

Classification of Manufacturing Costs and Expenses

Introduction

Management accounting, as previously explained, consists primarily of planning, performance evaluation, and decision-making models useful to management in making better decisions. In every case, these tools require cost and revenue information. A basic assumption of management accounting is that it is the responsibility of the management accountant to provide the needed cost and revenue information. Consequently, the management accountant needs a complete understanding of the different types of costs required by the various models. In Figure 4.1, the major costs associated with each management accounting tool is listed.

In management accounting, as in financial accounting, it may be said that a major building block in the conceptual foundation is cost. Both the financial and management accountant must have a sound understanding of the varied and complex ramifications of cost. From a financial accounting viewpoint, a faulty understanding of cost may cause financial statements to be incorrectly prepared. From a management accounting viewpoint, an inadequate understanding or use of costs will result in poor decisions.

There are two broad aspect of the term cost that needs to be understood: cost classification and cost behavior. Cost classification refers to the separation of costs into categories for proper preparation of financial statements or for use in decision-making models. Cost behavior refers to the effect that volume (production or sales) has on total expenses or costs. In this chapter, both aspects will be discussed in some depth.

Cost Classification

In accounting, the term cost refers to the expenditure or sacrifice made to acquire something of value. In financial accounting, all transactions are recorded in terms of historical cost; that is, the money expended or to be expended at the date of the transaction. The monetary value associated with an asset acquired is said to be its cost. Cost is the sacrifice made in resources to acquire another resource. Cost is measured in monetary units which in the United States is the dollar. For example, a machine is purchased by paying \$4,000 in cash and trading in an old machine having a sales value of \$1,000. The cost of the new machine is \$5,000 because resources worth a total of \$5,000 were given in the exchange. Stated differently, resources worth \$5,000 were sacrificed.

Figure 4.1

Tools	Cost Information Required
Flexible Budget	Fixed and variable costs
Cost-volume-profit analysis	Fixed and variable costs
Direct costing	Fixed and variable costs
Budgeting	Planned data, fixed and variable costs
Variance analysis	Fixed and variable costs
Incremental analysis	Escapable , opportunity, relevant
Segmental reporting	Indirect costs, direct costs
Inventory models	Purchasing cost, carrying cost
Present value models	Cash inflows, cash outflows

Depending on the type of activity and the passage of time, the cost of an asset in accounting can be classified in several ways. Proper financial reporting and correct decision-making require an understanding of the different ways in which costs can be classified. In Figure 4.2 is a list of costs that pertain to both financial statement preparation and decision-making analysis.

For purposes of management accounting, there are three important dual classifications of cost that require some understanding: Expired and unexpired, manufacturing and non manufacturing, and fixed and variable. These three classifications are somewhat interrelated, particularly concerning financial statements.

Expired and Unexpired Costs

Expired costs or expenses are the used up value of assets. Expired costs are always shown on the income statement as deductions from revenue. Expired costs may be thought of as that portion of the asset value benefitting current operations. It is helpful to think of expired costs as former assets values. To illustrate, supplies expense is an expired cost. The cost allocated to supplies expense, of course, is the used portion of supplies, an asset. The relationship between asset values and expired costs is further illustrated in Figure 4.3.

Figure 4.2

Financial Statements Cost Concepts Management Accounting Cost Concepts (Decision-making Cost Concepts) Direct and indirect Relevant and irrelevant Prime Escapable and inescapable Joint Sunk Fixed and variable Fixed and variable Manufacturing and non manufacturing Opportunity and sunk

Expired and unexpired Incremental Direct and indirect Expenses Fixed and variable expenses Mixed, semi-variable

Carrying cost, purchasing cost

Manufacturing Costs/Expenses

The difference between a cost and an expense is frequently misunderstood. Because the terms variable costs and variable expenses will be used later in this chapter, and also throughout this book, the difference in meaning between a cost and a expense will now be clarified.

Technically, there is a difference between a manufacturing cost and a manufacturing expense. The term manufacturing costs usually refers to material used, direct labor incurred, and overhead incurred in a manufacturing business. Material used, direct labor, and manufacturing overhead at the time incurred are not expenses; rather they incurred costs. In the manufacturing process, material, labor, and overhead do not expire; rather through manufacturing activity they become transformed from one type of utility to another.

In a manufacturing business, the accountant will debit work in process for materials used, direct labor incurred, and manufacturing overhead. Since work in process is an asset account, it would not be logical to regard material used, direct labor, and manufacturing overhead as expenses. Expenses cannot be transformed back into asset values.

Figure 4.3

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Asset Values and Related Expenses					
Asset Expired					
Accounts receivable	Bad debts expense				
Finished goods	Cost of goods sold				
Prepaid insurance	Insurance expense				
Supplies	Supplies expense				
Building	Depreciation				

Manufacturing costs, however, do eventually become manufacturing expenses Material used, direct labor incurred, and manufacturing overhead are first recorded in inventory accounts (work in process and finished goods) and then become an expense when finished goods are sold. In a manufacturing business, only the cost of goods sold account can properly be called a manufacturing expense. Prior to the sale of finished goods, all manufacturing expenditures remain as unexpired costs. In order to understand the transformation of manufacturing costs into manufacturing expenses, you should fully understand the flow of cost as taught in cost accounting. The flow of cost diagram is shown in Figure 4.4.

The term, variable cost, then primarily refers to the manufacturing costs that are reflected in the inventory accounts: materials, work in process, and finished goods. The term, variable expenses, refers to cost of goods sold and to other variable non manufacturing expenses such as sales people's commissions. As a student of management accounting, you should understand, however, that the two terms, variable expenses and variable costs, are sometimes used interchangeably. Some writers use the term variable costs to include variable expenses. The technical difference is ignored because the theory underlying the use of variable expenses is the same as for variable costs.

There is one instance in which manufacturing costs and manufacturing expenses (cost of goods sold) are the same in amount. When sales equal production, that is, all units manufactured are sold, then manufacturing costs (materials used, direct labor incurred, and manufacturing overhead incurred) and the manufacturing expense (cost of goods sold) are equal. Under these conditions, all manufacturing costs including fixed manufacturing overhead incurred will be included in cost of goods sold.

In terms of financial statements, manufacturing costs appear on the cost of goods manufactured statement while manufacturing expenses are shown on the income statement. However, the amount of manufacturing costs are not necessarily reported on the income statement in the period incurred. Some of the current period manufacturing cost may still reside in finished goods inventory until the inventory is sold.

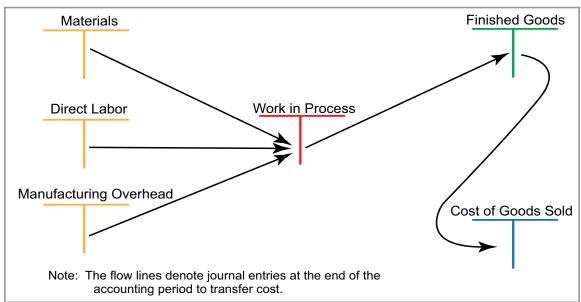


Figure 4.4 • Flow of Manufacturing Cost

Manufacturing and Non Manufacturing Costs

The distinction between manufacturing and non manufacturing costs is important because this dual classification is reflected in different types of financial statements for the manufacturing business: the income statement and the cost of goods manufactured statement. The cost of goods manufactured statement shows all the current period manufacturing costs while the income statement shows all the current non manufacturing expenses. In order to understand the direct relationship of the income statement and the cost of goods manufactured statement, it is necessary to understand the distinction between manufacturing and non manufacturing costs.

Manufacturing costs may be simply defined as materials used, direct labor incurred, and manufacturing overhead incurred. These are the costs that are found on the cost of goods manufactured statement. Non manufacturing costs (technically, expenses) are those expenses commonly called selling and administrative. These are the expenditures incurred in the current period directly for the benefit of generating revenue. Non manufacturing expenses should not be included in the cost of inventory. The term is somewhat misleading because the "cost" part of the term implies unexpired costs when it fact it has reference to expenses. Since "non manufacturing costs" are, in fact, expired costs (expenses), then technically a better term would be "non manufacturing expenses."

After some costs have been classified as manufacturing, they are normally further classified as direct and indirect. Materials used in the manufacturing process are either used directly or indirectly. Direct material is material that becomes part of the finished product and, therefore, significantly adds to the weight or size of the product. If the final product, for example, is a wooden chair, then the wood used to make the legs, seat, and back is a direct use of material. Materials such as glue and screws, usually not significant in amount, are often regarded as an indirect use. Also material issued but not becoming a part of the final product and used for manufacturing objects such as saw horses or shelves to store paint or other incidental materials would be regarded as an indirect use of material.

In a similar manner, factory labor is normally classified as either direct or indirect. Consequently, two types of labor are recognized: direct factory labor and indirect factory labor. Direct factory labor is the cost of labor incurred while work is done on the product itself. Normally, in one way or another, direct labor affects the physical appearance of the product. Some factory workers do not actually work on the product itself but provide services necessary to the over-all manufacturing process. Janitorial services, repair and maintenance service, supervision of direct workers, and computer support are examples of labor incurred that would be regarded as indirect.

The significance of classifying material and labor as an indirect cost is this: indirect material and indirect factory labor are recorded as manufacturing overhead and, therefore, becomes a part of the cost of the final product through the use of overhead rates. The recording of direct and indirect manufacturing cost may be illustrated as the following journal entry:

Date	Accounts	Debit	Credit
Dec. 31	Work in process (direct material)	100,000	
	Work in process (direct factory labor)	250,000	
	Manufacturing overhead (indirect material)	20,000	
	Manufacturing overhead (indirect labor)	50,000	
	Materials inventory		120,000
	Factory labor		300,000

Although the classification of costs as manufacturing and non manufacturing is very important in preparing financial statements, this distinction is not essential from a decision-making viewpoint. The important point is that the tools of management accounting are equally important in both categories of cost. Important decisions in both areas can benefit from the use of management accounting tools. Figure 4.5 shows examples of specific decisions in both classifications.

Fixed and Variable Cost

The most volatile variable in a business is considered to be volume. A fundamental fact of all businesses is that some costs change (increase or decrease) with changes in volume (activity). The costs or expenses that change with volume are called variable while those that do not change with changes in activity are called fixed. The classification of costs as fixed and variable is by far the most useful and helpful classification of costs in management accounting. Furthermore, the recognition of fixed and variable costs has resulted in several mathematical models useful in analyzing cost data for decision-making purposes.

Some decisions such as a decrease in price or an increase in advertising can have an immediate impact on volume. In most instances, management will want to

Figure 4.5

Relationship of Cost Classification and Decision-making					
Classification of Costs	Example of Decisions				
Manufacturing					
Material	Suppliers, quality of material				
Labor	Wage rate, number of hours				
Manufacturing Overhead	Cost of equipment, repairs and maintenance				
Non Manufacturing Costs (expenses)					
Sales People Compensation	Commission rate				
Advertising	Media, advertising budget				
Staff salaries	Salary, working hours				

test decisions before execution. In management accounting, a number of planning, evaluating, and decision-making models have been developed to account for the effect that a change in volume has on total costs. The decision-making models in this text that require fixed and variable costs inputs are: cost-volume-profit, direct costing, flexible budgeting, variance analysis, and profit planning (budgeting). Other tools such as incremental analysis and present value models may benefit from a classification and measurement of costs as fixed and variable.

The detailed study of fixed and variable costs in management accounting is commonly called the study of cost behavior. Since cost behavior, or the study of fixed and variable costs, is so fundamental to many management accounting tools, it represents the first area of management accounting that must be studied in depth. The next chapter will be devoted to the study of cost behavior. The study of cost behavior will be divided into two parts: (1) theory of cost behavior and (2) techniques of measuring cost behavior.

Illustrative Problem

Figures 4.6, and 4.7 present a type of income statement, cost of goods manufactured statement, and balance sheet commonly used in manufacturing businesses. Certain income statement and balance sheet items have been identified by number. Fourteen items have been selected. To test your understanding of each cost selected. categorize the selected costs as follows:

- 1. Manufacturing
- 2. Non Manufacturing
- 3. Expired
- 4. Unexpired
- 5. Variable cost
- 6. Variable expense
- 7. Fixed cost
- 8. Fixed expense

Figure 4.6

Acme Manufa Cost of Goods Ma		
Material used	(1)	\$3,000
Direct labor	(2)	4,000
Manufacturing overhead	(3)	5,000
Work in process		2,000
Total manufacturing costs		14,000
Work in process (ending)		1,000
Cost of goods manufactured	(4)	\$13,000 ==================================

Figure 4.7

Acme Manufacturing Comp Income Statement	Acme Manufacturing Company Balance Sheet			
Sales Cost of goods sold: (5) Finished goods (B) Cost of goods manufactured Finished goods (E) Gross profit Expenses Selling Sales people commissions (6) Advertising (7) Rent (8) Administrative Salaries (9) Supplies (10)	\$20,000 2,000 13,000 15,000 3,000 12,000 8,000 2,000 3,000 1,500 5,000 5,000	Assets Cash Materials Work in process Finished goods Plant and equipment Total assets Liabilities Accounts payable Bonds payable Stockholders' equity Common stock Retained earnings Total liabilities and stockholders' equity	(11) (12) (13) (14)	\$ 1,500 500 1,000 3,000 10,000 \$16,000 2,000 5,000 \$ 7,000 \$ 8,000 1,000 9,000 \$16,000
Net income	\$ 3,000			

The importance of understanding the classification of cost can be best appreciated by examining the financial statements of a manufacturing business. An examination of the above statements shows that the classification of costs as expired and unexpired, manufacturing and non manufacturing, and fixed and variable are highly interrelated.

> 1. Manufacturing costs Items 1, 2, 3,4 2. Non manufacturing costs -Items 6, 7, 8, 9, 10 Expired costs Items 5, 6, 7, 8, 9, 10 4. Unexpired costs Items 11, 12, 13, 14 Variable costs Items 1, 2, 3 (only the variable portion) 6. Variable expenses Items 5, 6 7. Fixed costs Item 3 (only the fixed portion) 8. Fixed expenses Items 7, 8, 9, 10

Summary

The importance of understanding different kinds of cost in management accounting can not be understated. Management accounting, as stated several times before, consists of various decision-making tools. Each tool requires different kinds of cost information. Without a good understanding of different kinds of cost and cost behavior, it is highly unlikely any specific tool could be used in a meaningful way to improve the quality of decisions.

The cost concepts that need to be understood in order to fully understand and be able to use the various management accounting tools are the following:

- 1. Relevant and irrelevant
- 2. Direct and indirect
- 3. Prime costs
- 4. Escapable and inescapable
- 5. Joint costs

- 6. Fixed and variable
- 7. Manufacturing and non manufacturing
- 8. Expired and unexpired
- 9. Opportunity and sunk costs
- 10. Mixed and semi-variable

QUESTIONS

- Q. 4.1 List the ways in which costs and expenses can be classified.
- Q. 4.2 Explain the difference between:
 - a. Direct material and indirect material
 - b. Direct labor and indirect labor
 - c. Manufacturing and non manufacturing costs
 - d. Fixed and variable costs
 - e. Expired and unexpired costs
- Q. 4.3 What are the two primary measures of volume or activity in a business?
- Q. 4.4 Why is an understanding of cost behavior and cost classification important in management accounting?
- Q. 4.5 Explain how manufacturing costs become an expense.

EXERCISES

Exercise 4.1 • Classification of Costs/Expenses

In the course of running the operations of a business, many different kinds of transactions take place. In a manufacturing business, transactions are often classified as manufacturing or non manufacturing. In making decisions, it is important to distinguish between manufacturing accounts and non manufacturing accounts. This distinction is necessary in order to prepare the cost of goods manufactured statement and the income statement.

A list of account items is given below. For each account item, indicate by a check mark (🗸) the category in which the account item is normally classified. There are a few items in the list that do not fall into the manufacturing and non manufacturing categories and should not be checked. Only one column for each item should be checked.

	Manufacturing				Non Manufacturing					
Cost/expense item	Materials		Factory Labor		Manufacturing Overhead		Selling Expenses		General and Administrative	
Executive salaries	()	()	()	()	()
Material X purchases	()	()	()	()	()
Factory supplies	()	()	()	()	()
Advertising	()	()	()	()	()
Depreciation, factory equipment	()	()	()	()	()
Freight-in - material X	()	()	()	()	()
Finished goods	()	()	()	()	()
Factory labor, cutting department	()	()	()	()	()
Sales people training cost	()	()	()	()	()
Supervision labor- factory	()	()	()	()	()
Sales people salaries	()	()	()	()	()
Factory labor, assembling department	()	()	()	()	()
Secretarial salaries	()	()	()	()	()
Home office expense	()	()	()	()	()
Utilities, factory	()	()	()	()	()
Material Y purchases	()	()	()	()	()
Sales people travel expense	()	()	()	()	()
Cash	()	()	()	()	()
Allowance for bad debts	()	()	()	()	()
Factory workers training cost	()	()	()	()	()

Exercise 4.2 • Expired and Unexpired Costs

For each item listed below check (🗸) whether the item is an expired cost or an unexpired cost.

	Item	Expired cost	Unexpired Cost
1.	Interest expense		
2.	Supplies		
3.	Insurance expense		
4.	Building cost		
5.	Accounts receivable		
6.	Prepaid property tax		
7.	Bad debts		
8.	Depreciation expense, building		
9.	Prepaid insurance		
10.	Supplies expense		
11.	Prepaid Interest		

Exercise 4.3 • Fixed and Variable Costs/expenses

For each item listed below check (🗸) whether the item is a variable cost or a fixed cost.

	Item	Variable Cost/expense	Fixed Cost/expense
1.	Direct material issued		
2.	Direct factory labor incurred		
3.	Salaries of executives		
4.	Compensation of accountants		
5.	Sales people commissions		
6.	Materials used to package finished goods		
7.	Executives compensation		
8.	Monthly rent on building		
9.	Electric power used to run A/C units in the summer time		
10.	Advertising expense for the year		