.02 per minute of variable telephone cost. Inserted into the cost formula for June:

   A$98.80 = a + (A$0.02 × number of minutes used)
   A$98.80 = a + (A$0.02 × 1440)
   A$98.80 = a + A$28.80
   a = A$70 monthly fixed telephone cost

   Therefore, Pierre’s cost formula for monthly telephone cost is:
   \[ Y = A$70 + (A$0.02 \times \text{number of minutes used}) \]

3. The electricity rate is A$0.30 per kilowatt hour
   The telephone cost is A$70 + (A$0.02 per minute)
   The fixed water cost is A$60.

   Adding them together we get:
   \[
   \text{Fixed cost of utilities} = A$70 \text{ (telephone)} + A$60 \text{ (water)} = A$130
   \]

   \[
   \text{Monthly Utilities Cost} = A$130 + (0.30 \text{ per kilowatt hour}) + (A$0.02 \text{ per telephone minutes})
   \]

4. Estimated utilities cost = A$130 + (A$0.30 × 2200 kilowatt hours) + (A$0.02 × 1500 minutes)
   = A$130 + A$660 + A$30 = A$820
4-51 (35 min.) Deciding where to produce

<table>
<thead>
<tr>
<th></th>
<th>Victoria</th>
<th>New South Wales</th>
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</thead>
<tbody>
<tr>
<td>Selling price</td>
<td>A$150.00</td>
<td>A$150.00</td>
</tr>
<tr>
<td>Variable cost per unit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manufacturing</td>
<td>A$72.00</td>
<td>A$88.00</td>
</tr>
<tr>
<td>Marketing and distribution</td>
<td>14.00</td>
<td>14.00</td>
</tr>
<tr>
<td>Contribution margin per unit (CM_PU)</td>
<td>64.00</td>
<td>48.00</td>
</tr>
<tr>
<td>Fixed costs per unit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manufacturing</td>
<td>30.00</td>
<td>15.00</td>
</tr>
<tr>
<td>Marketing and distribution</td>
<td>19.00</td>
<td>14.50</td>
</tr>
<tr>
<td>Profit per unit</td>
<td>A$ 15.00</td>
<td>A$ 18.50</td>
</tr>
</tbody>
</table>

CM\_PU of normal production (as shown above) A$64 A$48
CM\_PU of overtime production (A$64 – A$3; A$48 – A$8) 61 40

1. Annual fixed costs = Fixed cost per unit × Daily production rate × Normal annual capacity
(A$49 × 400 units × 240 days; A$29.50 × 320 units × 240 days)
Break-even volume = FC ÷ CM\_PU of normal production (A$4 704 000 ÷ A$64; A$2 265 600 ÷ A$48)

2. Units produced and sold 96 000 96 000
Normal annual volume (units) (400 × 240; 320 × 240) 96 000 76 800
Units over normal volume (needing overtime) 0 19 200
CM from normal production units (normal annual volume × CM\_PU normal production) (96 000 × A$64; 76 800 × A$48) A$6 144 000 A$3 686 400
CM from overtime production units (0; 19 200 × A$40) 0 768 000
Total contribution margin 6 144 000 4 454 400
Total fixed costs 4 704 000 2 265 600
Profit A$1 440 000 A$2 188 800
Total profit A$3 628 800

3. The optimal production plan is to produce 120 000 units at the Victoria plant and 72 000 units at the New South Wales plant. The full capacity of the Victoria plant, 120 000 units (400 units × 300 days), should be used because the contribution from these units is higher at all levels of production than is the contribution from units produced at the New South Wales plant.

Contribution margin per plant:
Victoria, 96 000 × A$64 A$  6 144 000
Victoria 24 000 × (A$64 – A$3) 1 464 000
New South Wales, 72 000 × A$48 3 456 000
The contribution margin is higher when 120,000 units are produced at the Victoria plant and 72,000 units at the New South Wales plant. As a result, profit will also be higher in this case since total fixed costs for the division remain unchanged regardless of the quantity produced at each plant.

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**TUTORIAL ACTIVITY**

**Part (e)** Attempt question 10-32, on page 409 of Horngren (2014) et al.

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**10-32 (15 min.) Responsibility in a restaurant**

The cost of the pancake mix is usually the responsibility of the purchasing agent and usually controllable by the Central Warehouse. However, in this scenario, Janet the cook has taken the responsibility for the cost of the replacement pancake mix from the purchasing agent by making a purchasing decision. Since Barney holds the purchasing agent responsible for pancake costs, and presuming that Janet knew this, Janet should have discussed her decision with the purchasing agent before sending the kitchen helper to the store.

Barney should not be angry because his employees acted to satisfy the customers on a short-term emergency basis. Presuming the Central Warehouse does not consistently have problems with their freezer, there is no way the purchasing agent could foresee the pancake shortage and plan accordingly. Also, the problem only lasted three days, which, in the course of the year (or even the month) will not seriously harm the profits of a restaurant that sells a variety of foods. However, had they run out of pancake mix for three days, this could have long-term implications for customer satisfaction and customer loyalty, and in the long run could harm profits as customers find other restaurants to eat breakfast.

Classroom discussions have also raised the following diverse points:

- (a) How will the cook behave in the future?
- (b) How will the purchasing managers behave in the future regarding willingness to take risks?

The text emphasizes the following: beware of overemphasis on controllability. For example, a time-honoured theme of management is that responsibility should not be given without accompanying authority. Such a guide is a useful first step, but responsibility accounting is more far-reaching. The basic focus should be on information or knowledge, not on control. The key question is: Who is the best informed? Put another way, "Who is the person who can tell us the most about the specific item, regardless of ability to exert personal control?"