

CHAPTER 10

MANUFACTURING! DO YOU KNOW HOW MUCH YOUR PRODUCTS COST?

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66 BOOKS OF ACCOUNTS – A QUICK RECAP

We have talked about the Books of Accounts in Chapter 3 which are normally used by a Business to record Accounting transactions. Of these, the following Books are used for Accounting of manufactured inventory:

- Inventory Ledger.
- General Ledger.

Since inventory is being discussed here, Purchase Day Book, Purchase Ledger and Cash & Bank Book will also be used. However, since we have already discussed these Books in Chapter 5, we will not repeat a discussion on these Books in this Chapter. Where Accounting entries are required to be shown, we may refer to these Books of Accounts for illustration purposes.

67 WHAT TYPE OF INVENTORY IS MANUFACTURED?

You will recall that we discussed inventory valuation techniques in Chapter 9. In that Chapter, inventory was taken to include:

- Raw material.
- Finished goods purchased for resale or manufactured.

At the same time, these techniques could also equally well apply to stocks of stores, spares, loose tools, consumables, etc.

In this Chapter, we will discuss valuation techniques of inventory items which are being manufactured i.e.:

- Finished goods.
- Work in process.

67.1 FINISHED GOODS

Finished goods are those items of inventory which have been produced after raw material(s) have been subjected to a manufacturing process. You will also recall the following picture from Chapter 9 which, from an accounting view point, summarizes a typical manufacturing process.

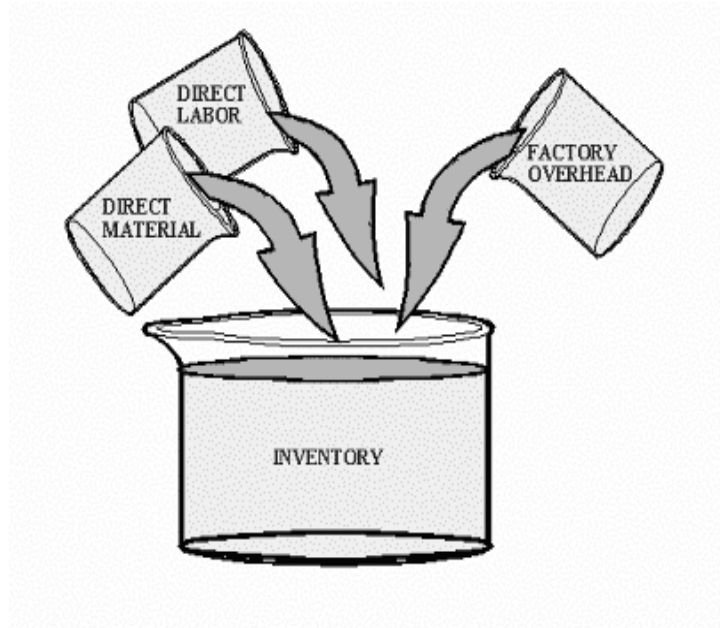
As you will see from this picture, raw material is not the only cost which is incurred by a Business to produce finished goods.

67.2 WORK IN PROCESS

Work in process represents finished goods which are partially completed. Once the manufacturing process is completed, work in process becomes manufactured finished goods.

Just to clarify this further, whenever accounts are prepared all production which has commenced during an accounting period may not always get completed at the end of that accounting period. The various items of raw material, processed or semi-processed, along with the other expenditure incurred by the Business are shown as "Work in Process".

Since we are dealing with manufactured inventory items, this Chapter will be useful for those Businesses which manufacture products.



68 WHY IS COSTING IMPORTANT FOR A MANUFACTURER?

Every manufacturer needs to know: What is my cost of manufacturing? Other relevant queries that can also be addressed through this question are:

- How much should I sell it for?
- Is it feasible to sell for this price?
- Can I cover my other costs /overheads?
- What discount can I offer on this product?

Answers to these questions require a manufacturer to know his costs and that too accurately! This can only be done if:

- Accounting has been done correctly.
- Proper Books of Accounts have been maintained.

We will now move towards understanding what is meant by “costs”.

69 WHAT IS COST OF MANUFACTURED INVENTORY?

The term “Cost” includes all amounts which have been incurred in bringing an item to its present location, condition and usage (you will also recall this definition from Chapter 5 & 9). By this definition, to manufacture an inventory item, some or all of the following costs may be incurred:

- Cost of materials purchased.
- Transportation costs.
- Wages paid to workers.
- Salary paid to factory supervisor / foreman.
- Electricity & gas bill for the factory.
- Expense incurred on repair & maintenance of machinery.

Since these costs have been incurred to facilitate manufacturing of products, Accounting rules require that these costs should also form part of the cost of manufacturing inventory items. The techniques that a Business adopts to include (or apportion) these costs to its products / inventory of items is called “Costing”.

From a business view point, “Costing” is not about complying with an Accounting definition, it also has practical importance; in order to decide how much to sell a product for, a Business must know its cost and when a Business analyzes its costs, it will see that some costs are:

- Directly related to the item being produced e.g. raw material.
- Not directly related to the production of a particular product but these costs were necessary to get production e.g. foreman’s salary.

Both categories of these costs are specific to the type of product. An increase or

decrease in these costs will directly result in an increase or decrease in the manufactured inventory.

However please note that these are the costs which are “fixed” in nature, i.e., have to be paid whether one or more products are manufactured. On the other hand, these costs may also increase (or decrease) if more products are manufactured e.g. let’s assume that a foreman can handle production of four items – however, if a Business decides to manufacture more products, another foreman may have to be hired.

It is this difference of cost behavior with level of production that requires Businesses to adopt valuation techniques which will facilitate answers to questions like “How much has this product cost me?”, so that the decision on “How much should I sell this product for?” can be accurately made.

70 COSTING TERMINOLOGY MADE EASY!

Before we discuss the “Costing” techniques in more detail, it is important to understand some of the typical terms.

70.1 DIRECT COSTS

Direct costs are those which can be directly identified with the production or manufacture of a specific product.

EXAMPLE # 10.1

Direct Cost

Hussain Khaddar manufactures Khaddar which requires yarn as the raw material. To produce 100 meters of Khaddar, Hussain Khaddar requires 50 lbs of yarn. In this example, yarn is called the “Direct Cost” which gets consumed in the manufacture of Khaddar.

70.2 INDIRECT COSTS

Indirect costs or overheads are expenditure which cannot be directly identified with one inventory item, i.e. costs which are required to run a manufacturing facility but do not relate to any one manufactured product.

EXAMPLE # 10.2

Indirect Costs

Hussain Khaddar has employed a factory supervisor who is responsible for production and quality control. He is paid a fixed salary of Rs. 5,000 per month.

The salary of production supervisor is referred to as the “Indirect Cost”.

70.3 VARIABLE COSTS

Variable costs are those costs which directly vary, i.e. increase or decrease with a corresponding change in the production level. This means that if the production increases, these costs will increase in a similar proportion and if production is reduced, these costs will also decrease in similar proportions.

EXAMPLE # 10.3

Variable Costs

In Example 10.1, raw material cost is generally a variable cost because it is directly linked to the quantity of production. It is called variable because the cost being incurred increases or decreases depending on whether production is being increased or decreased, respectively.

But, please note that all variable costs are not always direct costs.

70.4 FIXED COSTS

Fixed costs are those costs which are not increased or decreased by a change, i.e. increase or decrease in production.

EXAMPLE # 10.4

Fixed Cost

In Example 10.2, the salary paid to Production Supervisor is Rs. 5,000 / month. This salary will be paid to the Supervisor irrespective of the level of production.

Again, please do note that all fixed costs are not always indirect costs.

71 WHAT IS A TYPICAL MANUFACTURING CYCLE?

The manufacturing cycle refers to the various processes which are typically undertaken by a Business when a manufacturing order has to be processed. Usually, this cycle starts after an order has been received and when the Business is ready to start the manufacturing activities.

In our discussion on the manufacturing cycle, keeping an Accounting perspective, we recommend that manufacturing Businesses should adopt the following two processes:

Issue of raw materials from store keeper – Issue Note (IN)

An Issue Note allows a Business to keep a record of how much and where raw materials have been consumed. This also enables the Business to assign responsibility on its employees who will be accountable for the inventory items which have been issued by the store keeper.

An Issue Note is not for raw materials only – such a note can be used for all materials and items which a Business may want to track. An Issue Note is a simple document and

the format of a typically used Issue Note is shown below:

ISSUE NOTE			
Date:			
Sales Order #			
Issuance Note #:			
Requested By:			
Serial	Items Code	Items Description	Quantity Issued
Signature Store In charge		Received By	

Transfer of finished goods to godowns (Transfer Note)

A Transfer Note is a confirmation that finished goods have been manufactured. Besides ensuring safe custody of manufactured products, a Transfer Note also ensures that the order has been completed along with a mention of the various raw materials and other items that have been consumed.

The format of a typically used Transfer Note is shown below:

TRANSFER NOTE			
Date:			
Sales Order #:			
Issuance Note #:			
Transfer Note #:			
Serial	Items Code	Items Description	Quantity Issued
Signature Production In charge:		Received by Store Keeper	

72 HOW ARE COSTS CLASSIFIED?

Manufacturing, and therefore the cost of manufactured products, is a dynamic Business activity which needs to be carefully handled. One of the main requirements is that a manufacturing Business should know its costs, and more importantly, the classification of these costs.

All costs incurred by any manufacturing Business can be classified as one of the following:

Manufacturing Costs	Direct & Indirect Costs	Variable & Fixed
Other (Period) Costs	Indirect Costs	Fixed

Other Costs or the Period Costs have no relationship with manufacturing activities. To identify what is included within "Other Costs" depends on the organizational structure of the Business and can also be known by the name of departments which have been created within the Business.

Typically, these will include some or all of the following:

- Marketing department.
- Finance department.
- Sales department.
- Purchase department.
- IT department.

The number of departments can vary from one Business to another; however, these costs are incurred and spent irrespective of whether there are departments or not.

If we simplify our discussions on costs, all these costs can be summarized in the following tabular form:

Total Cost for a Business	Amount
Direct Costs	
Indirect Costs	
Total Manufacturing Costs	
Other(Period) Costs	
TOTAL COSTS	

When we talk about cost of manufactured inventory, we usually refer to the Total Manufacturing Costs. Period costs are not taken as part of product valuation.

73 HOW IS COST OF MANUFACTURED INVENTORY CALCULATED?

By now, we have understood the different types of costs that Businesses encounter, the purpose for which these costs are incurred and the relevance and linkage of these costs with the manufacturing process of the Business. Two commonly used methods will be discussed here which are generally used by most manufacturing Businesses.

When costing is discussed, it means to include the following three areas of accounts:

- Cost of manufactured items which have been sold.
- Cost of manufactured inventory which is still held in stock (whether in finished form or as work in process).

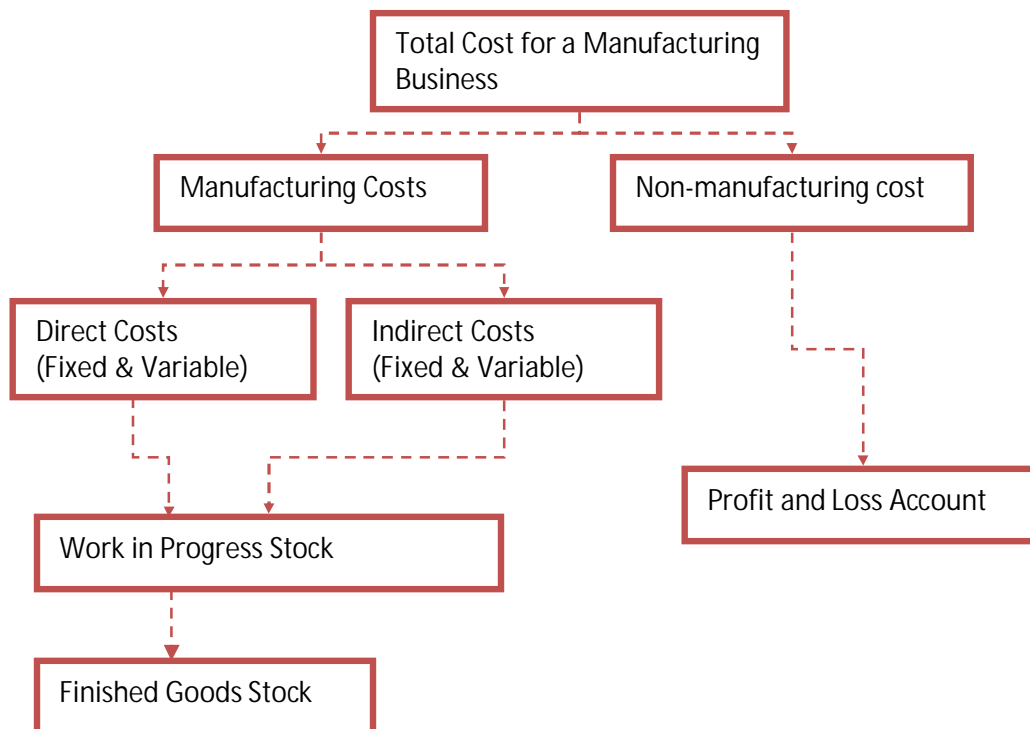
We will now discuss the two methods of costing with emphasis on showing how Accounting is carried out for above.

73.1 ABSORPTION COSTING METHOD

Absorption costing is probably an easier costing method to understand. The basic principle is that all production costs i.e. direct and indirect (irrespective of whether these costs are variable or fixed) have been incurred to manufacture products. Therefore, all these costs should be used to arrive at:

- Cost of manufactured inventory which has been sold.
- Cost of manufactured inventory which is unsold.

This can also be explained by way of the following flow chart:



We will now take an example to show how Absorption Costing is actually used:

EXAMPLE # 10.5

Absorption Costing

Hussain Khaddar & Looms (Pvt) received an order from Ayaz Textile to manufacture 20,000 meters of Greige Khaddar & 15,000 meters of Dyed Khaddar on 5/7/05. Price was agreed @ Rs. 5.0 / meter & Rs. 7.5 / meter for Greige & Dyed Khaddar, respectively. 15,000 lbs of 20/s yarn was required to manufacture Greige Khaddar costing Rs. 40,000 and Rs. 50,000 was spent on 17,500 lbs of 30/s yarn for Dyed Khaddar. By 31/7/05, both Greige & Dyed Khaddar were completely manufactured but had not been despatched to Ayaz Textile. Production started on 10/7/05 and was completed on 25/7/05, while all employee salaries and other expenses were paid on 20/7/05. Both types of Khaddar were despatched to Ayaz Textile on 14/8/05.

Hussain Khaddar paid Rs. 5,000 to the production supervisor, Rs. 1,000 each to five workers (3 of these workers worked on Greige Khaddar and the other 2 worked on Dyed Khaddar), Rs. 3,500 electricity bill for the factory & approx Rs. 2,500 of other expenses were incurred in factory.

If we apply the table in section 7 to this Example, we get:

	Common Costs (Rs.)	Greige Khaddar (Rs.)	Dyed Khaddar (Rs.)
Direct Costs			
Yarn Purchased		40,000	50,000
Daily workers wages		3,000	2,000
		43,000	52,000
Indirect Costs:			
Production Supervisor	5,000		
Electricity costs	3,500		
Factory overheads	2,500		
	11,000	-	-
Total Manufacturing Costs	11,000	43,000	52,000

The reason why these costs have been placed as shown above is briefly explained below:

Yarn purchased: Since each type of yarn is specifically for each type of Khaddar, these costs can be directly attributed to each end product.

Daily Wage Workers: Because each worker was allocated to a particular product (3 workers on Greige Khaddar and 2 on Dyed Khaddar), wages are directly attributed to particular products.

Production Supervisor: These costs are not directly attributable to a particular product but were necessarily spent to manufacture.

Electricity & Factory overheads: Same as for "Production Supervisor".

Where costs can be directly allocated to a particular product, it is a simple process. However, in case of "common costs", these costs need to be allocated or apportioned to each product so that we can accumulate and arrive at total manufacturing costs for each Product.

The method that is used to allocate "common costs" should be such that it represents a fair approximation of the actual costs that have been incurred in manufacturing these inventory items.

Some of the more commonly used basis to apportion common costs are:

1. Floor space.
2. Kilowatt hours.
3. Capital Cost of machines.
4. Machine hours.
5. Quantity of raw material.
6. Quantity of products produced.
7. Sales price.
8. No of hours worked.
9. Any other reasonable basis depending on the type of Business.

The important thing to bear in mind is that there is no right or wrong answer. The basis that is chosen should represent the closest similarity with the cost behavior and should be applied consistently from one period to the next.

In our example, we have taken the quantity of end product produced as the basis for allocating indirect manufacturing costs.

	Total Quantity (meters)	Greige Khaddar (meters)	Dyed Khaddar (meters)
Quantity produced	35,000	20,000	15,000

The factor to be applied for allocation of indirect costs for each product is:

Greige Khaddar (meters)	Dyed Khaddar (meters)
$20,000 / 35,000 = 0.57$	$15,000 / 35,000 = 0.43$

Applying this factor to each individual indirect cost, we get the following allocation of indirect costs:

Common Cost	Basis for Apportionment	Greige Khaddar (Rs.)	Dyed Khaddar (Rs.)	Total (Rs.)
Production supervisor salary	Quantity Produced	2,850	2,150	5,000
Electricity cost	Quantity Produced	1,995	1,505	3,500
Other manufacturing overheads	Quantity Produced	1,425	1,075	2,500
Total		6,270	4,730	11,000

Now that we have the allocation of common costs, we can completely fill our table as shown below:

Total Manufacturing Costs:	Total	Greige Khaddar	Dyed Khaddar
Quantity Produced (meters)	35,000	20,000	15,000
Direct Costs:			
Yarn	90,000	40,000	50,000
Daily Wage Workers	5,000	3,000	2,000
Indirect Costs:			
Production Supervisor	5,000	2,850	2,150
Electricity	3,500	1,995	1,505
Factory overheads	2,500	1,425	1,075
Total Manufacturing Costs	106,000	49,270	56,730

We have now arrived at the total cost of manufactured products using Absorption Costing method. As you will recall from Example # 10.5, the inventory of Greige & Dyed Khaddar is still not sold as of 31/7/05. Therefore, when accounts are prepared for July '05, the following entries will be recorded:

On 10/7/05, production commenced when raw material was issued to the production department – since raw material is direct costs which can be individually attributed to each product, these costs will be directly allocated to a Work in Process Account:

GENERAL LEDGER							
WORK IN PROCESS ACCOUNT							GL-21
Debit				Credit			
Date	Folio	Description	Amount (Rs.)	Date	Folio	Description	Amount (Rs.)
10/7/05	GL-10	Inventory Control Account	40,000				
10/7/05	GL-10	Inventory Control Account	50,000				

GENERAL LEDGER							
INVENTORY CONTROL ACCOUNT							GL-10
Debit				Credit			
Date	Folio	Description	Amount (Rs.)	Date	Folio	Description	Amount (Rs.)
				10/7/05	GL-21	Work In Process Account	40,000
				10/7/05	GL-21	Work In Process Account	50,000

And, the memorandum Inventory Ledger accounts are also updated:

INVENTORY LEDGER										
20/s Yarn								IL-2		
Date	Ref No.	Receipt			Issue			Balance		
		Qty	Rate (Rs)	(Rs.)	Qty	Rate (Rs.)	(Rs.)	Qty	Rate (Rs.)	(Rs.)
10/7/05	SI 023/05				15,000 lbs	2.67	40,000			

INVENTORY LEDGER										
30/s Yarn										IL-9
Date	Ref No.	Receipt			Issue			Balance		
		Quantity	Rate (Rs.)	Amount (Rs.)	Quantity	Rate (Rs.)	Amount (Rs.)	Quantity	Rate (Rs.)	Amount (Rs.)
10/7/05	SI 023/05				17,500 lbs	2.86	50,000			

During the production process, wages were also paid to workers. Since each worker's work is directly associated with each individual product, these costs are also charged directly to the Work in Process Account.

CASH & BANK BOOK							
BANK ACCOUNT							GL-20
Debit				Credit			
Date	Folio	Description	Amount (Rs.)	Date	Folio	Description	Amount (Rs.)
				20/7/05	GL-21	Work In Process Account	5,000

GENERAL LEDGER							
WORK IN PROCESS ACCOUNT							GL-21
Debit				Credit			
Date	Folio	Description	Amount (Rs.)	Date	Folio	Description	Amount (Rs.)
20/7/05	GL-20	Bank Account	3,000				
20/7/05	GL-20	Bank Account	2,000				

Production supervisor's salary is part of fixed manufacturing costs – these costs will not be charged to the Work in Process Account until the time that manufacturing process is completed, or when the Accounts are required to be prepared if that time comes before completion of manufacturing process:

CASH & BANK BOOK							
BANK ACCOUNT							GL-20
Debit				Credit			
Date	Folio	Description	Amount (Rs.)	Date	Folio	Description	Amount (Rs.)
				20/7/05	GL-22	Production Supervisor Salary Account	5,000

GENERAL LEDGER							
PRODUCTION SUPERVISOR SALARY ACCOUNT							GL-22
Debit				Credit			
Date	Folio	Description	Amount (Rs.)	Date	Folio	Description	Amount (Rs.)
20/7/05	GL-20	Bank Account	5,000				

Electricity expense is also a part of fixed manufacturing overheads. This will also be charged to its respective account when bills are paid:

CASH & BANK BOOK							
BANK ACCOUNT							GL-20
Debit				Credit			
Date	Folio	Description	Amount (Rs.)	Date	Folio	Description	Amount (Rs.)
				20/7/05	GL-41	Electricity Expense Account	3,500

GENERAL LEDGER							
ELECTRICITY EXPENSE ACCOUNT							GL-41
Debit				Credit			
Date	Folio	Description	Amount (Rs.)	Date	Folio	Description	Amount (Rs.)
20/7/05	GL-20	Bank Account	3,500				

Similarly, for other manufacturing overheads, the treatment shall be same as that for other fixed manufacturing overheads:

CASH & BANK BOOK							
BANK ACCOUNT							GL-20
Debit				Credit			
Date	Folio	Description	Amount (Rs.)	Date	Folio	Description	Amount (Rs.)
				20/7/05	GL-27	Other Expenses Account	2,500

GENERAL LEDGER							
OTHER EXPENSES ACCOUNT							GL-27
Debit				Credit			
Date	Folio	Description	Amount (Rs.)	Date	Folio	Description	Amount (Rs.)
20/7/05	GL-20	Bank Account	2,500				

On 25/7/05, the manufacturing process was completed. The costs which were charged to the Work in Process account as well as the fixed manufacturing overheads which were incurred need to be quantified to establish the cost of finished goods.

The first step is to allocate the fixed manufacturing overheads to the Work in Process Account. We already have the allocation of amounts in the example above which will now be used to show the allocation.

This allocation will be recorded through a Journal Entry as follows:

Date			Debit (Rs)	Credit (Rs)
25/7/05	DEBIT	WIP Control Account	11,000	
	CREDIT	Production Supervisor Salary Account		5,000
		Electricity Expense Account		3,500
		Other Expenses Account		2,500

Based on this journal entry, the accounting entries will be recorded as follows:

GENERAL LEDGER							
PRODUCTION SUPERVISOR SALARY ACCOUNT							GL-22
Debit				Credit			
Date	Folio	Description	Amount (Rs.)	Date	Folio	Description	Amount (Rs.)
				25/7/05	GL-21	Work In Process Account	5,000

GENERAL LEDGER							
ELECTRICITY EXPENSE ACCOUNT							GL-41
Debit				Credit			
Date	Folio	Description	Amount (Rs.)	Date	Folio	Description	Amount (Rs.)
				25/7/05	GL-21	Work In Process Account	3,500

GENERAL LEDGER							
OTHER EXPENSES ACCOUNT							GL-27
Debit				Credit			
Date	Folio	Description	Amount (Rs.)	Date	Folio	Description	Amount (Rs.)
				25/7/05	GL-21	Work In Process Account	2,500

GENERAL LEDGER							
WORK IN PROCESS ACCOUNT							GL-21
Debit				Credit			
Date	Folio	Description	Amount (Rs.)	Date	Folio	Description	Amount (Rs.)
25/7/05	GL-22	Production Supervisor Salary Account	5,000				
25/7/05	GL-41	Electricity Expense Account	3,500				
25/7/05	GL-27	Other Expenses Account	2,500				

An important point to remember: Not all fixed manufacturing overheads are always allocated to the cost of manufactured inventory. We will take the example of salary paid to the Production Supervisor to demonstrate this. In our Example, we had assumed that the Production Supervisor spends all his time looking after the production. And, for this reason, we had allocated Production Supervisor's cost on the basis of quantity produced for each manufactured product. However, there may be instances where this may not be true, as we will show on next page.

The Production Supervisor may also have other responsibilities, besides production, which may include looking after factory administration, purchasing and store keeping. Where a production supervisor handles multiple tasks, a better measure of allocating his salary cost would be the “hours spent” on each task.

Let us take a simple example; the Production Supervisor is responsible for:

Production	75% of time spent
Factory Administration	25% of time spent

In this case, since 75% of his time is spent on manufacturing related activities, only 75% of his salary will count towards fixed manufacturing overheads (and will get allocated to the cost of manufactured products), while the remaining 25% will be treated as “Other / Period Costs”. And, like before, the amount allocated towards production will be further allocated between the different manufactured products on the basis of quantity produced.

In such a case, taking the amounts from our Example, the Production Supervisor’s monthly salary was Rs. 5,000/- per month. This salary will get allocated as follows:

	Rs.
Production	3,750
Factory Administration	1,250
Total	5,000

When the amount allocated to production is further spread over the two types of Khaddar, we get the following allocation:

Common Cost	Basis for Apportionment	Greige Khaddar	Dyed Khaddar	Total
Production supervisor salary	Quantity Produced	2,138	1,612	3,750

Accordingly, the accounting entries will also change.

The various manufacturing costs have now been allocated to the Work in Process Account. Since the manufacturing process is also completed, all these costs need to be transferred to Finished Goods Account.

GENERAL LEDGER							
WORK IN PROCESS ACCOUNT							GL-21
Debit				Credit			
Date	Folio	Description	Amount (Rs.)	Date	Folio	Description	Amount (Rs.)
				25/7/05	GL-28	Finished Goods Control Account	49,270
				25/7/05	GL-28	Finished Goods Control Account	56,730

GENERAL LEDGER							
FINISHED GOODS CONTROL ACCOUNT							GL-28
Debit				Credit			
Date	Folio	Description	Amount (Rs.)	Date	Folio	Description	Amount (Rs.)
25/7/05	GL-21	Work In Process Account	49,270				
25/7/05	GL-21	Work In Process Account	56,730				

At this stage, you will note that the balance on the Work in Process Account becomes "nil" i.e. since the manufacturing process has been completed, all costs have been transferred to finished goods.

Also, just like inventory items, separate accounts are also opened for finished goods in the Inventory Ledger so that the Businesses can keep track of the quantity of finished products.

INVENTORY LEDGER									
GREIGE KHADDAR									IL-25
Date	Ref No.	Receipt			Issue			Balance	
		Quantity	Rate (Rs.)	Amount (Rs.)	Quantity	Rate (Rs.)	Amount (Rs.)	Quantity	Rate (Rs.)
25/7/05	TN 032/05	20,000	2.46	49,270					

INVENTORY LEDGER										
DYED KHADDAR										IL-95
Date	Ref No.	Receipt			Issue			Balance		
		Quantity	Rate (Rs.)	Amount (Rs.)	Quantity	Rate (Rs.)	Amount (Rs.)	Quantity	Rate (Rs.)	Amount (Rs.)
25/7/05	TN 032/05	15,000	3.78	56,730						

Similarly, since these finished goods are kept with in a godown, the store keeper will also update Bin Cards with the quantities received of each product.

And lastly, when the manufactured products were dispatched on 14/8/05, the following entries are recorded:

GENERAL LEDGER							
FINISHED GOODS CONTROL ACCOUNT							GL-28
Debit				Credit			
Date	Folio	Description	Amount (Rs.)	Date	Folio	Description	Amount (Rs.)
				14/8/05	GL-33	Cost of Sales Account	49,270
				14/8/05	GL-33	Cost of Sales Account	56,730

GENERAL LEDGER							
COST OF SALES ACCOUNT							GL-33
Debit				Credit			
Date	Folio	Description	Amount (Rs.)	Date	Folio	Description	Amount (Rs.)
14/8/05	GL-28	Finished Good Control Account	49,270				
14/8/05	GL-28	Finished Good Control Account	56,730				

At the same time, the memorandum Inventory Ledger will also get updated with the Finished Goods issued or sold:

INVENTORY LEDGER										
GREIGE KHADDAR										IL-25
Date	Ref No.	Receipt			Issue			Balance		
		Quantity	Rate (Rs.)	Amount (Rs.)	Quantity	Rate (Rs.)	Amount (Rs.)	Quantity	Rate (Rs.)	Amount (Rs.)
14/8/05	DN 012/05				20,000	2.46	49,270			

INVENTORY LEDGER										
DYED KHADDAR										IL-95
Date	Ref No.	Receipt			Issue			Balance		
		Quantity	Rate (Rs.)	Amount (Rs.)	Quantity	Rate (Rs.)	Amount (Rs.)	Quantity	Rate (Rs.)	Amount (Rs.)
14/8/05	DN 012/05				15,000	3.78	56,730			

An important point to note:

You will appreciate that it is also possible that the end products manufactured on different dates could have cost different amounts to a Business, e.g., because raw material was purchased on another date which has cost less or more. Where cost of finished goods changes over time, FIFO or weighted average valuation techniques will be used to calculate the "cost of goods sold".

73.2 MARGINAL COSTING METHOD

Marginal costing is very similar to the absorption costing method except that Fixed Manufacturing Expenses are not allocated or apportioned to the cost of manufactured inventory or to the cost of manufactured inventory sold – please note that the variable portion of fixed production costs will continue to be added to the overall manufacturing cost.

The rationale behind adopting this method is that fixed manufacturing overheads will be incurred by the Business irrespective of the quantity produced or sold – therefore, since

these costs are part of having a manufacturing Business, they should not be added to the cost of manufactured inventory or to the cost of manufactured inventory sold.

While the allocation and apportionment methods are similar to those which have been discussed above, the key is to identify the fixed manufacturing overheads.

EXAMPLE # 10.6**Calculating Manufacturing Cost**

Continuing from Example 10.5, we will now use marginal costing method.

As we have already explained, fixed manufacturing expenses are not included in Marginal Costing Method. In Example 10.5, the fixed manufacturing overheads were:

Production Supervisor	5,000
Electricity costs	3,500
Factory overheads	2,500
Total	11,000

These costs are ignored for the purposes of calculating the manufacturing costs. The cost of manufactured inventory will, therefore, be as follows:

Total Manufacturing Costs:	Total	Greige Khaddar	Dyed Khaddar
Quantity Produced (meters)	35,000	20,000	15,000
Direct Costs:			
Yarn	90,000	40,000	50,000
Daily Wage Workers	5,000	3,000	2,000
Total Manufacturing Costs	95,000	43,000	52,000

When accounts are prepared for July '05, the sequence of accounting entries remains same as has already been shown for absorption costing. The only difference is that Fixed Manufacturing Costs / Overheads do not get allocated to the cost of manufactured products. Since Accounting entries are similar, we have not repeated the entries under marginal costing method.

73.3 COMPARISON: ABSORPTION COSTING VS. MARGINAL COSTING

By now, we have understood application and Accounting of the two commonly used costing methods. The table on next page summarizes the salient features of these methods.

Absorption Costing	Marginal Costing
All manufacturing expenses (variable or fixed) are included in costing.	Only variable manufacturing expenses are included in costing.
Cost of manufactured inventory is usually higher.	Cost of manufactured inventory is usually lower.

73.4 IMPACT ON PROFIT CALCULATION

The net profit is same for a Business irrespective of whether absorption or marginal costing methods are used only if there is no closing stock at the year end.

We will now show this by taking the following brief example:

EXAMPLE # 10.7

Calculating the Profit

Continuing from example 10.5 & 10.6, the Profit & Loss Account for August '05 will be prepared as shown below. We will assume that there was no further production or sale.

Profit & Loss Account For the month of August 2005 Using Absorption Costing	
Sales	Rs. 212,500
Less:	
Cost of sales	106,000
Gross Profit	106,500

Profit & Loss Account For the month of August 2005 Marginal Costing	
Sales	Rs. 212,500
Less:	
Cost of sales	95,000
Fixed Manufacturing Overheads	11,000
Gross Profit	106,500

You will note that the difference between the two methods is only to show manufacturing costs between two heads, i.e. Cost of Sales and Fixed Overheads – the overall impact on a Business's profitability has, however, remained same.

74 WHAT IS ACCOUNTING FOR WORK IN PROCESS?

We have already discussed what work in process is in this Chapter. The Accounting for work in process is very simple.

In Examples # 10.5 & 10.6, it was shown that all manufacturing expenses and raw material costs are first debited into a "Work in Process" Account. As soon as the inventory gets manufactured, these costs are taken to the "Finished Goods" account. At any time when accounts are prepared and if an inventory item has not been completely manufactured, the balance on the "Work in Process" Account, after a portion of manufacturing expenses have also been charged, will represent the value of "Work in Process".

You will remember that Inventory has three components, i.e. raw material, work in process and finished goods. Any inventory shown as Work in Process means that:

- These do not represent completed inventory items; and
- Further costs and time will be required to finish or process these inventory items further into finished goods.

Accounting for Work in Process is simple enough – by way of Examples # 10.5 & 10.6 we have already shown how accounting for Work in Process is carried out.

75 HOW SHOULD I DECIDE WHICH PRODUCT TO MANUFACTURE?

Where a Business manufactures multiple products, a situation may arise when some decisions may need to be made: "Which product should I manufacture?" Or "Which product should I manufacture more?" The obvious answer is that the Business should manufacture a product which is more profitable, which leads to the next obvious question, "Which product is more profitable?"

The solution lies in knowing the Contribution Margin for each product. Contribution Margin represents the "excess over cost" which is generated by each product after paying for its respective variable costs. It is the Contribution Margin which pays the fixed overheads (or period costs) after which profit is left for the Business. Consequently, the product or the mix of products which generate maximum Contribution Margin should be manufactured the most and shall result in maximum profitability for the Business.

Simply speaking:

$$\text{Sales Price} - \text{Variable Manufacturing Costs} = \text{Contribution Margin}$$

We will now explain Contribution Margin by taking the following example:

EXAMPLE # 10.8

Contribution Margin

Continuing from Example 10.5 & 10.6, we will now calculate Contribution Margin for both Greige & Dyed Khaddar.

You will note that the calculation of Contribution Margin is not affected by whether a Business uses Absorption or Marginal Costing method. It only requires that a Business should know the break up of its manufacturing costs between variable and fixed costs.

Contribution Margin Per Meter		
	Greige Khaddar	Dyed Khaddar
Quantity (meters)	20,000	15,000
	Rs.	Rs.
Selling Price per meter	5.00	7.50
Less:		
Manufacturing Cost per meter	2.15*	3.50*
Contribution Margin	2.85	4.00

* You will remember that the total direct variable costs were Rs. 43,000 and Rs. 52,000 for Greige & Dyed Khaddar, respectively.

In this example, Dyed Khaddar has a higher Contribution Margin which means that Hussain Khaddar should concentrate on selling Dyed Khaddar more.

76 HOW CAN THESE COSTING METHODS HELP IN DECISION MAKING?

The main difference between these two costing methods is to establish how a Business shall deal with Fixed Manufacturing Expenses i.e. whether they should be part of product cost or not. In Example 10.5 using absorption and in Example 10.6 marginal costing methods, the cost of manufactured products was as follows:

Total Manufacturing Costs:	Total	Greige Khaddar	Dyed Khaddar
Quantity Produced (meters)	35,000	20,000	15,000
Under:			
Absorption Costing (Rs.)	106,000	49,270	56,730
Marginal Costing (Rs.)	95,000	43,000	52,000

The cost of same product works out to be different depending on whether a Business is using absorption or marginal costing method. These cost differences may be important in some situations, e.g., if the Business receives a competitively priced order for supply of Greige Khaddar for Rs. 45,000, should the Business accept it? Judging by the table above, if the Business uses Absorption Costing, they should not accept the order and if the Business uses Marginal Costing, the order should be accepted. This is not right! The

decision to accept or decline an order should be based on profitability and not on the costing method used by a Business.

The decision on whether a Business should accept such orders is really a mixture of:

- Whether the Business has any spare capacity; AND / OR
- Whether the contribution margin is more or less.

Clearly, if a Business has no spare capacity and taking on an order means cutting production of another product, then the decision should be to produce the product with a higher Contribution Margin.

Alternatively, if a Business has spare capacity and the order in question can be easily accommodated, the decision on whether to go ahead with the order should simply be to see whether the Contribution Margin on that order is positive or not. So long as the Contribution Margin is positive, the Business should go-ahead with the order.

77 HOW MUCH DO I HAVE TO PRODUCE BEFORE I START MAKING PROFITS?

Every Business wants to know the answer to this question, “How much should I sell before I make profits?” This is called “Breakeven Analysis”. Breakeven is the point at which the Business neither makes a profit nor a loss. Sale in excess of the breakeven point will result in profits for the Business.

In other words, we can also say that Breakeven is the point where Contribution Margin from sale of all products equals the fixed overheads of the Business i.e. the Business neither makes a profit nor a loss. Mathematically, this can be shown as follows.

$$\text{Sales} - \text{Variable Costs} = \text{Fixed Costs}$$

$$\text{Sales} - \text{Variable Costs} - \text{Fixed Costs} = \text{Zero}$$

We will now illustrate this concept by using the following example:

EXAMPLE # 10.9

Breakeven

Using the facts in Example 10.5, we will assume that Hussain Khaddar has a capacity to manufacture 100,000 meters of Greige Khaddar per month. Fixed overheads are estimated at Rs. 25,000 per month.

In this example, we are trying to work the quantity of Khaddar which Hussain Khaddar should sell every month to achieve a Breakeven.

If we assume that the breakeven quantity for Greige Khaddar is X and if we apply the example to the equation, we get:

$$\begin{aligned} X \times 5 - X \times 2.15 &= 25,000 \\ X (5 - 2.15) &= 25,000 \\ X (2.85) &= 25,000 \\ X (\text{Quantity}) &= 8,771 \text{ meters} \end{aligned}$$

Therefore, so long as Hussain Khaddar is able to manufacture and sell 8,771 meters of Greige Khaddar, the Business will Breakeven – any sales in excess of 8,771 meters will result in profits.

78 ARE THERE OTHER COSTING METHODS?

Absorption and marginal costing methods are generally applicable to all Businesses. However, there are specific costing methods which have been developed depending on the type of business and manufacturing activity.

We will now briefly describe some of these commonly used methods.

78.1 ACTIVITY BASED COSTING (ABC)

The essence of ABC is that it is activities which cause costs to be incurred and not products, and it is products which require activities to be undertaken. If cost of all such activities can be determined, and their relationship to products is understood, ABC can be deployed as the basis for product costing, performance measurement and profitability analysis.

78.2 JOB COSTING

Job costing is adopted when every order received by a Business is a separate and a distinctive order, i.e. the raw materials, end products and production start to finish can be easily identified. Most types of Businesses can actually fall within the definition of Job Costing – the easiest example would be furniture manufacture. A separate Job Cost Sheet is prepared for every order which itemizes all costs associated with that order.

78.3 BATCH COSTING

Batch costing is used in following circumstances:

Where a Business produces a product to meet a customer's specification (as in job costing), but where a number of similar items (a batch) are made for each order; or where a batch of similar items is made, and is held in stock awaiting customers' order

Where a Business produces a single item to meet a customer's specification (i.e., job costing is used), but where the product being made contains components that are also used in other products. Such components will be made in batches.

As in job costing, a cost sheet or file in a computer will be used to record the direct and indirect cost incurred by, or allocated to, the production of the batch. The cost sheet is called a batch cost sheet.

78.4 PROCESS COSTING

Process costing, as the name implies, is relevant in situations where raw materials are processed in a continuous stream with the result that the raw material cannot be associated with any particular finished product. Good examples of process costing are chemical, oil refineries, milk processing plants and confectionery products.

CHAPTER HIGHLIGHTS

What have we covered?

1. Finished goods are produced after raw materials have been subjected to a manufacturing process, and after other expenses have also been incurred.
2. While a manufacturing process is ongoing, it is called Work in Process, which when completed becomes Finished Goods.
3. Cost of manufactured inventory includes all amounts which have been spent in bringing an item to its present location, condition and usage.
4. Direct costs can be directly identified with production.
5. Indirect costs cannot be directly identified to a single product but are necessarily incurred to facilitate manufacturing activities.
6. Variable costs vary directly with production levels, while fixed costs are usually incurred irrespective of production levels.
7. Manufacturing cycle refers to the various processes which are typically undertaken by a Business when a manufacturing order is processed.
8. Issue Notes are used to record movement of raw material from godown to production.
9. Transfer Notes record movement of finished goods back to the godown.
10. Under absorption costing, all costs whether fixed or variable are included within the cost of manufactured products.
11. Under marginal costing, only variable costs are included within the cost of manufactured inventory items.
12. Net profit for a Business under absorption or marginal costing is same. Difference is only in inventory valuation.
13. Contribution margin shows the "excess over cost" generated by each product after paying all its variable costs.
14. Production levels at which a Business neither makes a profit nor a loss is called its break even point. Production / sale in excess of this level will result in profits.
15. Contribution margin should be used to evaluate decisions on which product to manufacture.
16. The product which yields the highest contribution margin should be manufactured the most.
17. Other costing methods are also available which are more useful for certain types of Businesses.