Cost Accounting
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Lecture - 07
Sensitivity Analysis

[FL]. In last few sessions we are discussing cost volume profit analysis then BEP analysis and how it can be applied in various decision making scenarios. We have done two illustrations about calculation of contribution PV ratio, BEP and so on and in last session we did two cases where sales mix was involved. So, computing BEP not just for one product, but for a BEP for a sales mix and using BEP and weighted average PV ratio commenting on which sales mix is more suitable.

So, if you remember we are done two sums, one on Ganesha limited and then on Keshav limited, where we try to study two sales mixes and comment on it is on their suitability. Today we will go to a step further and we will try to make a draft budget so, we will do a kind of sensitivity analysis that this is the current budget according to the designs of management, according to the needs of scenario, we want to incorporate certain changes in it. How will the profit statement change according to it this is what we have to study, I hope you got a print out if no please take the printout right away and then sit with me and try to solve the problem.

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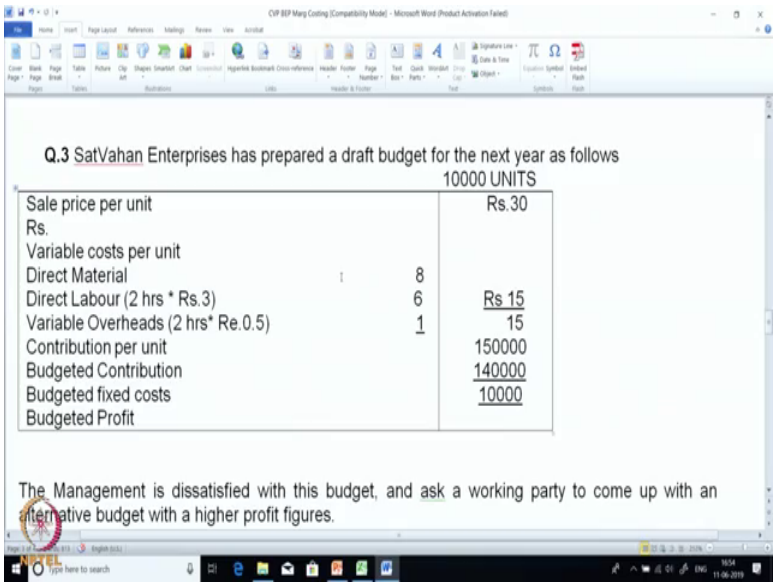

So, SatVahan Enterprises as prepared a draft budget.

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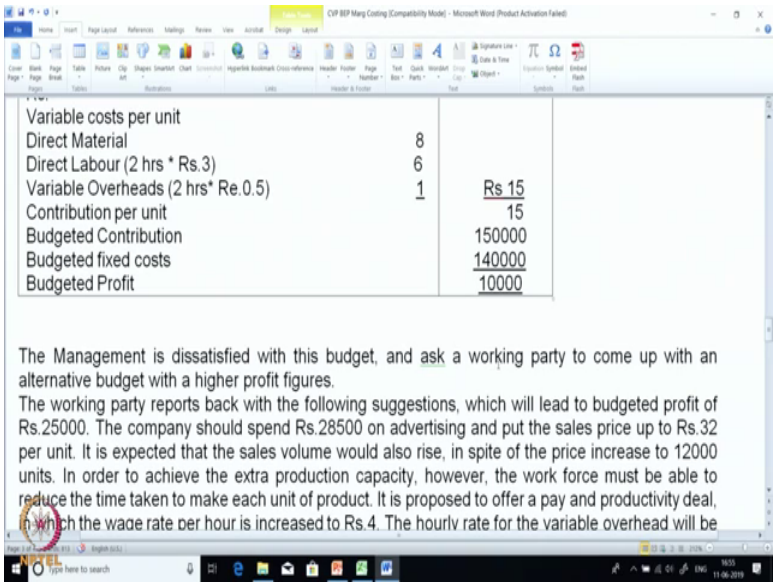

So, they have made a budget of 10,000 units, sale price is 30, direct material 8, labour 6 and variable overheads 1 per hour rates are also given. So, total variable cost is 15 and contribution per unit is also 15, let me shift this a bit down. So, total is 15 here, contribution per unit is 15, now they have already given as contribution as per the current budget.

So, it gives a budget contribution of 1,50,000 because 10,000 units into 15 means 150, their budgeted fixed overheads are 140 giving them a profit of only 10,000. Now, naturally management is not very happy with low profits they want a more suitable tactic a better strategy a better way of doing business. So, they have asked a working party to come up with alternate budgets with better or higher profit figures.

Now, working party reports back with the following suggestions, one they say which will lead to budgeted profit of 25,000. Now they suggest that company should spend 28,500 on advertising and put the sale price up to 32. So, current sale price which is 30 will be increased to 32, it is expected that sales volume would also rise to 12,000.

So, from current 10,000 the sales volume will increase to 12, now they have to increase their production they only have a capacity of 10 they have to increase it to 12. Now, in order to achieve extra production the workforce that is existing employees how to reduce

the time taken for each unit of the product and it is proposed to offer a pay and productivity deal. So, that more wage rate is paid and wage rate is increased to 4, you can see their current wage rate is 3, for 2 hours at the rate of 3 they are getting 6.

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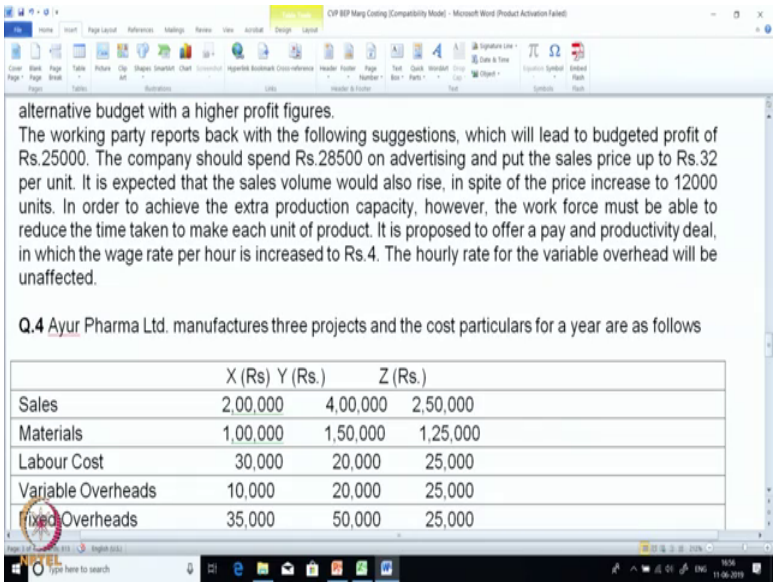

Now, we want to give a better deal to employees and increase their wage rate to 4 the hourly variable overhead rate will remain same. Now after incorporating these changes you have to give alternate budget got it ok.

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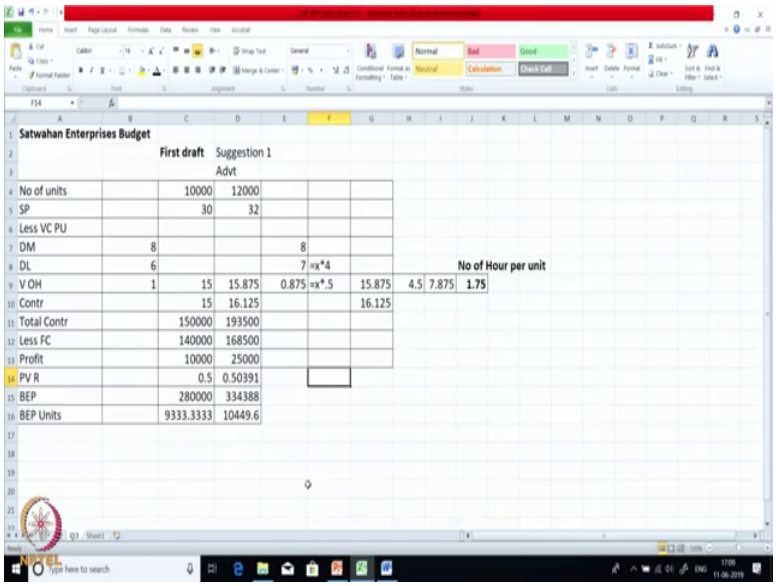

Now, start doing it with me how will you start now I have just drawn a structure for you for ease of understanding. Firstly, just record the current draft in a proper format. So, they have given as this as a current draft let us try to put it in a proper format in excel then you can incorporate certain changes.

So, please draw the structure this is called as a first draft number of units are 10,000, sale price is 30, the variable cost is 8, 6 and 1 that is 15, contribution per unit is also 15 30 minus 15, total contribution 150, 140 is a FC, profit is 10,000 this much was already given, compute the PV ratio PV ratio you know it is contribution upon sales.

So, orally also you can do it is 50 percent what is the breakeven point, FC upon PV ratio. So, 2,80,000 and breakeven point in units is 9333.33. So, you can see they are just operating little above breakeven, that is why the profit is very low. Now incorporate their suggestion make the changes that spends some more money on advertising, increase the sale price and so on and calculate the revised budget.

So, what is the new number of units, from 10,000 it has increased to 12,000, selling price is now 32, direct material cost is not going to change it is going to remain constant at 8, write down the labour, variable overheads and so on and compute the profit for revised budget. I will increase the fixed cost from 140 will now go to 168500, because we will add advertising expense of 28,500, how much will be material, labour and overheads are you able to compute.

They already we know that they have a target of 25,000 of profit, see it is very clearly given that which will lead to budgeted profit of 25,000. So, anyhow they want to make a profit of 25 are you able to compute this components of VC, it is not a straightforward calculation you can directly compute this, you have to go back for a desired profit of 25 new fixed cost is 1,68,500.

So, total contribution is 1,93,500 you know the number of units. So, you can compute the contribution per unit 16.125 how to get, because one the total contribution which you must on is 1,93,500 divided by 12,000 will give you 16.125 you know the new selling price which is 32. So, 32 minus 16.125; that means, your variable cost should be 15.875.

Now, are you able to match in that, I think it will be tough because direct material is 8, what is the new labour cost. They have increase the labour rate because they want to

increase the production from 10 to 12 see they have taken the given that it is a pay and productivity deal since workers are increasing the number of units we are giving them 4 rupees per hour. So, if you take 4 the current calculation was 2 into 3 if you make it 2 into 4 now, it will be 8 8 and 1 what will be the total the total will be 17, but we do not want the total variable cost to exceed 15.875.

So, how to manage it now, are you able to do it, because see direct material cost is not going to change, that is simple direct material cost there is no change. What about labour cost, will it change? It will because the rate is now going up, but will it go to 8 rupees no, because number of hours must come down as per the current calculation it is 2 hours per unit at 3 rupees.

See they are saying that in order to achieve extra production workforce must be able to reduce the time taken to make each unit; that means, we are offering a pay and productivity deal we are telling workers [FL] boss we will give you more rate [FL] rate [FL] 4 rupees [FL], but you cut down the number of hours from 2 rupees to something less than 2 sorry 2 hours to less than 2 then only will give you 4 per hour. So, this cannot be 2 into 4 this must be less than 2 so, now, how will you calculate that figure.

Suppose you take it as x it will be 4 x getting it 4 because the labour rate will go to 4 now, suppose the labour cost is 2 it will be 4 x. What about variable overheads, in variable overheads also they have given that hourly rate of variable overhead will be unaffected, but the total amount of one will change because it is 2 hours into 2.5.

So, whatever is new rate sorry new hours which is x it will be 0.5 x. So, 4 x and 0.5 x; that means, 4.5 x is total of labour plus variable overheads and we already know that total should not be more that 15.875. So, 15.875 minus 8 it should be 7.875, now with this data try to work back the quantum of x. Here I have try to show you the calculation it is 4 x and 0.5 x we already know that the total is 5 point 15.875; that means, 4.5 x is equal to 15.875 so, we get if you divide this you will get x as 1.75.

If you remember earlier they used to take 2 hours per unit they are supposed to cut it down. So, they have cut it down to 1.75 so, now, 1.75 is the new value of x into new rate that is 4 1.75 into 4 you get 7 and 1.75 into 0.5 you get 0.875. So, if you take total of this 3 it becomes 15.875 and then everything matches are you getting. So, they will be able to achieve the target profit, increase the production, give more payment to workers, do

everything provided, they can reduce the number of hours per unit from 2 to 175 that is a offer we want to make to workers that ok, we are willing to increase your rates provided you cut down the number of hours to 1.75. Now I hope you would have got that if you can make this calculation perhaps management will be very happy, because they get 2 point 5 times the profit.

Even the total sales of the company are also going up workers feel also be happy, because they get more payment. So, it is a win-win deal to begin with first of all we have to show all these proper calculations. So, that all parties are happy and then of course, one has to do execution properly, to ensure that productivity increases, the time is cut down. So, the cost is cut down and the contribution goes up, now you can see the contribution has gone up, there is a increase in fixed cost despite that you are making more profit.

What is a new PVR now, it is almost constant it has slightly gone up because the price has gone up so, 0.50, what is the new BEP will it go up or will it fall down. Actually new BEP has gone up, is it a good sign actually not so much of good sign, because company has committed new fixed cost that is why their BEP has slightly increased and BEP in terms of units has also increased. So, it is a slightly risky proposal company will have to take little more risk, to ensure that they are able to improve their profitability; I hope you are getting it.

So, with this we will stop here [FL].