

# CHAPTER 2

## An Introduction to Cost Terms and Purposes

### Learning Objectives

*After studying this chapter, a student should be able to:*

1. Identify and distinguish the logic underlying three cost classification systems derived from financial accounting information: period and inventoriable, direct and indirect, prime and conversion
2. Apply cost information to produce detailed financial schedules to illustrate how the asset value of inventories expires into cost of goods sold reported on the income statement
3. Differentiate fixed costs from variable costs using the management-accounting cost-classification system
4. Explain the limitations that the use of average or unit costs impose on managerial decision making
5. Apply management-accounting logic to classify costs for use in managerial decisions

## CHAPTER OVERVIEW

Strategic decisions involve cost information that is not necessarily routine financial information. Different decisions require different cost information. Thus, the phrase “different costs for different purposes”

Product costing needs information distinguished by three classifications: period and inventoriable, direct and indirect, and prime and conversion. This information can be used to determine cost of a unit of production or unit product cost.

When the cost of inventory is appropriately determined then the cost of a goods sold out of that inventory will be more accurate. This provides management with information on the relationship of profit to sales and the income reported on the income statement. Management looks at those costs as variable per unit or fixed so that extrapolations or “what if” hypotheses can be made within the limitations of the assumptions about the behaviour of total costs within the relevant range of activity.

Cost objects, direct costs and indirect costs are defined and illustrated. The concepts of cost tracing and cost allocation are introduced. Cost drivers and cost management are defined and their interrelationship described. The relationships of cost drivers, variable costs, and fixed costs are explained. Several approaches are provided to illustrate the concept of cost behaviour. Major assumptions underlying the definitions of variable and fixed costs are given and the relevant range is defined. Uses and limitations of unit costs are explained. Graphs are used to depict these important relationships.

Manufacturing firms and their related manufacturing cost categories are introduced. Prime and conversion costs are defined and the decreasing importance of direct labour in automated manufacturing systems is explained.

The financial statements for service, merchandising, and manufacturing sector companies are compared with the cost of goods sold section being explained and illustrated in detail. Then costs as assets and expenses are discussed. The three types of inventory appearing on a manufacturer’s balance sheet are defined.

The use of unit costs for management decisions is potentially dangerous. Since fixed costs are constant in the total amount within the relevant range any variation in the output in units will cause forecasting errors. It is best to segregate the fixed costs from the total cost, then calculate the change based on variable costs to get the impact of the change. If necessary add back the total fixed cost amount to the total variable costs to determine the total cost of a forecasted output.

Product cost is the sum of the costs assigned to a product for a specific purpose, which could be:

1. Cost-control-problem identification and management; to maximize revenues and minimize cost

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2. Product pricing and product emphasis, by establishing an appropriate value proposition where the customer is willing to pay maximum price to maximize revenues
3. Contracting with government agencies, classification of costs that withstand scrutiny by external auditors, thus ensuring maximum reimbursement
4. Financial statements that comply with GAAP, COGS must include only inventoriable costs and other costs are reported as period costs.

**TEACHING TIP:**

*Begin the session on chapter with an overview of the chapter. Make the major points in a three to five minute opening statement. Use the forgoing to guide your comments. At the end of the session, close with a reiteration of the same points.*

*TEACHING TIP: Hand out the quiz questions (quiz fits multiple 8.5 by 11 sheets) at the beginning of the lecture so that students can write their answer and or make a correction as necessary. The quiz paper gives the opportunity to make a note about the correct answer as explained during feedback session. The quiz could be used as part of a personal response system, or "clicker" technology.*

## CHAPTER OUTLINE

### *Learning Objective 1*

**Identify and distinguish the logic underlying three cost classification systems derived from financial accounting information: period and inventoriable, direct and indirect, prime and conversion**

#### **I. Cost Classification: Accounting Logic for Cost Management**

##### A. Costs and Relevant Cost Information

1. Cost is a resource sacrificed or foregone to achieve a specific objective.
2. Relevant information is information that changes with different decisions. Costs are not relevant for all decisions. Relevant costs should be used to support good management decisions.

##### B. Period and Inventoriable Costs

1. Period costs– are expensed because they will not provide a future benefit. The benefits have been achieved in generating revenues in the current period and thus the expense is matched with those revenues generated in the period.
2. Cost of Goods Sold (COGS) or Cost of sales (COS) is the accumulated cost of manufacturing or purchasing respectively, the goods or products that are sold.
3. Inventoriable costs is the accumulation of all costs incurred to either manufacture, as in finished goods inventory or purchase inventory for resale, merchandise inventory.
4. Cost of Goods Manufactured (COGM) is the costs of all finished goods transferred into finished goods inventory, whether sold or unsold irrespective of the time period when the work was done.
5. Cost of Goods Available for Sale (COGAS) the cost of goods that are available for sale during the period. COGAS is made up of beginning finished goods inventory plus cost of goods manufactured during the period.

See the Schedule of Cost of Goods Manufactured and Sold at the end of the notes.

**Do Chapter Quiz multiple choice question 1.**

## II. Direct and Indirect Costs

- A. Direct costs of production can be traced to a given cost object—a single output unit—in an economically feasible way.
- B. Indirect costs of a cost object are related to but cannot be readily traced to specific output units in an economically feasible way.
- C. Factors affecting classification of a cost as direct or indirect:
  - 1. Materiality of contribution to the total cost per unit of output
  - 2. Information technology available to create and maintain management information system.
  - 3. Production process used and whether the transformation is dependent on human versus equipment and technology. In other words whether it is a labour intensive or machine intensive process.

**Do Chapter Quiz multiple choice questions 2 and 3.**

## III. Prime Costs and Conversion Costs

- A. The process framework or logic partitions all inventoriable costs into either of two classifications, prime or conversion
  - 1. Prime costs are significant costs of inputs, usually direct materials is the most significant single cost in the process costing system. Direct manufacturing labour can be significant enough to be included in prime cost.
  - 2. Conversion costs include immaterial amounts of labour and all the other costs necessary to complete a large number of units of output flowing through a manufacturing process where one unit of output is not distinguishable from another unit.
- B. This classification aids management in monitoring and controlling the costs and to predict profit performance.

## IV. Strategy

- A. Strategy is “...a way of thinking that relies on hypothesis generation and testing...It is intelligently opportunistic in search of its goals...while leaving room for new and unintended strategies to emerge.” In more straight forward language a strategy is pursued by looking at all the opportunities that are available and connecting the possible outcomes with the mission statement. These possible outcomes need to be measured in terms of revenues and matching costs.
- B. The results of strategies will be the identification of value propositions which are benefits for which customers will pay. You need to know the cost-benefit analysis of each value proposition.
- C. Develop the ‘what if’ question and then test the hypothesis with ‘if.....then’ question.

**Do Chapter Quiz multiple choice question 4.**

**In-class exercise – Mastery Questions – Learning Objective 1: Question 2**

**Assign Exercise 2-19.**

*Learning Objective 2:*

**Apply cost information to produce detailed financial schedules to illustrate how the asset value of inventories expires into cost of goods sold reported on the income statement**

**V. Merchandising in Contrast to Manufacturing**

A. Cost of Sales versus Cost of Goods Sold

1. Finished goods inventory is the result of acquiring goods through purchases from suppliers of a ready to sell item or through the manufacturing processes where resources such as materials, labour, and machines are used to produce a ready to sell item.

- B. When the finished goods are eventually sold the income statement presentation will be cost of sales for merchandising and the cost of goods sold for manufacturing a period cost as they represent the cost matched with the revenues which were generated from the sales of merchandise for merchandising and finished goods in the case of manufacturing. *[Refer to Exhibit 2-9 on page 51.]*

C. Different Costs for Different Contracts

1. As can be seen in Exhibit 2-10 the routine treatment of direct manufacturing labour is a direct cost, however the fringe costs are not included. This has the effect of changing the direct cost as a percentage of total costs.
2. Alternatively, we see that a change in definition of direct manufacturing costs will change this relationship. Normally, this is not an arbitrary decision, but when there is an economic incentive to include the direct manufacturing labour fringe costs as well it is acceptable.

3. Governance Issues—Different Cost Classifications

So where there is discretion on the application of cost classification the responsibility of the professional accountant is of foremost concern. The Professional Ethics states that management accountants must act with responsibility for and fidelity to public needs as well as fairness to clients (amount others). (*Governance Issues, page 53*)

**Do Chapter Quiz multiple choice questions 5 and 6.**

**In-class exercise – Mastery Questions – Learning Objective 2: Question 2**

*Learning Objective 3:*

**Differentiate fixed costs from variable costs using the management-accounting cost-classification system**

**VI. Cost Drivers and Cost Management**

- A. In order to keep up with the competition, organizations analyze costs continuously with the view of reducing or eliminating costs:
1. Effective and successful cost strategies include analyzing cost and benefit tradeoffs
  2. External factors are considered, including customer preferences and competitors' advantages, in order to develop mission and value proposition.
  3. Strategies like product differentiation have been developed using activity-based management, value added analysis, and now lean management techniques.
  4. Lean management focuses on the output and how to reduce or eliminate non-value added costs such as waste.

**B. Cost Drivers: different Names for Different Causes**

1. Management's understanding of classification of costs as variable or fixed is dependent on the causal factor of costs. What drives the variable costs as opposed to what drives or causes fixed costs.
2. Cost drivers are what cause cost to change, so that if the quantity of the cost driver changes the costs will change for the output unit.
3. Two types of causes:
  - a. *Material cause* or the input, materials and labour principally.
  - b. *Efficient cause* or the internal process of transforming material and labour into an output unit.
4. Cost control means that not all costs are classified as inventoriable. Excluded costs are expensed to the period under the financial accounting standards. Marketing, distribution, and customer services do not cause the cost of the output unit to increase but the cost of the unit sold to increase.

**C. Cost Management**

Describes the actions taken by managers to continuously control and reduce costs yet satisfy customers.

1. Causes of costs are many and mostly cannot be tied to a single factor. Take for example purchase cost which is caused by two factors, the price per unit of direct materials and the quantity of direct materials purchased.

2. Other factors will cause direct material costs to increase waste caused by inefficient handling of the direct materials, more materials required to achieve a given level of units of output.
3. Poorly designed products will lead to waste and more complex processes. The end result will be the cost of the unit of output.
4. Cost management begins long before the production process. What is designed dictates how it is to be processed. A poor design has consequences which may affect subsequent production costs, also customer services costs. These consequences are best anticipated in the continuous-flow goal of lean management.

## VII. Cost Behaviour: Variable and Fixed Costs

- A. **Variable cost (VC)** changes in proportion to change in the quantity of a cost driver of an output unit.
- B. **fixed cost (FC)** remains unchanged despite changes in the quantity of output units produced.
- C. Assumptions:
  1. Costs are defined as variable or fixed with respect to a specified cost object, a unit of output.
  2. the time horizon must be specified
  3. total costs (TC) are the sum of VC + FC and are linear
  4. there is only one cost driver for each cost
  5. variations of the level of the cost driver are within a relevant range over a specified time horizon
- D. A **relevant range** is the range of quantity of output units through which a specific relationship between cost and its material and efficient cost driver is valid
- E. Cost behaviour of Variable, Fixed, and Total Inventoriable Costs [*Refer to Exhibit 2-11 on page 57*]

**Do Chapter Quiz multiple choice questions 7 and 8.**

**In-class exercise – Mastery Questions – Learning Objective 3: Question 1**

**Assign Exercise 2-24.**



*Learning Objective 4:*

**Explain the limitations that the use of average or unit costs impose on managerial decision making**

**VIII. Unit Costs are an Average**

- A. **Unit cost** is computed by dividing some cost total by some number of units. It is also called **average unit cost**.
- B. **Variable costs per unit** remain constant over the relevant range. See column E in Exhibit 2-11
- C. **Fixed costs per unit/average unit cost(FC)** change because of the averaging of \$9,500,000 over a range of Q or cell phones produced. See column G in Exhibit 2-11. Graphically see Exhibit 2-12
- D. **Use Unit Average Fixed Costs Cautiously.** Whenever fixed costs are present, the average unit cost will change at different volume levels. *“The reason it is important to understand the behaviour of fixed, variable, and average costs is that both strategic and accounting decisions are made on the basis of this information. If the information directs attention to a non-existent problem, or to the wrong problem, then decisions to remedy the problem will be ineffective.”*

**Do Chapter Quiz multiple choice question 9.**

**In-class exercise – Mastery Questions – Learning Objective 4: Question 2**

**Assign Exercise 2-25.**

*Learning Objective 5:*

**Apply management-accounting logic to classify costs for use in managerial decisions**

**IX. Different Costs for Different Purposes**

**Product cost** is the sum of the costs assigned to a product for a specific purpose, which could be:

- 1. **Cost-control-problem identification and management.** Where-ever costs are incurred managers need relevant information to identify cost-control problems.
- 2. **Product pricing and product emphasis.** Maximizing revenues means offering a product with an appropriate value proposition to match what


customers are willing to pay. Relevant information is needed to make the correct pricing decisions to remain competitive. This information is used to forecast future outcomes used in pro forma or budgeted income statements.

3. **Contracting with government agencies.** Government contracts are unique in that they specify what costs are allowable and what is not allowable. The contractor consent what will be done and if it fails to do them it can be penalized. The costing of the project or product can be audited by the government so a government contract requires a special budget and a commensurate costing system to produce the desired documentation for reimbursement.
4. **Financial statements.** As the primary source of information for external decision makers it requires adherence to GAAP. Only inventoriable costs can be included in COGS, all other costs are reported as period costs.

**Do Chapter Quiz multiple choice question 10.**

**In-class exercise – Mastery Questions – Learning Objective 5: Question 1**

**Assign Exercise 2-40**

 includes a *Help Me Solve this* button that produces a pop-up window which breaks the question down into more manageable steps and provides tips to help students solve the specific part of the problem they are working on.

## CHAPTER 2 QUIZ

1. The costs incurred to either manufacture finished goods or purchase finished goods for resale, merchandise inventory, are:
  - a. cost of goods sold
  - b. inventoriable costs.
  - c. period costs
  - d. cost of goods manufactured

### Questions 2 and 3 are based on the following data:

Epsilon Company manufactures plastic coated metal clips. The following were among Epsilon's 2010 manufacturing costs:

<u>Wages</u>	
Machine operators	\$200,000
Maintenance workers	30,000
Plant supervisor	90,000

<u>Materials used</u>	
Metal wire	\$500,000
Lubricant for oiling machinery	10,000
Plastic coating	380,000

2. [AICPA Adapted] Epsilon's 2010 direct manufacturing labor amounted to
  - a. \$320,000.
  - b. \$230,000.
  - c. \$200,000.
  - d. \$290,000.
3. [AICPA Adapted] Epsilon's 2010 direct materials amounted to
  - a. \$890,000.
  - b. \$880,000.
  - c. \$510,000.
  - d. \$500,000.
4. Three part classification of inventoriable costs are:
  - a. Indirect costs are the only conversion costs
  - b. Direct manufacturing labour is the only conversion cost
  - c. Direct material costs are the only prime costs
  - d. Direct labour and indirect manufacturing labour are the only conversion costs
5. The manager wants to know where the cost of goods sold figure has been calculated. The following are being considered, which one is the correct one:
  - a. Beginning inventory plus purchases.
  - b. Cost of goods available
  - c. Cost of goods available less ending inventory
  - d. Ending inventory plus purchases

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### Chapter 2 Quiz continued

6. The three categories of inventories commonly found in many manufacturing companies and they are:
- direct materials, direct labor, and indirect manufacturing costs.
  - purchased goods, period costs, and cost of goods sold.
  - raw materials, work-in-process, and finished goods.
  - LIFO, FIFO, and weighted average.
7. The shipping department of Omicron Company had the following information for 2010:

Salaries	\$750,000	all employees on guaranteed contracts
Packaging	\$300,000	depending on size of item(s) shipped
Postage	\$400,000	depending on weight of item(s) shipped
Rent of warehouse space	\$200,000	annual lease

Omicron's shipping department had fixed costs amounting to

- a. \$700,000.    b. \$750,000.    c. \$950,000.    d. \$1,650,000.
8. Kappa Company successfully bid on jobs printing standard notebook covers during the year using last year's price of \$0.27 per cover. This amount was calculated from prior year costs, noting that no changes in any costs had occurred from the past year to the current year. At the end of the year, the company manager was shocked to discover that the company had suffered a loss. "How could this be?" she exclaimed. "We had no increases in cost and our price was the same as last year. Last year we had a healthy income." What could explain the company's loss in this current year?
- Their costs were all variable costs and the amount produced and sold increased.
  - Their costs last year were actual costs but they used budgeted costs to make their bids.
  - They used a different cost object this year than the previous year.
  - Their costs were mostly fixed costs and the amount produced this year was less than last year.

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### Chapter 2 Quiz continued

9. Managers need cost information to make decisions concerning cost reductions. The following choices are listed below. Choose the correct one that leads to an optimal decision.
  - a. Total costs and total unit cost
  - b. Total fixed costs and average unit fixed cost
  - c. Total variable costs and variable costs per unit
  - d. Variable cost per unit and total fixed costs
  
10. Beta Corp has entered into an agreement with the local government to receive a property tax rebate for specific costs that it incurs for land development in the first two years of business. This is an example of:
  - a. product period costs
  - b. product inventoriable costs
  - c. identifying costs for cost control purposes
  - d. expenses

**CHAPTER 2 QUIZ SOLUTIONS:**

1. [b]
2. [c]
3. [b]
4. [a]
5. [c]
6. [c]
7. [c]
8. [d]
9. [d]
10. [c]

## WRITING/DISCUSSION EXERCISES

### 1. Define and illustrate a cost object.

- Describe and give an example of “cost” other than one with a conventional meaning (cash outlay).

*Everything has a cost. Not all costs are evident or can they be identified and measured in a more conventional manner – but they are costs nevertheless.*

*Some costs are named but not accounted for in the traditional sense. One example is opportunity cost [defined in text at later point] that can be associated with any cost object. Though financial amounts may be associated with this cost, they do not appear in the accounting records.*

*“Human costs” are another example of costs that may be associated with most cost objects. The text emphasizes the importance of using a management accounting system to help individuals do their jobs better. Sometimes companies engage in cost management that benefits the company by costing their employees (and society) on a personal basis. Mandatory overtime for parents of young children may save a company the cost of additional employees but deprive the children of time spent with their parents or contribute to “latch-key” situations and the lack of adult supervision and interaction.*

*Environmental costs may also be assigned to most cost objects. Though these costs have been highlighted with legislation and are being identified and measured more often, they may exist in less obvious ways. The interesting story of Easter Island and how it came to be uninhabitable could be used as an example of using up resources to the point of changing an environment so much that the damage is irreparable.*

*Until recently, unused capacity was not identified as a cost. In a later chapter costs are attached to this situation and cost objects identified.*

### 2. Distinguish between direct costs and indirect costs.

- If a cost can be traced directly to its cost object, why might a company choose not to trace but to include that cost in the indirect cost category and allocate on some arbitrary basis? Explain the advantage and disadvantage of tracing versus not tracing.

Advantages

- ❖ Cost may be feasible to trace but not in an economical manner
- ❖ Cost may be more “costly” to trace than the benefit of accuracy provided by tracing (materiality taken in context of all costs)

Disadvantage

- ❖ Loss of accuracy

**3. Explain cost drivers, variable costs, and fixed costs.**

- How can a cost driver/cost relationship be developed?

*The development of a relationship is similar to that of developing a working model (often labeled the “scientific method”). Thoughtful observation is primary. As one observes recorded data, both financial and nonfinancial, noting relevant changes in related factors, causal relationships can be inferred. From the inferences, assessment can be made about the plausibility of such a cause-effect relationship.*

*Most relationships are complex and all of the interrelationships cannot be discerned, therefore a model cannot be as accurate and reliable as the actual relationship. Models must be simplistic in order to be useful (cost-benefit approach). They must also be updated from time to time or cast off for a new approach as things change. Models can be relied upon to eliminate some errors that could occur without their use. If a model is used like a “checklist” then inexperienced workers can be productive more quickly by following an “experience model” before they gain complete understanding. Artificial intelligence is based upon human models of thinking about a particular task. In the example of filling out income tax returns, the “model” gave right answers more often than the professionals did because the professionals sometimes forget to include a minor item or consideration.*

**4. Distinguish among, merchandising companies, and manufacturing companies, and service-sector companies.**

- Why would a service-sector company need cost accounting when they do not have product inventories or cost of goods sold?

*Service-sector companies do have products and need to know if the revenues generated by those “products” or services exceed the cost of furnishing the service. For financial accounting the service cannot be inventoried because it does not exist until it is performed, at which time it becomes an expense. The expense is not labeled “cost of goods sold” because it is not a “good” in the traditional meaning. Cost accounting is more than costing a product that can be inventoried. Costs must be accumulated and assigned for service-sector companies. The greater context of cost management is also important for service-sector companies.*

**5. Interpret unit costs cautiously.**

- Explain why a variable cost stays the same per unit and a fixed cost changes per unit. Which cost would decision makers prefer to use as a per unit cost and why?

*In calculating a per unit cost, division is used. Variable costs derive the name variable from their total cost behavior. As the numerator changes (the cost), the denominator (the cost driver) also changes in proportion so that the quotient is the same at any level within the relevant range. A fixed cost, however, means that the*



*numerator is fixed in total within the relevant range. As the denominator changes, the numerator does not, and the resulting quotient changes with each change in the denominator. The name of the cost is based upon total cost behavior and does not apply to per unit cost behavior, but in fact, the unit behavior can be described as the opposite of how the total behavior is described.*

*Most decision makers would do well to use only variable costs on a per unit basis. Decisions are about the future, and in predicting costs, one would want to use a cost for which the behavior was more easily predictable. Fixed costs can be predicted more easily in total. To use them as unit costs, one would have to carefully predict a level of activity for the cost driver. If another activity level were to be considered, the per unit cost would have to be recalculated; whereas for the variable cost, several levels of activity could be used without recalculating the per unit cost (relevant range concept).*

**6. Explain why product costs are computed in different ways for different purposes.**

- If costs can be assigned in different ways for different purposes, how does one know what costs to combine?

*The purpose for which costs are to be developed must be clearly defined. From that clear purpose, a cost object can be identified so costs can then be appropriately assigned. In the situations in which the cost object may be defined commonly as the “product cost” but for which differing amounts of the same costs are assigned, one can look more closely at the particular purposes. The cost object, though appearing to be the same “product” in various situations, is not. For purposes of pricing, the “product” must cover all costs of the organization for that is the means by which the company would earn a profit. For purposes of costing the “product” for a specific contract, the terms of the contract would have to be met. For financial accounting purposes, the cost of the “product” would have to meet the definition given under GAAP. Using a common label for a cost object such as “product cost” is not enough to define the combining of cost but one must look to the particular purpose and its full meaning.*

## BEWARE OF UNIT COSTS

	<b>Total</b>	<b>Unit</b>
<b>Variable</b>	<b>“Varies”</b>	<b>Same</b>
<b>Fixed</b>	<b>“Fixed”</b>	<b>Changes</b>

## Schedule of Cost of Goods Manufactured and Sold

Beginning direct materials inventory
+ Purchases
<hr/>
Available for use
- Ending direct materials inventory
<hr/>
Direct materials used
Direct manufacturing labor
Indirect manufacturing costs (Listing)
Variable
Fixed
<hr/>
Total Manufacturing costs incurred during current period
+ Beginning work in process inventory
<hr/>
Total manufacturing costs to account for
- Ending work in process inventory
<hr/>
Cost of goods manufactured
+ Beginning finished goods inventory
<hr/>
Goods available for sale
- Ending finished goods inventory
<hr/>
<u>Cost of goods sold (to income statement)</u>

## Income Statement

Revenue (Sales)
- Cost of goods sold (from schedule)
<hr/>
Gross margin
- Operating costs
<hr/>
<u>Operating income</u>