Managerial Accounting
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Module - 16
Lecture - 34
Cost Volume Profit and Break - Even Point Analysis

Dear students, we have already done our module 12 on Cost Volume Profit Analysis. Let us do some more cases and problems. So, that there is more conceptual clarity. And you will know how those concepts can be applied to real situations. So, try to remember what we had done under cost volume profit analysis. Are you able to remember, what was covered there?

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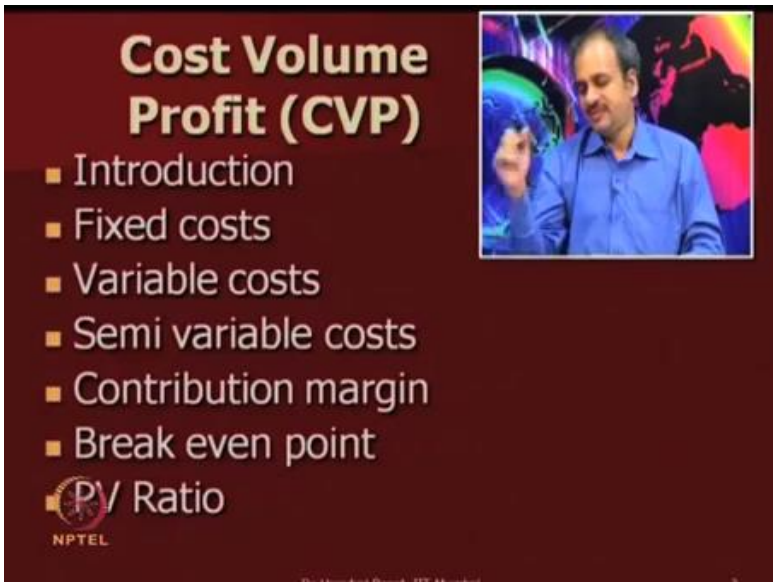

Have a look at the slide. At that time, we had discussed these issues about fixed costs, variable costs, semi variable costs. Then, we had gone into discussion on contribution, breakeven point, PV ratio. And we had also seen, how these concepts can be used in various decision making situations. So, I would not repeat everything, but just try to remember what is meant by fixed cost. Anyone is able to remember what is a fixed cost?

So, the cost which does not change with the production or with the level of activity is what is called as fixed cost, whereas the cost which changes in the direct proportion to level of activity is a variable cost. Semi variable is something in between, it does change,

but not in the same proportion. So, we break down the semi variable cost into fixed portion and variable portion. Now, what is meant by contribution margin?

Now, variable cost as you know by definition, changes with the level of activity. So, we compared that with the volume or the sales. So, Sales minus variable cost gives us contribution that is the profitability at a gross level. From that contribution, we need to pay fixed cost to get the profit.

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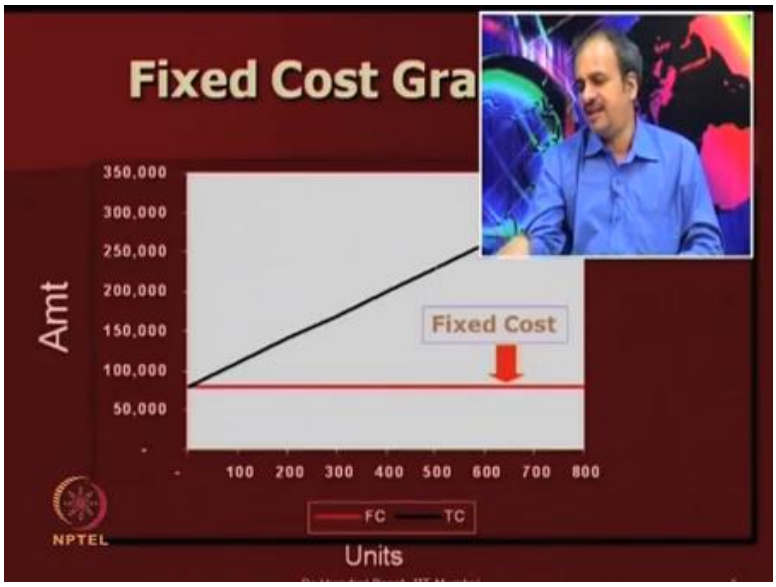

Let us see the formulas as well of, what we had already seen. This is the graph of fixed cost. So, you can see that. Though the sales rise, fixed cost essentially remains constant. It is a horizontal line.

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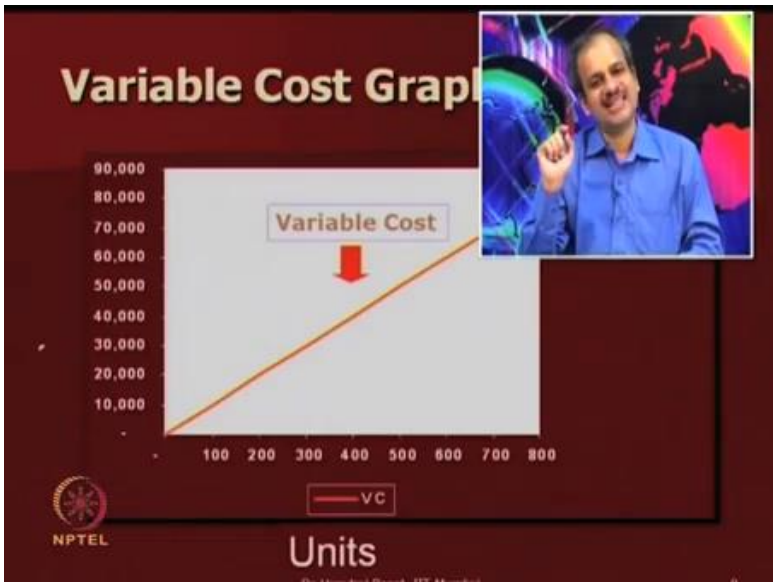

As against this, the variable cost is starting at zero and will continuously go up. It continuously increases.

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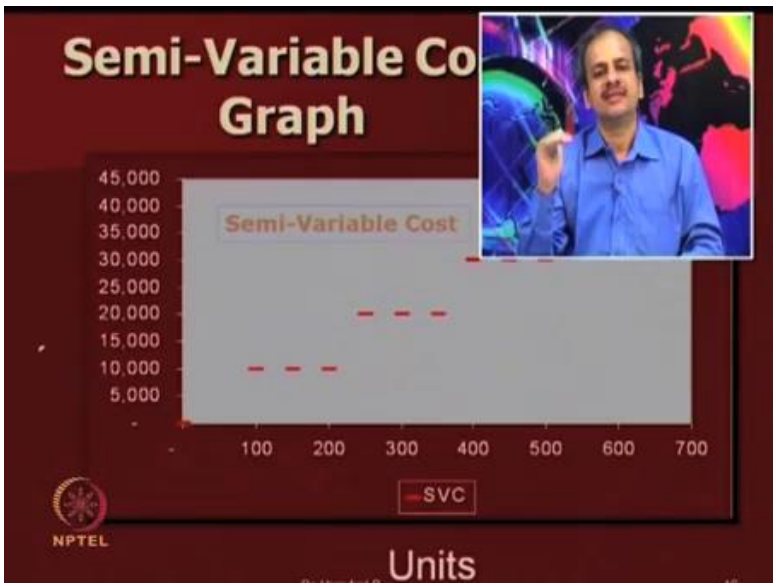

Semi variable cost is like steps. It follows the step pattern. With these, we will try to go to break even points. I will not repeat assumptions etcetera. I hope, remember these things.

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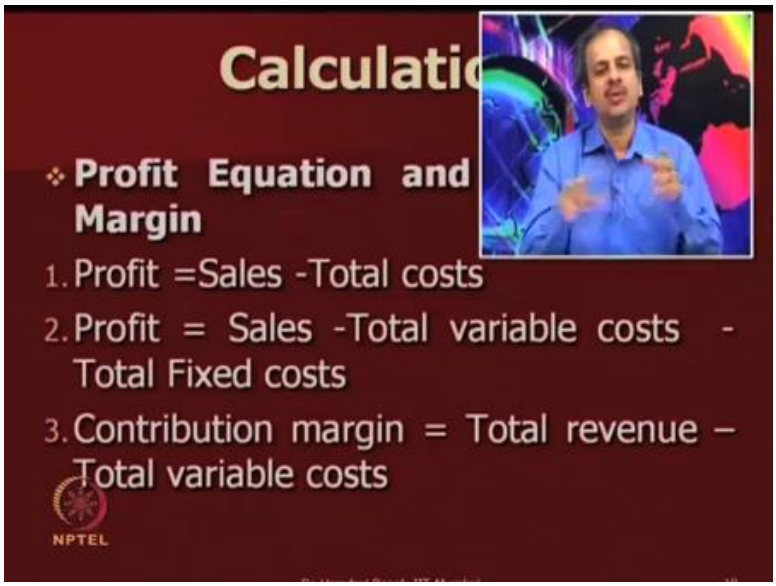

So, now instead of looking at profit as sales minus total cost, we break down the total cost into variable and fixed.

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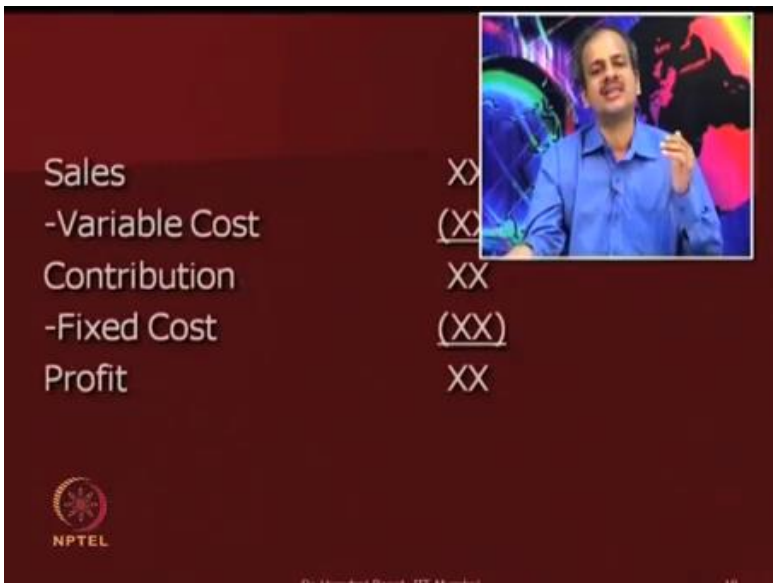

So, we first calculate contribution which is revenue minus variable cost. And from that contribution, we reduce fixed cost to get the profit.

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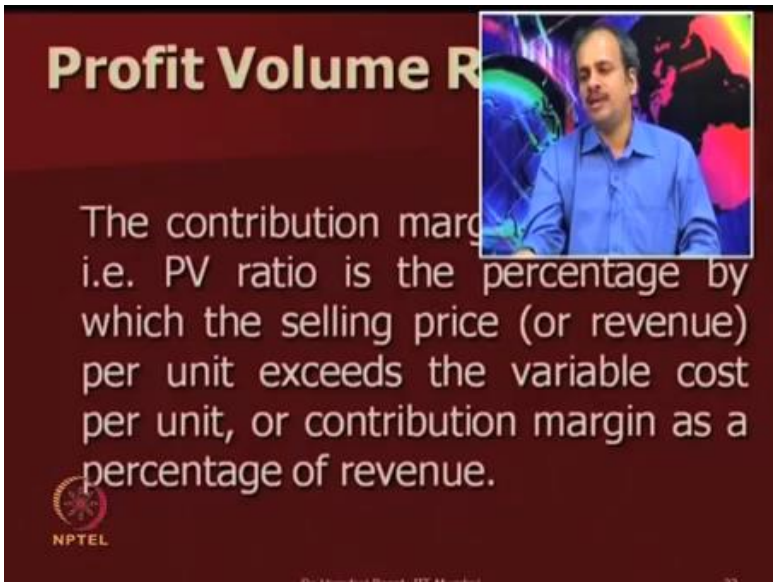

Now, what do you mean by PV ratio? Profit Volume ratio, what is the formula?

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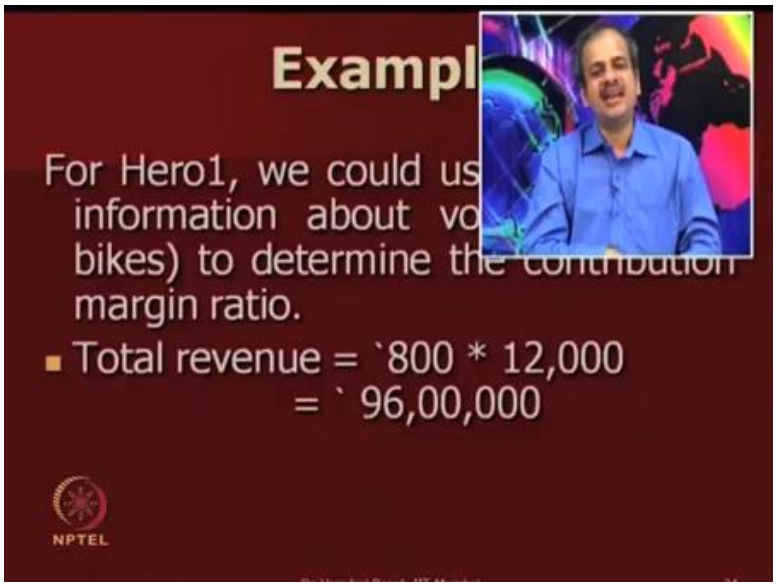

It is basically a comparison of contribution to sales. So, the formula of PV ratio is contribution divided by sales, correct. Now, let us go to BEP or Breakeven Point analysis.

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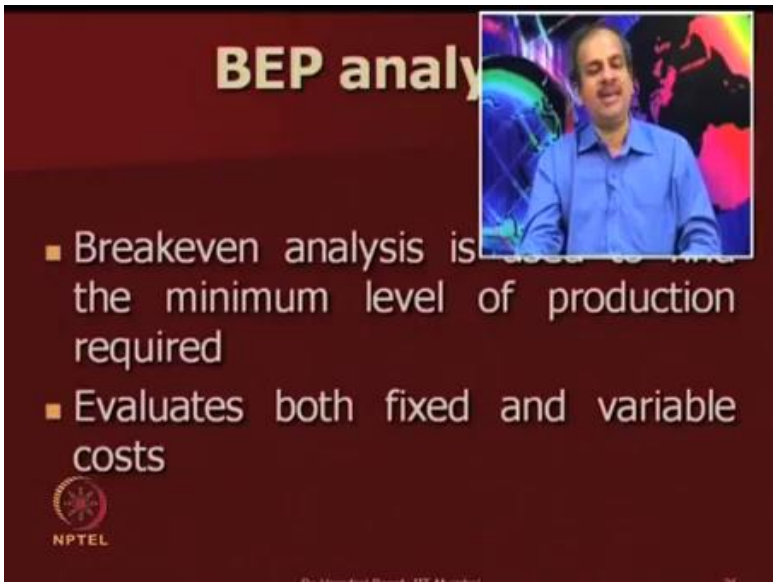

So, what is meant by BEP? It is that level of activity, at which profits are zero. So, if number of units is below, that level will be in losses. At that level, it is equal to 0. And above that level, we are in profit. Such level or such figure is called as BEP.

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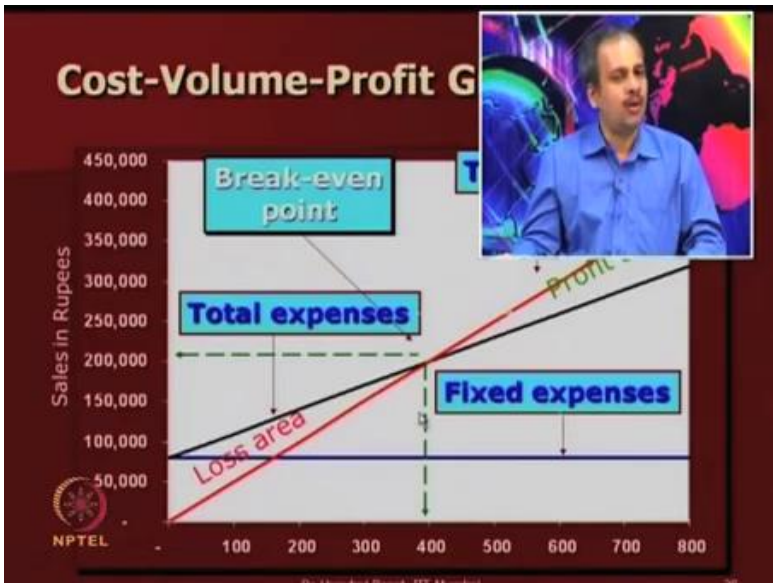

Again you can look at BEP graphically. You will see the red line starting from 0 is a sales line. It goes up. Here is our line, which is total cost line which starts at a particular level in this case at 100000, because fixed cost will be incurred at 0 production also. And then it goes up. The sales line crosses it and goes beyond that line, at a particular point.

That point is nothing but BEP. This is the point where total cost and total expenses match.

Below that point, you can see there is a loss area because, loss will be incurred if output is less than the breakeven point level. Moment we achieve a level of activity beyond the breakeven point level, we go into what is known as profit area. You can see here. This is a profit area below is a loss area. So, I hope you remember these concepts. We did a very, very brief revision kind of. You can see the formula of BEP.

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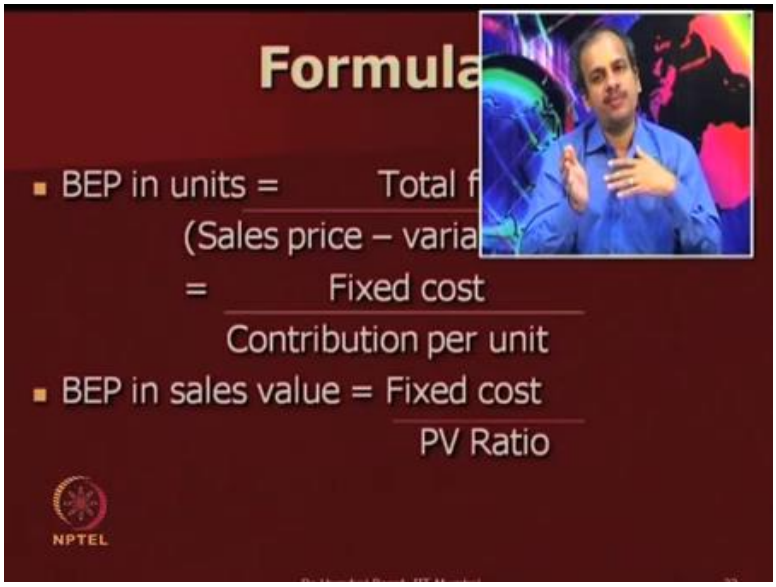

There are two formulas for calculating in units. It is fixed cost upon contribution per unit. And for calculating in terms of value, it is fixed cost upon PV ratio. Now, this understanding of contribution PV ratio and BEP, helps us in variety of decision situations. What are the decisions which are facilitated by this? Do you remember, can you name a few decision? Yes, try to think over. So, you can take pricing decision.

You can decide your level of activity. If the product or the raw material is in short supply, you can take sales mixed decision. You can decide on whether to outsource or not to outsource. So, a variety of decisions are based on the understanding of CVP and BEP concepts. Let us try to do a few cases on these concepts.

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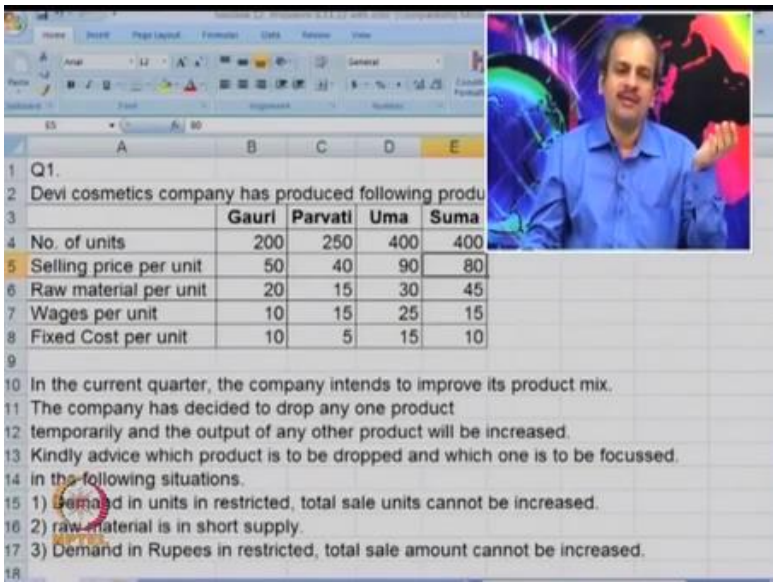

Now, try to read this case carefully. It is a little longish one, but please be careful in read it properly, very interesting case. So, for a company called as Devi cosmetics, they have four products. The data is given about them Gauri, Parvati, Uma and Suma. Number of units sold in the last quarter is available. It is 200, 250, 400, 400. Selling prices are 50, 40, 90 and 80. Raw material prices per unit wages per unit fixed cost per unit are all available.

Now, in the current quarter, company wants to improve it products mix. So, company has decided to drop any one product temporally. And the output of any other product will be used, will be increased. Kindly, advice the company which product is to be dropped and which one is to be focused. In the following scenarios, one demand in units is restricted and the total sale units cannot be increased. Second, raw material is in short supply. Third, demand in rupees is restricted and total sale amount cannot be increased.

Compute the profit for each of the situations, if your advice is followed. Once again have a look at it and think over, how it can be solved. Are you able to suggest how to proceed? Now, the first thing which we will need to understand is, company would like to improve its profit by improving the product mix. So, the idea is a product which is giving you less profits, will have to be dropped. And we will focus on some products, which is more profitable.

So, we need to rank the products to know which product is more profitable and which product is less profitable. So, the most profitable one, we can focus on we would like to increase it sales. Three decision situations are given. In first case, the demand in units is restricted. So, market is such that, the total number of units sold are same. So, for Gauri it is 200, 250, 400, 400. So, we know the total market size within that market size, we can move the output from one product to another. You will realize that, we would like to rank the products.

Remove rank number 4 and transfer that output to rank number 1. Because, they have given a restriction that they cannot close all the products. They will close only one product temporally. And that output will be transferred to another product. So, now how will you start? For the starting, irrespective of decision situations we need to first calculate the contribution from each of the product. If you remember, we have discussed that it is not the profit, but it is the contribution that is really driving the profitability. So, let us see how to do it.

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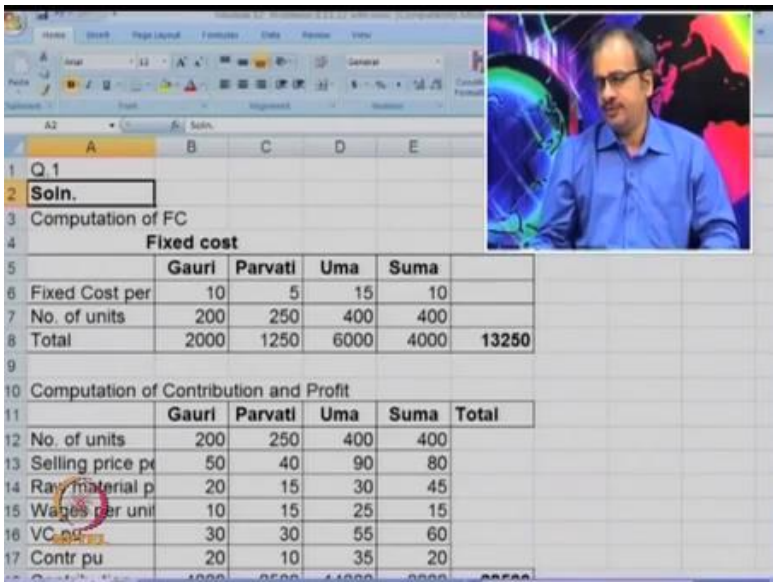

So, in the beginning using the available data, fixed cost is calculated. If you see here, our fixed cost was given in terms of per unit. It was 10, 5, 15 and 10. Now, this fixed cost though they are given in terms of per unit, actually are not changing unit wise. So, instead of representing on per unit, it will be appropriate to show them as the total amount. So, in the beginning we have calculated the total fixed cost.

So, for Gauri it is 10 per unit. And there are 200 units of Gauri. So, we get 2000 as fixed cost. It is not fixed cost of Gauri. There is no point in dividing the fixed cost product wise. The total fixed cost will be more important and it will be treated as together. So, in the same manner for Gauri, Parvati, Uma and Suma the fixed cost are calculated and total, we get a total fixed cost of 13250, correct.

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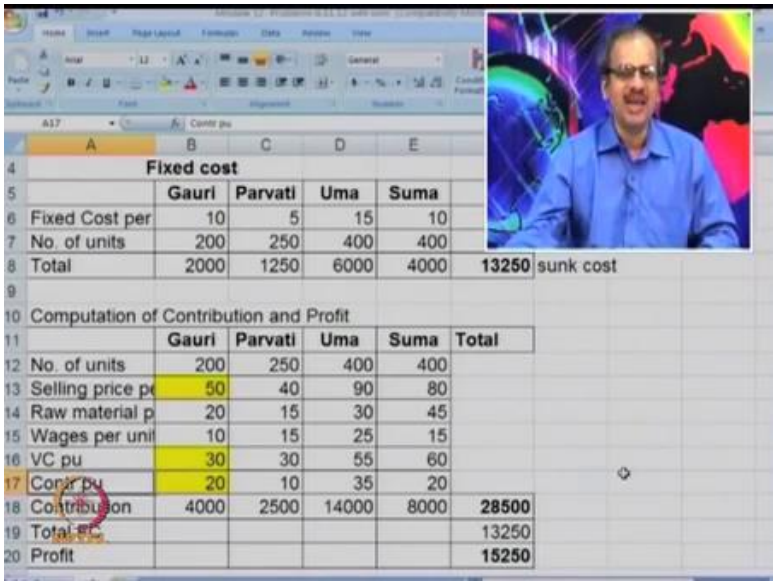

Now, let us try to compute the contribution. So, what type of cost this fixed cost is for this decision? If you remember, we call such cost sunk cost. Because, it does not affect our decision, we should not include it in taking the decision. That is why we have first calculated and remove it. We will not include in for taking the decision. Now, the contribution is calculated. We know the number of units. We also know the selling price. And we know the data on variable cost.

So, using this data now the variable cost is first calculated. So, raw material price is 20 and 10. So, we get the total VC as 30. Our selling price is 50. So, 50 minus 30, the contribution is 20 per unit. Like that, so we have taken these sales price and we have taken the total of VC. That together gives me an important figure of contribution. Same way, contribution is calculated for all the four products. So, it is 20, 10, 35 and 20.

We have multiplied it by number of units. So, 20 into 200 you get 4000 as contribution from Gauri, 2500 from Parvati, 14000 from Uma and 8000 from Suma. So, total contribution is 28500 minus fixed cost of 13250. Our current profits are 15250. Now,

from this profit position, the company would like to improve. That is why, they are thinking of changing the product mix to a better one.

Now, how will you proceed? Give them a suggestion. Is it that the product with the total contribution, we would choose? Is it the product with higher per unit contribution, we will choose? That will have to see as per the decision situations.

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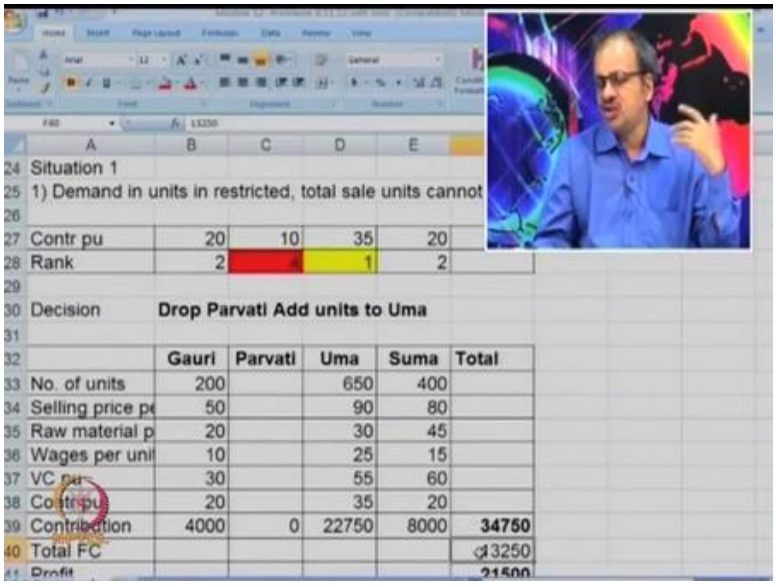

Now, situation 1. Situation 1 says that the demand in units is restricted. Total sales unit cannot be increased. Now, what to do in such scenario? So, our ranking would be based on contribution per unit. (Refer Time: 14:11) You can see here for the four products, we have already calculated this contribution 20, 10, 35 and 20. The same has been repeated here. So, contribution is 20, 10, 35 and 20.

So, the most profitable product undoubtedly is Uma because, it has a contribution of 35. Then, it is Gauri and Suma. Both have rank number 2 because, they have a contribution of 20 each. And Parvati has a contribution of 10. So, we have given a rank number 4. So, you can easily see that company should concentrate on Uma and would like to drop Parvati. So, decision says that drop Parvati and add units to Uma. Is it are you clear? Why this decision was taken?

So, we have decided to focus on the product with highest contribution. And the product with lowest contribution will be done away with. That is why, Parvati is dropped and

Uma with rank 1 will be focused on. Now, let us look at profitability after this change. So, now the number of units for Uma, have increased. If you see earlier, Uma units were 400, Parvati units were 250. So, these 250 units are now transferred to Uma because, total number of units are restricted.

You can close the product and transfer it to another profitable product. So, Parvati's production is temporally closed and it is transferred to Uma. So, we get 650 as the output of Uma. Gauri is 200, Suma is 400. The selling price, variable cost and contribution remains the same. So, 200 into 20, 4000 is a contribution of Gauri as it has remained same. Parvati has become 0, Uma now increased to 22750, Suma is again same 8000. So, if we take the total contribution, it is 34750. Fixed cost does not change, it is a sunk cost.

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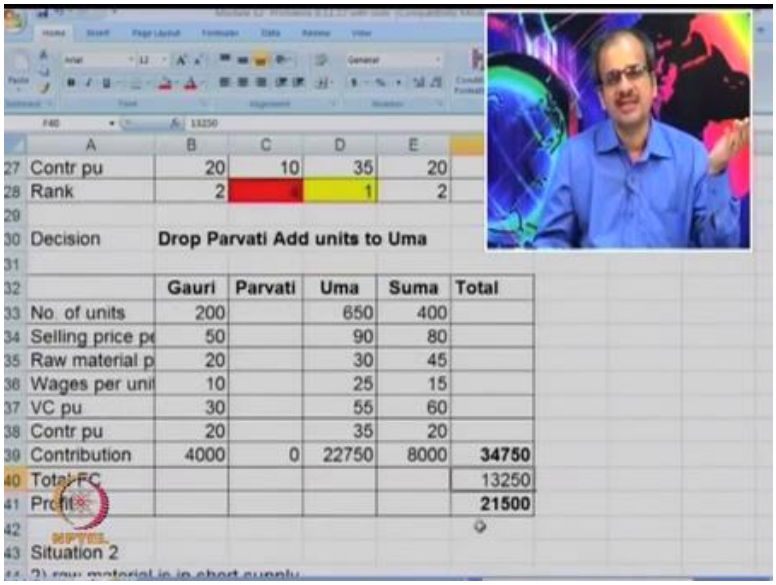

So, now the profit is 21500. So, has there been an increase in profit? What was the earlier profit? It was only 15250. It has become 21000. So, you can see that by this decision, we have increased our profit almost by 50 percent. So, almost by 7250 we could increase the profit and reach 21500. So, is it clear now? How the calculation of contribution and use of CVP has laid us to a better product mix. Now, let us look at decision situation 2.

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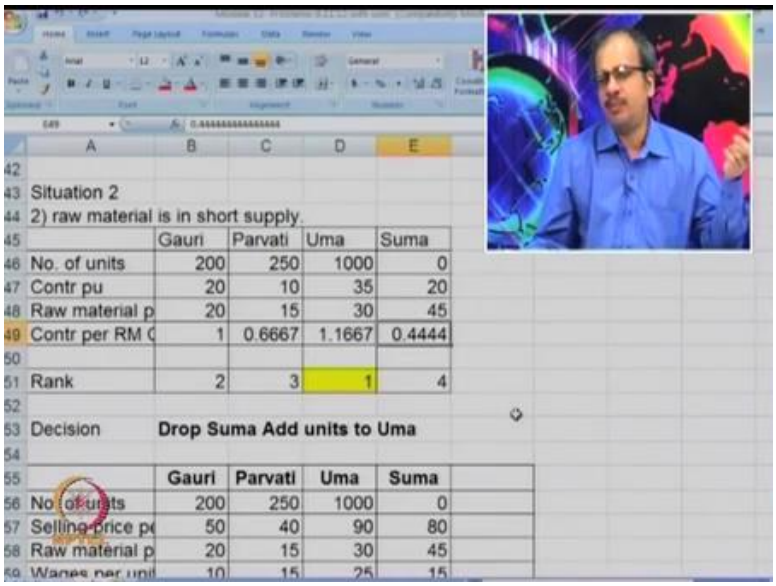

The decision situation 2 says that, raw material is in short supply. Now, please advise me what should be done in such a scenario. If we have limited raw material, will the rank change now? How will you do the ranking? The rank will change, because now the focus is on better usage of raw material. Earlier, we were looking at contribution per unit. If you see here, we looked at contribution per unit and it was used for ranking.

Now, instead of contribution per unit we will see contribution per value of raw materials consumed or per rupee of raw material. So, let us see the re calculation. Now, we already have the number of units. We have contribution per unit, which is already done 20, 10, 35 and 20. Now, the contribution per RM consumed is calculated. You can look at the RM consumed which is 20. I will just go up to this table.

So, RM consumed was 20, 15, 30 and 45. The same is used here. I think, I will insert the column. So, that it is more apparent to you. Is it now more clear. So, contribution per unit was 20. Raw material consumed is also 20 for Gauri. So, contribution per rupee of RM consumed is 1 for Gauri. For Parvati, it is 0.66, for Uma it is 1.67 and Suma it is 0.44. So, now you can see the ranking. Uma remains number 1 with highest contribution per use of raw material.

Gauri is number 2, Parvati is number 3 and Suma is number 4. So, what is your decision now? So, now the decision is to drop Suma and add units to Parvati. So, we would like to focus on Uma, the focus continues. And we would like to drop Suma. Why is Suma

dropped because, it is giving me only 0.44 per rupee of raw material consumed. If the same raw material is transferred to a better produce that is Uma, we would get more profits.

Our beginning position was this. (Refer Slide Time: 20:05) So, I will copy that units and we would like to go for a better mix, correct. So, now we have decided that Suma be closed and use that raw material to make Uma. So, what will be the new units of Uma? Will they be 400 plus 400 of Suma? No, in situation 1 we could do that because, number of units there to be transferred.

In this case, it is not number of units, but it is the raw material that is to be transferred. So, we will have to see how much raw material was consumed by Suma, that raw material will be released and it will be transferred to Uma.

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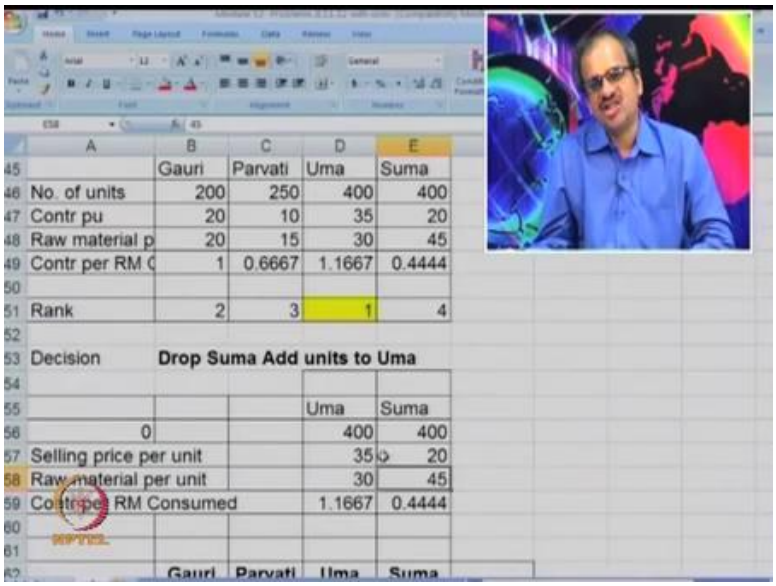

So, are you able to now see how much raw material will be released, will try to do it here. I think that will be giving you more clarity. So, how much raw material was released by not making Suma. So, we are not worried about the first two products. But, if you look at Suma, which now we want to close. How much was the raw material being consumed by Suma? I will place the values. So, that there are no changes. So, now you can see that by not making 1 unit of Suma, I am selling 45 per unit and such 400 units of Suma, we are manufactured.

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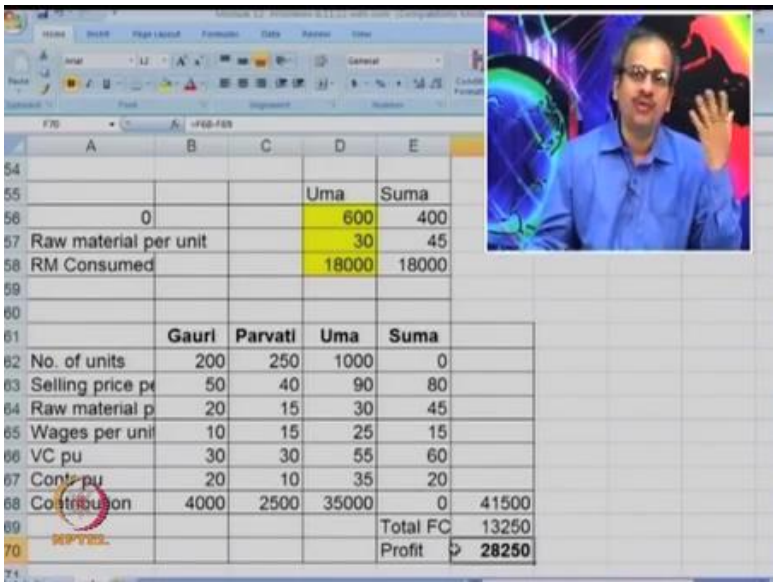

	A	B	C	D	E	
54						
55				Uma	Suma	
56	0			600	400	
57	Raw material per unit			30	45	
58	RM Consumed			18000	18000	
59						
60						
61		Gauri	Parvati	Uma	Suma	
62	No. of units	200	250	1000	0	
63	Selling price pe	50	40	90	80	
64	Raw material p	20	15	30	45	
65	Wages per unit	10	15	25	15	
66	VC pu	30	30	55	60	
67	Cont pu	20	10	35	20	
68	Contribution	4000	2500	35000	0	41500
69					Total FC	13250
70					Profit	28250

So, raw materials released from Suma is, now 18000 kg's. If same 18000 kg's is transferred to Uma, how much of Uma units you can make? Because, Uma consumed only 30 kg's per unit. So, you can perhaps make 18000 upon 30. So, you can make additional 600 units of Uma. So, by not making 400 units of Suma, actually this 400 are able to release raw material of 18000. So, this is raw material released.

So, RM consumed for Suma will be now released and it will go to Uma. So, we get additional 600 units in Uma. So, now in a new chart for Suma it will be 0 and for Uma it will be 400 plus 600. So, this is a new table. So, again let us make a table of profitability. Now, we show Uma units as 0, Suma units as 1000, for Gauri and Parvati there are no changes. We have already calculated contribution per unit.

So, contribution of Gauri, Parvati remains at 4,000 and 2500. For Uma, the contribution significantly increased to 35,000, Suma is 0. So, total contribution is now 41500 minus FC of 13250. So, profit is 28250. So, you can see how much increase in the profit from the original profit of 15250. If we re-locate the raw material carefully, the profitability zooms up to 28250. Of course, we have assumed that there is enough demand for Uma.

As per the condition, we can close anyone product and that can be transferred to another product. So, we have closed Suma. Same raw material transferred to Uma. And with that raw material, we could make 600 more units of Uma which are sold. So, we get a profitability of 28250 in situation 2.

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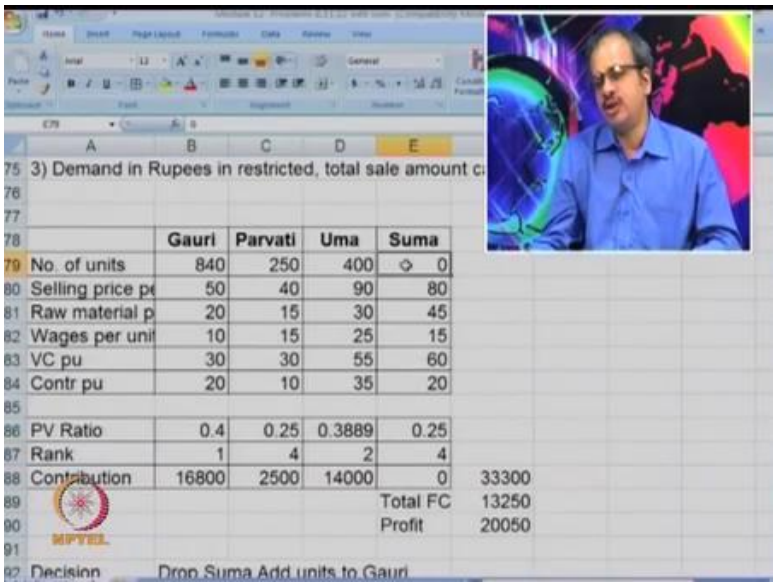

Now, situation 3. In situation 3, it was given that demand in rupees is restricted. Total sale amount cannot be increased. So, how much customers will buy is fixed. We cannot increase the total volume of sales. So, now how to proceed, how will you do the ranking in this scenario? Just think over. So, in this scenario it is not the contribution per unit, it is not contribution for raw material. But, it is the contribution per rupee of sale.

That is contribution upon sales, which in other words we call it as PV ratio. So, here the ranking is based on PV ratio. Now, let us look at the ranks. So, again the original data is shown. The PV ratio is 0.4 for Gauri, 0.25, 0.3889 and .25. I hope, you remember the formula for PV ratio. What is the formula? It is contribution upon sales or contribution per unit upon selling price, so 20 upon 50, so we get 0.4, 0.25, 0.3889 and 0.25.

So, the ranking have change now completely. You can see now Gauri, the product Gauri has rank number 1. Product Uma closely follows it. It has rank number 2 and Parvati and Suma both have rank number 4. So, in this scenario what decision would you like to take? So, we would like to drop either Parvati or Suma, but which one is better to be drop. In this case, you can see Suma has been dropped, but why?

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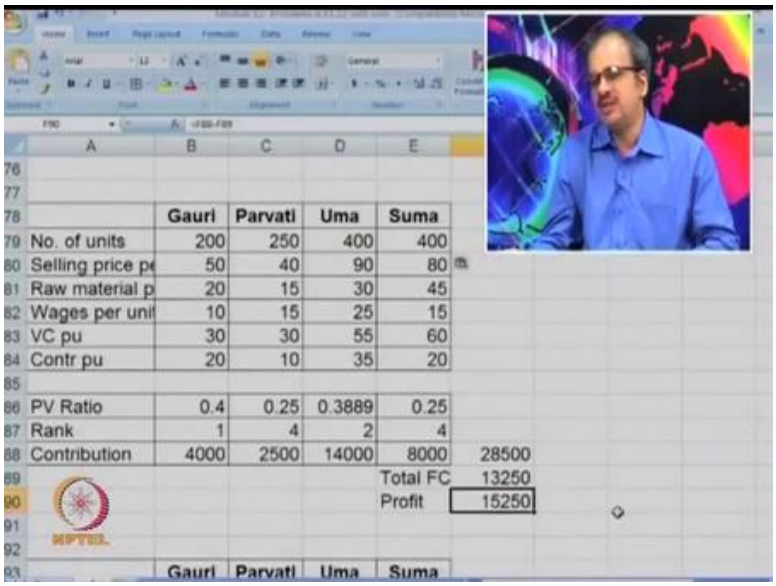

So, you would appreciate that if you look at the starting point. This was our table. We know that, Gauri is the most profitable product in terms of PV ratio. Parvati and Suma both have rank number 4. So, of the two which one you would you like to drop. You will see that, more sale revenue comes from Suma. So, it is 400 units at a price of 80. So, if we close Suma and transfer the output to Gauri, that will give us more sales totally. And that will also give us more output.

So, let us try to calculate it once again. So, if you start with the original scenario, where it was this many units. You will realize that, our profit was 15250, correct. This is a like a original table. What we have done more is, we have calculated the contribution PV ratio. Then, we have calculated the ranks. Now, our decision is based on this rank what to do. So, we will decide that it may be better to drop Suma and add those units to Gauri. Is it clear to all, why we have dropped Suma only?

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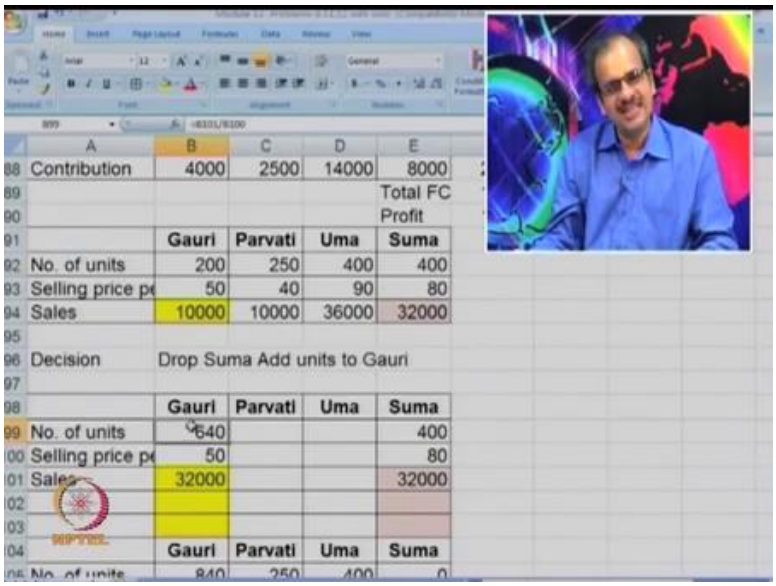

That is because Suma has more sales than Paravati. So, though both have rank number 4. Our decision is based here, not only on ranks it also based on the quantum of sales. I think, I will show you that will make it more clear. So, let us try to calculate the sales for all the four products. So, you will realize that sales of Suma are much more than those of Parvati.

So, it might be better to close Suma and transfer the whole output to another product, that is Gauri. Is it correct? Now, how much of units of Gauri can be sold? You know that the total sale value cannot increase. So, total sale value of Suma that is 32000 will be now transferred to Gauri. But, their sale prices are different.

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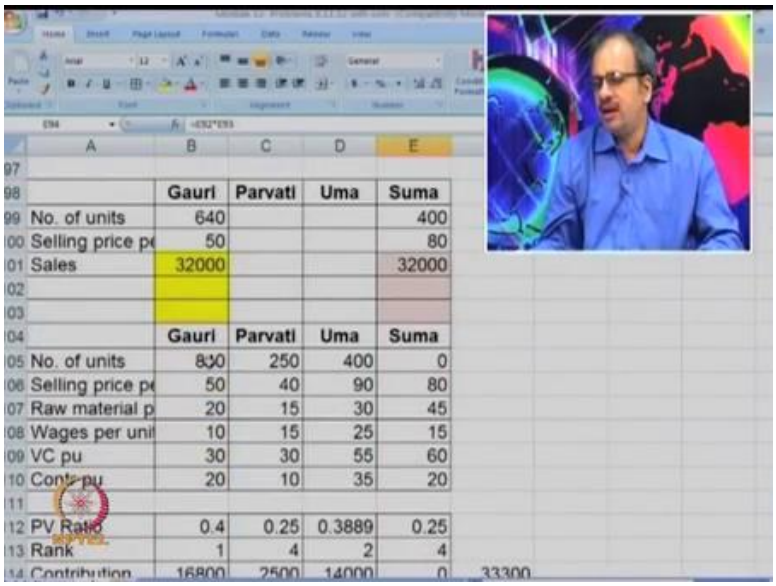

	A	B	C	D	E
97					
98		Gauri	Parvati	Uma	Suma
99	No. of units	640			400
100	Selling price pe	50			80
101	Sales	32000			32000
102					
103					
104		Gauri	Parvati	Uma	Suma
105	No. of units	840	250	400	0
106	Selling price pe	50	40	90	80
107	Raw material p	20	15	30	45
108	Wages per unit	10	15	25	15
109	VC pu	30	30	55	60
110	Cont. pu	20	10	35	20
111					
112	PV Ratio	0.4	0.25	0.3889	0.25
113	Rank	1	4	2	4
114	Contribution	16800	2500	14000	0

33300

So, we will have to calculate how many more units can be sold. So, I am just copying the same table again. So, that we can correctly calculate the more numbers of unit, which can be sold. So, 32000 is the reduction in Suma sales, will not worry about Parvati and Uma now. So, Suma sales will reduce by 32. If I put that 32 here in Gauri, at the rate of 50 per unit how many more units can be calculated? I can make 640 more units of Gauri.

I have already have output of 200 for Gauri, I will add 650. So, I will get total output of 840 for Gauri and Suma's output will become 0. So, again it is not that 400 units are transferred from Suma to Gauri. It is a sale value of 32, which is transferred from to Suma to Gauri. We will have to calculate the new units, which can be produced. So, we have done the calculation and we get 640 more units. So, now we have 840 units of Gauri and zero units of Suma.

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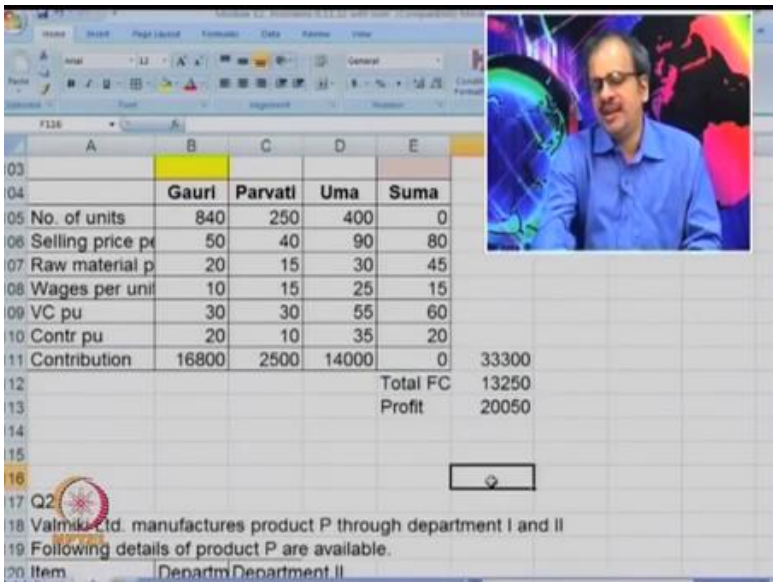

If you do all the recalculation again, you will get that it is a extra contribution of 32,000, sorry it is a total contribution of 32 now. Fix cost remain same. So, profit has now reached 20050. Is it clear now? In all the three decision situations, our ranking criteria were different. So, first situation was if total sale in units are restricted, what was the ranking criteria? The ranking was based on contribution per unit.

The second scenario, the raw material consumption or raw material availability was restricted. So, what was the ranking criteria? It was contribution per rupee of raw material. In third, the total sale value was restricted. So, what was the ranking criteria? Here the ranking criteria is based on PV ratio. So, like that company will have to look at the scenario and then find out what is a suitable ranking criteria. But, one thing is very clear. That appropriate ranking criteria once chose, CVP ratio tells you how you can improve your product mix. And you can see the profitability has improved, in all the three scenarios. Now, let us look at case number 2.

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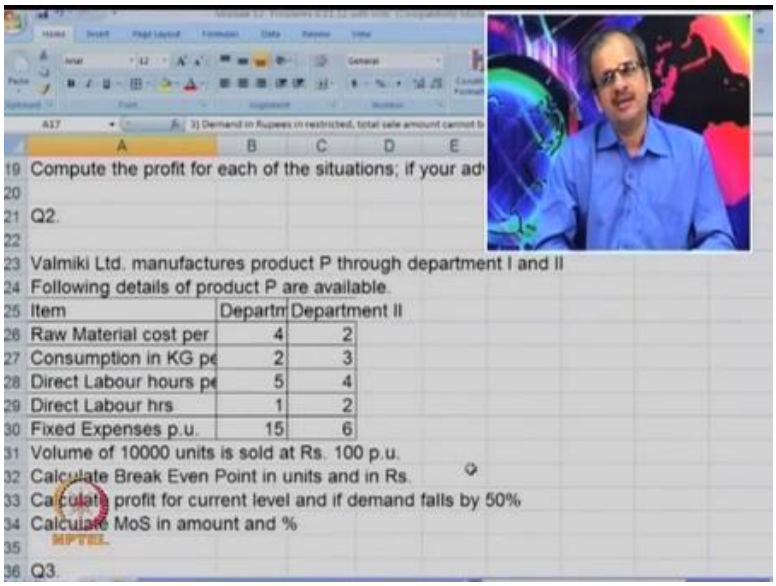

I request you to read it carefully. So, now a company called Valmki limited manufactures product P, through department 1 and 2 and following are the details of product P, which are available. So, they have given two departments. It passes through department 1 and department 2. Raw material cost is given for both the departments. Consumption in kg's is given, direct labor's hour are given. Direct labor rate is given and then.

This should be direct labor rate per hour. It is not per unit, it is per hour. So, you can see raw material cost per kg is 4 and 2. And the consumption is 2 and 3. Direct labor rate per hour is 2 and 4. And number of labor hour is 1 and 2. And fixed expenses are given per unit as 15 and 6. The volume of 10000 units is sold at 100. You have to calculate breakeven point in both units and rupees. Calculate the profit for current level.

And what will happen, if demand falls by 50 percent and also calculate margin of safety, amount and percentage. So, how to go about now? Just think over, how we can proceed. So, are you able to find out what can be done? Actually here, there is no purpose of giving units separately. There was no reason, why two departments must be given. Even, if the data is given for two departments you can combine that data and proceed.

So, we would try to calculate the variable cost for the product, which will give me contribution per unit and PV ratio. Using the data, we can calculate BEP. And what do

mean by MOS, Do you remember? MOS is Margin of Safety. Once we get BEP, we can calculate MOS.

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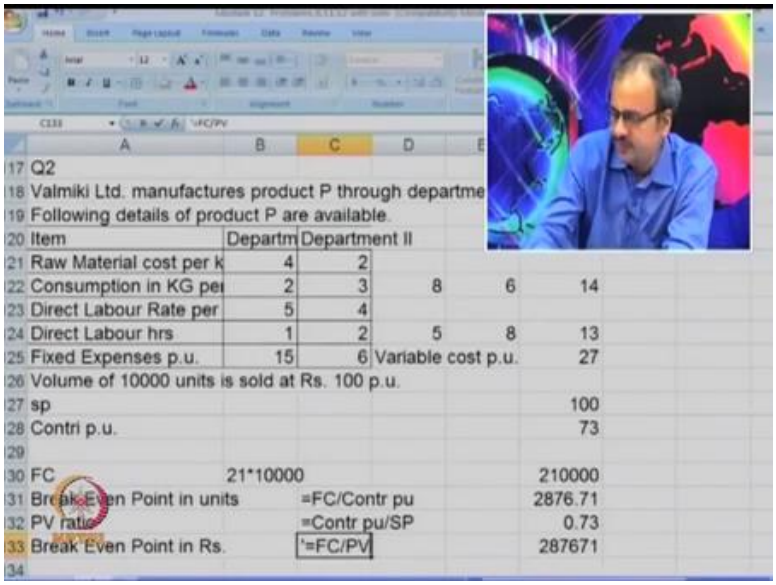

Now, from the available data the first thing we are trying to calculate is, the raw material cost. We are consuming 2 kg's and price is 4 per kg. So, anyway 4 into 2, we will get 8 as the raw material cost for in department 1. And 2 into 3 that is 6, is a raw material cost in department 2. So, total RM cost comes to 14, 6 plus 8. Same way for labor multiply by 5, 1, 4, 2. So, we get 5 and 8. The total labor cost is 13. So, 14 and 13, so we get the total variable cost as 27.

This is variable cost per unit. In most of the PV ratio problems or BEP problems, it is very important for you to arrive at variable cost per unit. This we will compare with selling price, which is given as 100. So, selling price is 100, variable cost is 27. So, contribution is 73. I hope, these fundas are every clear to you now. Now, once you know contribution we can calculate BEP, but before that we need to know the fixed cost.

So, how much is the fixed cost? It cannot be just 15, 15 per unit in department 1. We know the number of units. So, what we have done is 15 plus 6. So, it is 21 per unit and the volume is 10000. So, we get 21 into 10000, 210000 as a fixed cost. Breakeven point, we can calculate it now. So, what is the formula for break even? Yes, you can tell me it is FC upon contribution per unit, correct. So, fixed cost is 210 divided by 73.

You get 2876 as a contribution per unit. This is a breakeven point in terms of units. This is 2876 is a break even points in units. Contribution per unit is 73. Same way, calculate PV ratio. What is the formula for PV ratio? You are right I think. You are getting it correct. It is contribution upon contribution per unit divided by selling price. You can also do it as contribution upon total sales. But, here we know per unit contribution and selling price.

So, it is 73 upon 100. We get 0.73. Breakeven point in rupees will be, what is the formula? FC divided PV ratio, correct. So, FC is 210 divided by .73, we get 287671. So, the first part of the question said that, calculate BEP in units and rupees, that we have solved it now. The second part says, calculate the current profit and the profit if demands falls by 50 percent. So, now, how will you calculate the profit?

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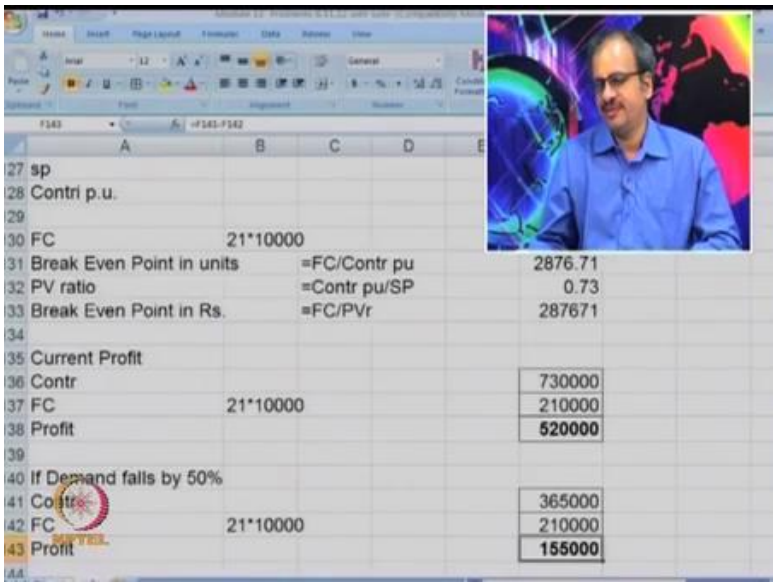

We know the contribution and FC both so calculating the profit is very simple. Contribution will be 730000. So, it is 73 per unit for 1000 units. So, 730 is a contribution, I am sorry 10,000 units. So, 73 into 10000, 730000. Fixed cost is 21 into 10000. So, 210000 and profit is 520000. Now, what will be the scenario if demand falls by 50 percent, how much will be the profit? Will it also fall by 50 percent? No, because fixed cost does not change with level of activity, contribution does. So, let us recalculate the contribution.

So, for contribution now, per unit it remains at 73. But, number of units have fallen to 5000. So, contribution also comes to half, it becomes 365000. Fixed cost remains at 210. So, profit has significantly dropped, it is 155000. So, we have also done the second part of the problem. Calculate the profit for current level and if demand falls by 50 percent. Now, the third part, calculate MOS in amount and percentage.

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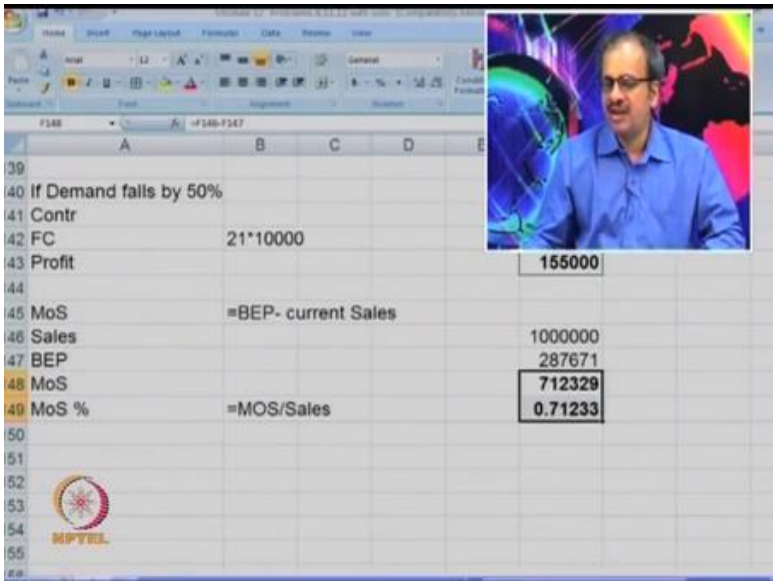

What is MOS? What is the formula? Are you able to remember? Margin of Safety means, how much above the current level sales? How much is the current level sales above the BEP. So, this is BEP minus current sales or minus sales, you can say. Now, you know that your current sales are at 100 per unit for 10000 units. So, your current sales becomes 100 into 10000 that is, 1000000. The breakeven point in terms of rupees is 287671.

Here we have done it. So, 1000000 minus 287000, we get margin of safety as 712329. It is a very healthy margin. And we can also calculate, it in percentage terms. So, what is the formula for doing it in percentage terms? It is MOS, that is Margin of Safety divided by sales. So, MOS is 712 upon 1000000. So, we get 0.71 as MOS in percentage. So, now let us do one more case.

So, here we were trying to revise a very basic fundas on BEP, PV ratio and MOS. If you are able to do it very easily, very fine because, now we have done number of problems.

So, it is intended that you can easily handle this simple problems. Now, let us take the third one.

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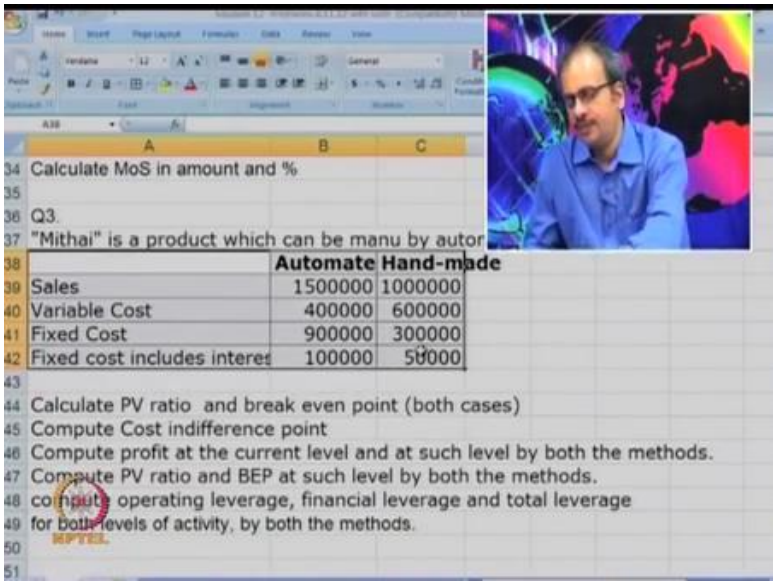

Now, Mithai is a product which can be calculated by two methods, either by automated or by handmade. The sales data for both the methods is given. Automated is 1500000, handmade is 1000000. Then, the variable cost, fixed cost is given. Fixed cost also includes interest. For automated, it is 100000 and for handmade it is 50000. So, read this carefully, what we have to calculate? We have to calculate PV ratio and BEP, in both the cases.

We have to calculate cost in difference point. Then, compute the profit at the current level and at such level by both the methods. So, by at such level we mean, at cost in difference point level. So, compute the current profit and the profit at cost in difference point. Calculate the PV ratio and BEP. At such level, by both the methods that is by automated and by handmade method, compute the operating leverage, financial leverage and the total leverage.

For both the levels of activities, again by both the methods. So, now how to do it? We have done all these fundas. So, just try to remember how we can proceed? Do you remember, what is cost in difference point? Even before that, we will calculate PV and BEP. That I think all of you can easily calculate. So, if this is the data which is available.

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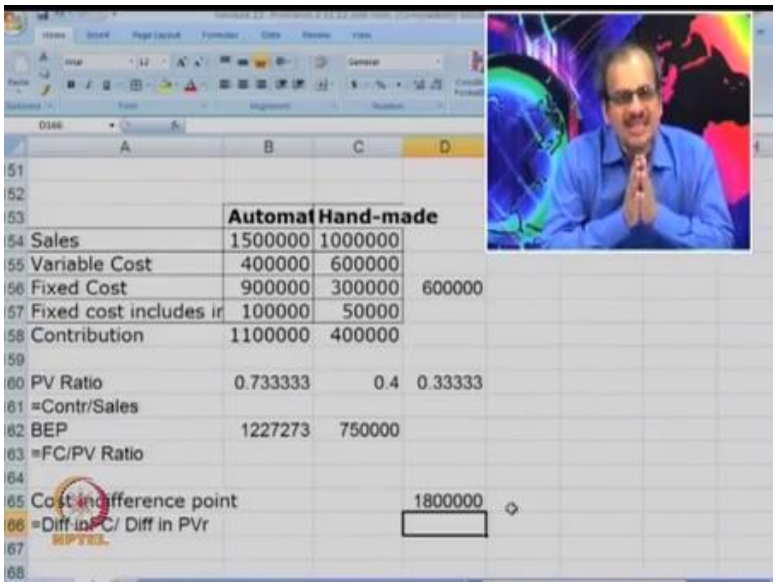

How will you calculate PV ratio and BEP? What is the formula of PVR? I think, most of you will know it by now. But, I am just showing it again for the benefit of those who do not remember it. So, it is contribution upon sales. In this case, we do not have per unit level data. So, we are doing it on total basis. So, we need to know contribution. Sales is given. How much is contribution from the given data?

Contribution is nothing but sales minus variable cost. So, it is 1100000 and 1000000. So, PV ratio is contribution 1100000 upon sales 1500000, 0.73 and for handmade, it is 0.4. So, you can see that automated technology gives us more PV ratio. But, it has higher fix cost associated with it. Fixed cost are 900000 whereas, in handmade the PV ratio is low, just .4, but fixed cost also remain low. Now, the question was calculate the PV ratio and BEP.

So, how much is BEP now. Again, what is the formula for BEP? It is FC divided by PV ratio. So, we know that fixed cost is 900000 divided by PV ratio. So, it is 1227000 for automated system and it is 750000 for handmade system. Why it is lower for handmade system? It is natural because, the fixed cost are lower for handmade system. So, we have done the first calculation that is, BEP up to BEP.

Now, let us try to do the, calculate the cost in difference point. So, what is cost in difference point? Do you remember and do you remember its formula? Earlier, we have done this. So, in cost in difference point, the idea is that to calculate such level of sales,

where the profits are constant by use of both the technologies. So, either you go by automated or handmade, the profit should be the same.

And what is that sales level, where the profits are the same. That is known as cost in difference point. So, what we will do is, the formula is very similar to the BEP formula. BEP formula as you know is, FC upon PV ratio. Here, we try to find difference in FC and divided it by difference in PV ratio. So, it is difference in FC upon difference in PV ratio. Now, we know the fixed cost for both the methods.

So, try to find the difference between the two. It is 600000 and the difference between PV ratios is 0.33. So, the cost in difference point will be 600000 upon 0.33, that is 18 lakhs. So, 1800000 is such level of sales where by either method. The profit will be constant. So, in today session we have started doing a sort of revision on, decision making, CVP, breakeven point. We have seen, what is meant by contribution?

We have seen, what is meant by breakeven point? What is meant by PV ratio? And we have done two interesting cases, the first one was on product mix under different scenarios. So, if raw material is restricted, if sale is restricted, how you can improve your product mix using calculation of contribution per unit or per rupee of raw material. That we have seen. Second some, we have two departments.

But, the departments were irrelevant. We have to just calculate the variable cost, PV ratio and so on. In the third some, the focus is on calculation of cost in difference point. So, we have done it in today's session. In next session, we will continue the some. We will calculate the cost in difference point and profitability at that, in difference point.

Thank you so much.