

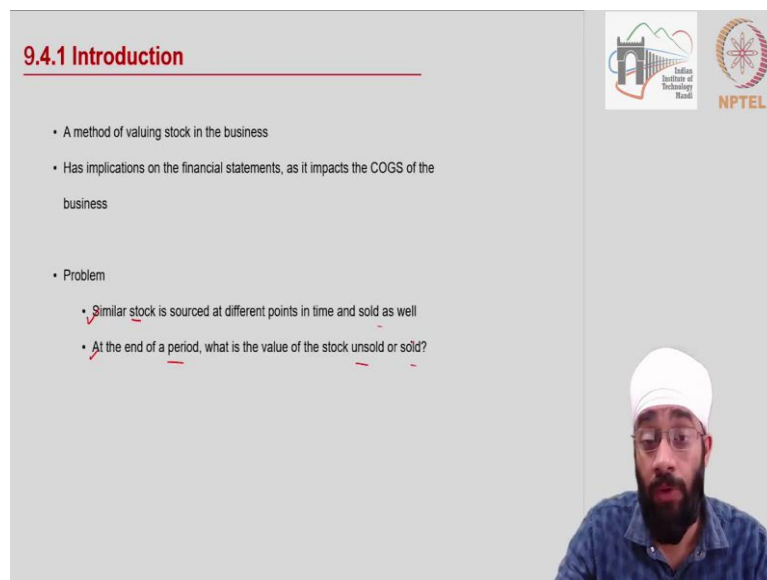
Financial Accounting
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Lecture – 120
9.4 Methods of stock valuation

In this video I am going to talk about methods of stock valuation. There are three four methods that I am going to discuss. The objective of these methods is to put a value to the stock. When you calculate profit during the year at the end of the year you need to work out the cost of the goods which are sold during the year. We know that the stock can be bought during the year multiple times at different prices. So, at the end of the year which stock has been sold, which stock is unsold, what is the total cost of the goods which have been sold and what is the cost of the goods which are unsold, how do we figure all that out?

To answer this question, we look at these techniques, these methods of valuing the stock at the end of the year, and we are going to do that with the help of an example.

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9.4.1 Introduction

- A method of valuing stock in the business
- Has implications on the financial statements, as it impacts the COGS of the business
- Problem
 - Similar stock is sourced at different points in time and sold as well
 - At the end of a period, what is the value of the stock unsold or sold?

The slide also features the logos of the Indian Institute of Technology Mandi and NPTEL in the top right corner. A video inset in the bottom right corner shows the lecturer, Dr. Puran Singh, wearing a white cap and glasses.

So, the problem that we are trying to solve is how to value the sold and unsold stock at the end of the year, when the stock is bought at varied rates during the year. If you are in say mobile retailing, and you buy a stock of 10 mobiles and 5 were sold, you buy another 50 and 20 are sold, you buy another 10 then another some units are sold, so at a given point in time there is so much confusion as to which stock is remaining.

Maybe the first stock of mobile phones that you bought cost 10,000 apiece and later on 9,500 per piece and the third lot that you bought cost you 10,500. So, which ones are you selling? Because when the customer comes in, he looks at all the available models with you and picks one, which could be from any of the three batches that you bought.


So, you have to keep a track of at what point in time you buy the stock, at what price, and then which units were sold. So, we have to answer the questions that we mentioned earlier. So, the problem is that similar stock can be bought at different points in time and sold as well.

And at the end of a given period, which is accounting period for us, the value of the stock which is sold or unsold that value has to be determined for us to be able to effectively manage the stock in the business and put a value to the cost of goods sold so that we can arrive at the profit for the year.

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9.4.2 FIFO *first in, first out*

Date	Purchase			Issued/Sale			Balance		
	Unit	Rate	Amt	Unit	Rate	Amt	Unit	Rate	Amt
2020 Apr 1	100	10	1000	-	-	-	100	10	1000
July 1	100	15	1500	-	-	-	100	10	1000
							100	15	1500
Dec 1	100	20	2000	-	-	-	100	10	1000
							100	15	1500
							100	20	2000
2021 Jan 1	-	-	-	100	10	1000	100	15	1500
							100	20	2000
Feb 1	-	-	-	50	15	750	50	15	750
							100	20	2000
Mar 1	-	-	-	30	15	450	30	15	450
							100	20	2000
									2450



Let us look at this example practice problem here. Here you are doing three different purchases. On April 1st 2020, on July 1st 2020 and on December 1st 2020; three purchases are being done. 100 units at each purchase, but the price of the purchase is varying at each occasion.

And then there are three occasions in the next year, although the same financial year. Let us say this is the 2020-21 financial year. And then the inventory is being sold in different units and we have to figure out at the end of the year which of the units are remaining, which of the

three lots, what is the value of the cost of the goods which have been sold or goods that are unsold and what is the value.

And the first method that we are going to use to value the stock at the end of the period is called the LIFO method; this is *Last In First Out* method. This will become clearer as we attempt to solve this problem here.

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9.4.2 LIFO

Purchase Records of a hardware store

- Apr 1, 2020 – Inventory purchased : 100 units of board @ 10 per unit
- July 1, 2020 – Inventory purchased : 100 units of board @ 15 per unit
- Dec 1, 2020 – Inventory purchased : 100 units of board @ 20 per unit

Sales Records

- Jan 1, 2021 – Inventory sold : 100 units of board
- Feb 1, 2021 – Inventory sold : 50 units of board
- Mar 1, 2021 – Inventory sold : 20 units of board

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So, we use this format and, again, there are different formats, different methods, different approaches to this method, but the principle is going to remain the same. So, there is one common date column and then there is section 1 on purchase, 2nd on sale and 3rd for the balance. The 2nd section says issued or sold because it is possible you are a retailer, so you could say sales. But, in large manufacturing houses there is a stock department which maintains this record of different kinds of stock purchased and then issued to say workshop section, the section where things are actually manufactured. So, they can use the issued heading in this column as well. However, let us stick to sales for the ease of understanding.

So, the first purchase was done on April 1st 2020. So, let us put a year here, 2020 and we are going to say April 1. So, on April 1, purchased 100 units, 10 per unit. So, in the units' column I am going to write 100, 10 per unit. So, that gives me a total amount of 1,000. So, this is the first entry here. This is a simple record, no specific format, or no regulatory guideline of any sort to maintain this, but just trying to explain to you one method of valuation of stock.

At the end of this transaction the balance remaining is 100 units at the rate 10 per unit and 1,000 is the total value of the stock with you, first entry completed. Second is July 1st 2020. So, I am going to write July 1st 2020, another 100 units are bought at this point in time at a higher price, typical behavior of prices over a period of time inflation goes up. So, a total amount of 1,500 is spent on this purchase. Now, notice that your stock is now 200 units at the end of this transaction you have 100 units at 1,000 rupees from the previous purchase. You also have 100 units at 15; 1500 from the current purchase, this is the new stock level. So, you have 2,500 rupees worth of stock, 200 units of stock and this stock is bought at 10 rupee at first and then 15 rupee at the second occasion. Now, we are maintaining separate records for these separate purchases. The third transaction is when we purchase stock again another 100 units but this time 20 per unit on December 1st. So, I will write here December 1st, another 100 units 20. So, 2,000 more and now I have 100 units worth of three stocks and each time the price has been going up. So, different prices and this is 1000, 1500, and 2000. So, this is my total stock available.

So, on any given day if the stock register is checked, if anybody asks as to what is the value of the stock today, at day end, you could just refer to this register and say this is the amount and these are different prices.

Now, let us get into more complicated business. Now, the sales take place let us say, January 1st 2021. So, we entered 2021 on January 1st, 100 units were sold. So, 100 units have been sold. So, no entry here, just like there was no entry in the sales column all this while, just to be clear. So, 100 units are being sold and they are going out. The question is what is the rate? And we do not want to write the selling price here. Selling price will go to the profit and loss account. This is internal accounting. This is internal to the business stock accounting. We have three stocks, consignments of stock with us 300 units, blocks, which of these 100 is being sold is the question.

Now, this is where the LIFO, the FIFO method comes in. The FIFO method is *First In First Out*. This means whichever stock you bought first, in chronological order, that stock is assumed to be sold first. Using that we would say this is the stock which was bought at the very first occasion and this cost us 10 per unit.

Therefore, we are going to use 10 here and we will say 1,000 rupees worth of stock has been sold. The stock may have been sold at 25 rupees, 50 rupees per unit, does not matter we are not

We could now go to the second approach which is *Last In First Out*, pretty opposite of the previous case. So, let us attempt the second approach as well and in this approach the first three transactions are going to be the same which is the purchase transaction. Just like we had April 1st, July 1st, and December 1st, three transactions of purchase, they are going to stay the same. So, I am just going to duplicate them here and now I am going to use the other transactions which were the sale transactions. Let us see how that is going to affect the stock accounting here. So, on January 1st, and then Feb 1st, and March 1st, there are three transactions and we had 100 units being sold, 50, and then 20. So, the question here is what price are you going to use to record these sales at? Now, in case of first in first out, for this 100 which was sold on January 1st in 2021, we used First In First Out. So, we used this 100; so, 10 rupees. Now, we are going to do the opposite. Chronologically, we are going to use the descending order. And we are going to use the Last In First Out approach. The last stock which was in is going to go out first, that is what it means. Therefore, at 20 rupees and 2,000 and after this transaction you are left with 100, and 100 at 10, and 15, 1000, and 1500 that is it. You have sold this last consignment of stocks.

So, on February 1st, likewise, you are selling 50 units and you are going to sell the latest one first at 15 rupees and this is 750 you are left with 100 and 50 at 10 and 15. So, 1000 and 750; this is the amount of stock remaining with you this is the Last In First Out method.

Finally, on March 1st, you are selling 20 units again at 15 rupees, the latest stock that is with you. So, 300, you are left with 100 and 30 at 10, and 15 this is 1000, and this is 450. So, the unsold stock at the end of the year is 1450 and the cost of goods sold during the year come out to be 3050, 27 that is right, 3050.

So, you see that there is a difference between the cost of goods sold according to the First In First Out method which was 2050 and the Last In First Out method; in this case the cost of goods sold is 3050. So, these fluctuations in prices of the stock lead to this confusion and therefore, we have to maintain a stock accounting, we have to do internally, for the purpose of valuing the stock.

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9.4.3 Average Cost Method

Date	Purchase			Issued/Sale			Balance		
	Unit	Rate	Amt	Unit	Rate	Amt	Unit	Rate	Amt
2020 Apr 1	100	10	1000	-	-	-	100	10	1000
July 1	100	15	1500	-	-	-	100	15	1500
Dec 1	100	20	2000	-	-	-	100	20	2000
Jan 1				100	15	1500	200	15	3000
Feb 1				50	15	750	150	15	2250
Mar 1				20	15	300	130	15	1950
						2250			CS

Now, let us look at another method which is called the *Average Cost Method*. Again, the top three entries are going to be the same, only difference is going to be in the entries on January 1st, and Feb 1st, and March 1st. And in this case again we have 100 units being sold, 50 and 20, the only confusion is, the only question to be answered is, at what price do we record these sales.

In the First In First Out we use this 10 and in the Last In First Out we use 20. In the average cost method, we are just going to use the average of these three. So, the average of these three comes out to be what? 15. So, 15 is the average and we are going to sell the stock, we are going to record the outward going stock at 15. Therefore, you have 1,500 rupees worth of stock which is going out. Now, how do we write the balance? Now from this point onwards you do not write separate balances, you are going to club everything up. So, out of 300, 100 has gone out. So, 200 is remaining at 15. So, value of the stock now is 3000 and from here on things become simpler. The things become simpler because now you will always issue the this stock at 15 rupees. So, you are left with 150 units at 15. So, 2250 this is the stock with you and then again 15, you sell 300 you are left with 130 units of stock. I think that is about right and you are left with 1800 rupees worth of stock. I hope the numbers are right 2250 minus 300, no, that is not right. So, this should be 300. So, 9 50, let me write it here. So, 5 1950, this is the amount of stock left at the end of the period. So, here the cost of goods sold for you, here this is the number.

So, this is how much? 1950 and 2250, if there is no arithmetic mistake, but the approach is what matters here not the essentially the numbers right now and not this, the amount of closing stock. So, this is the closing stock and this is the cost of goods sold that you have during the year. Again, there is a difference in the cost of goods sold; 2250 compared to 3050 in case of Last In First Out and 2050 in case of First In First Out this is the third approach.

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$\frac{4500}{200} = 15$

9.4.4 Weighted Average Cost Method

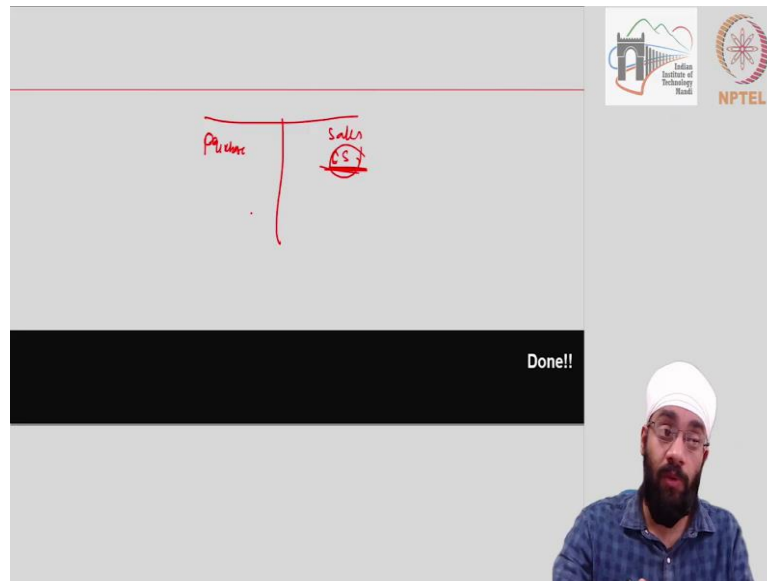
Date	Purchase			Issued/Sale			Balance		
	Unit	Rate	Amt	Unit	Rate	Amt	Unit	Rate	Amt
2020 Apr 1	100	10	1000	-	-	-	100	10	1000
May 1	100	15	1500	-	-	-	100	10	1000
Dec 1	100	20	2000	-	-	-	100	15	1500
Jan 1				100	15	1500			
Feb				50	15	750			
Mar 1				20	15	300			
						2250			

Let us look at the final approach fourth approach which is the *Weighted Average Cost Method*. Again, everything remains the same. All we have to do is calculate the price in a different way. So, January 1st, February 1st, and March 1st, you have 100 units, 50 units and 20 units. Now, the price at which you are going to record the sale is going to be the weighted average and the weighted average is the sum of this divided by sum of this, that is all.

So, sum of this comes out to be 2500, 4500. So, 4500 divided by 300. So, this comes out to be 15. So, essentially this comes out to be the same as the average cost, the weighted average is also equal because we had 100 units each. Therefore, my job becomes simpler here, although I could have taken different numbers of units in which case the amount, the numbers could have worked out to be different.

But essentially you know it gives you the same numbers. So, you are going to have 2250 as the cost of goods sold like you had in the previous case in the average cost method.

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So, these were four methods of valuation of the stock. The problem of valuation of the stock is important because at the end of the year, if you remember the final accounts from previous units, you have sales and you have closing stock and you have to compare that to the cost you have to figure out the cost of goods sold basically and you have purchase here.

So, if I remember correctly, there was a question at some point in time you know how do we figure out the value of the closing stock and now we have answered that question at the end of the course. So, closing stock in order to figure out how many units are left, what is the value you use, one of these four methods, depending upon what is the management policy.

There is of course, an accounting standard as well, which talks about valuation of stock, but again, too technical, we are not going there. The idea is to only give you an overview in this course and there are of course, more detailed courses that can be taken in understanding the inventory management which includes inventory valuation, inventory control, and some other methods of working with inventory, but for this course, this is where we stop vis a vis inventory management.