Management Accounting
Professor Anil K. Sharma
Department of Management Studies
Indian Institute of Technology, Roorkee
Lecture 42: Overhead Variances

Welcome students, so in this class we will learn about the Overhead Variances. In the previous class, I discussed with you the relevance of the Overhead Variances in detail and emphasized upon that Overhead being the third component of the cost, of the total cost of the product and having a very marginal amount or maybe you can call it as a nominal amount which may be somewhere ranging from 10 to 15 percent after the material and labour.

So sometimes it may not be required to analyse the variances with regard to the overheads. But in a case when a firm is very large in size overheads are also very large in the absolute value. In that case even 10 to 15 percent cost component needs to be analyzed in detail and we have to check for the variances that how these variances have come up? What was the reason for those variances? And even you control the 1 to 2 percent of those overhead variances then I think that total cost of the product can be brought out significantly.

So, I told you that there are the two kinds of the overheads - fixed and variable overheads. So, and for the further these fixed and variable overheads we have the further sub variances. Since, the importance of this overhead cost is not very high, so I will not discuss all the sub variances with you in detail. So in total say or in the larger perspective, I will be discussing with you three broad variances. First variance will be the total overhead cost variance which will include the total overheads both fixed and variable.

Then we dissect that next at that next level. We will dissect that overhead cost variance into the variable overhead variance and the fixed overhead variance. Variable overhead variance also has further two sub variances - variable overhead expenditure variance and the variable overhead efficiency variance and similarly the fixed overhead also have the further sub variances like the fixed overhead expenditure variance and the fixed overhead volume variance.

And volume variance further has the three subsection or the sub variances one is that is this fixed overhead capacity variance, calendar variance and the efficiency variance. Right so these different variances are there. We will now discuss all these sub variances in detail. Largely we

will learn about the three broad variances with regard to the overheads or the overhead cost because the relevance of this component of the cost is not very high and normally in the most of the companies but still being the student of management accounting.

We all must be clear about that the third important variance is the overhead variance and largely we can calculate three broad variances total overhead cost variances and then the variable overhead variance and the fixed overhead variance. So first we will learn formula how we can calculate these variances. I told you in the previous class that overheads are not studied in the absolute form.

They are studied in proportion to either material or in the proportion to labour. So depending upon the situation in the firm what is the policy of the firm? What is the say process of the firm? And how they means like to distribute the overheads or know about the cost of the overheads whether as a proportion of the material or as proportion of the labour. So, while calculating these variances we must be clear about what are these say two different ways to calculate the overhead variances?

If we have to calculate this variance with regard to or in proportion to material, how to do that and we have to do it with regard to the labour how to do that, so I will discuss with you both the formulas and then we will apply, means either of the two or sometime both and then we will learn how to calculate these variances. So, we will first calculate the total overhead cost variance. First variance is the Overhead Variances Overhead Variances.

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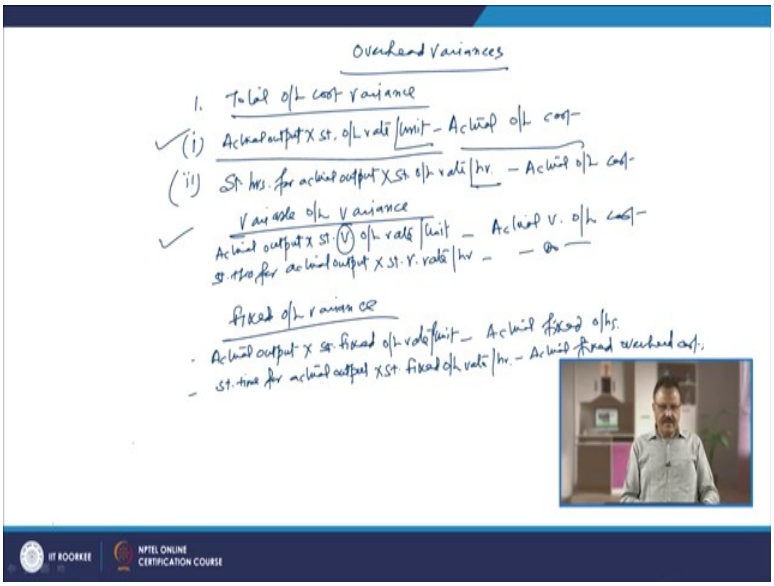

First variance is the total overhead cost variance. This is the first and this is the total overhead cost variance, total overhead cost variance and to calculate this total overhead cost variance we have both the formulas with us first if it is have to be calculated in relation to material so how to calculate that what is the formula? So, the formula is actual output, actual output multiplied by standard overhead rate per unit minus actual overhead cost.

Actual output into standard overhead rate per unit into standard overhead rate per unit minus actual overhead cost, so, if you look at these two components, these are basically the comparison between the standard overhead cost and the actual overhead cost and then we try to find out the difference between the two to find out the variances and if it has to be found out in relation to labour then what is the formula, that is the standard hours for actual output multiplied by standard overhead rate standard overhead rate per hour.

Here it was per unit here it is, so this is the one and then what we have to do is? This is the standard hours for actual output into standard overhead rate per hour minus the other part will remain the same actual overhead cost. So these are the means the way two different ways to calculate the total overhead cost variance and if it is in relation to the material you can calculate by using the first formula if it is in relation to the labour it we can calculate by using the second formula.

Now, we will further dissect it and the two other variances of these total overhead cost variance are variable overhead. So, first we will learn about how to calculate the variable overhead variance and for calculating the variable overhead variance, the formula is actual output into standard variable overhead rate per unit minus actual variable overhead cost. So, what is the difference between this formula, if you talk about this formula and this formula, only we have added the word here that is the variable.

Other formula is same actual output into, in the first case was standard overhead rate per unit and now it is actual output into standard variable overhead rate per unit minus actual variable overhead. So, it is a comparison between the standard variable overheads and the actual variable overheads and only word variable has to be added into the formula, if it has to be calculated in relation to the material.

And if it is in relation to the labour then it will standard hours for actual output into standard variable overhead rate per hour minus again the, this part will remain the same. This is actual variable overhead cost this is the actual variable overhead cost. So, standard hours for actual output into standard variable overhead rate per hour minus actual variable overhead cost, so the other side will remain the same, first part will change if it is in relation to the material and if it is in relation to the labour.

So, now this is how to calculate the variable overhead variance and now we will learn about how to calculate the fixed overhead variance. So, now next part is the fixed overhead variance and for calculating this fixed overhead variance. The formula is very simple again, actual output we are taking here as the actual output into, now it is standard fixed overhead rate into standard fixed overhead rate per unit. So, now what we are using the word per unit minus actual fixed overheads.

So, this is the say fixed overhead variance, if it is has to be say calculated in relation to the material and second one is if it is has to be calculated in relation to the labour then the second component will be standard time for actual output, standard time for actual output into standard fixed overhead into standard fixed overhead rate. It is per hour standard fixed overhead rate per hour minus other part will remain the same, actual fixed overhead cost.

So, these are largely three variances which we calculate with regard to the fixed overhead, sorry overhead cost variance. First one is the total overhead cost variance, so the dissection of this total overhead cost variance is into variable overhead variance and the fixed overhead variance and in case of the fixed overhead variance we learned if they are to be calculated in relation to the material how to calculate that?

If it in proportion to the labour how to calculate that? And then in case of the fixed overhead also, we learned about if they have to be calculated in relation to the material, how to do that and if you want to calculate it in proportion to the labour how to do it? So, if you look at this means these three formulas broadly there is only minor difference in these. First formula is actual output x standard overhead rate per unit minus actual overhead cost means actual total overhead cost that is both variable and fixed.

And when you go for calculating the variable overhead variance so first part is remaining the same, again actual output into now the word variable we are adding in the multiplying factor that is standard variable overhead rate per unit minus actual variable overhead cost, total cost, actual variable overhead cost and in case of the fixed overhead variance again it is the actual output, it has been multiplied the standard fixed overhead rate per unit minus actual fixed overheads.

So, these are the three broad variances we can calculate and we can find out that if variable overhead cost is going out of control then how to control this cost and even sometimes fixed overhead cost, normally fixed overheads remain fix but sometime if they change also then we have to think about why the fixed overhead cost changed and what the reason for this change or may be the negative variance particularly was controllable or not controllable and then to keep it or control or watch on the overhead cost.

I have already told you that the further dissection of the variable overhead variances in two parts, variable overhead expenditure variance and variable overhead efficiency variance. And the further dissection of the fixed overhead variance is in the further two parts that is the fixed overhead expenditure variance and the fixed overhead volume variance and the volume variance further has three say dissections or the sub variances, first is the your this capacity variance, calendar variance and the efficiency variance.

So, I have already told you, I will not go this much in detail. For this you can refer to the standard books I have given in the course plan and the good book for learning about the standard costing or the variance analyses is a management accounting book by Khan and Jain and that is a McGraw-Hill publication. So, you can refer to that book. I have also been referring to that book since say past for some amount of time. So that is a very good book.

So for the further detail, learning about the fixed overhead variances or total overhead variances, if you want to further go for the sub variances and learning about those sub variances you can refer to that book or any other good book on the management accounting. Now, we have learnt about that how to calculate these three variances, total overhead cost variance, variable overhead cost variance and the fixed overhead cost variance.

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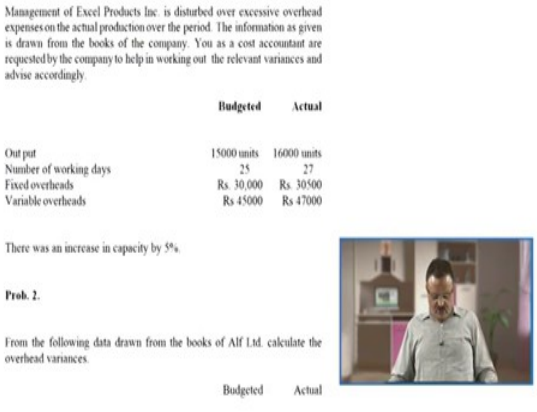

requested by the company to help in working out the relevant variances and advise accordingly.

	Budgeted	Actual
Out put	15000 units	16000 units
Number of working days	25	27
Fixed overheads	Rs 30,000	Rs 30500
Variable overheads	Rs 45000	Rs 47000

There was an increase in capacity by 5%.

Prob. 2.

From the following data drawn from the books of Alf Ltd. calculate the overhead variances.

	Budgeted	Actual
Overheads	Rs 3.75,000	Rs 3,77,000
Out put per man hour in units	2	1.9
Number of working days	25	27

Now the next thing is we will go for learning about that how to apply these formulas in the real life situation for working out these variances. So here you see that if you talk about this part. In this part I have given you here one problem these two problems are there and these are very simple problems. If you look at this information given to us it looks very simple that these I say problems or this information is very simple.

Using this information in both these problems you have to calculate the different overhead variances, we can calculate number of variances means all. But I will calculate only three variances, total overhead cost variance for the first problem and then the second will be the variable overhead variance and the fixed overhead variance. And then we will means say compare so as I told you that cost is the function of say price and quantity.

Here in these say overhead variances, total overhead cost variance is the function of the variable overhead variance and the fixed overhead variance. So, for applying the check while doing this in the examination or any other part, you can find out that your total overhead cost variance is equal to variable overhead variance and fixed overhead variance then you can say that your problem is correct and we have correctly calculated.

Because some of the variable overhead variance and the fixed overhead variances should be equal to the total overhead cost variance and that we have means to calculate and compare with each other. So, what is the problem here? Let us understand this problem first is very simple. So,

let us first understand this problem and then we will solve it. Problem is management of Excel Products Inc. is disturbed over excessive overhead expenses on the actual production over the period.

The information as given is drawn from the books of the company. You as a cost accountant are requested by the company to help in working out the relevant variances and advise the company accordingly. Was information given to us is that is output is standard information budgeted means standard and the actual information. Budgeted output is 15,000 units and actual output is more by 1,000 that is 16,000 units.

Number of working days 25 and 27, fixed overhead means total fixed overhead cost is standard means the budgeted cost was rupees 30,000, actual is 30,500. It has gone up little up and variable overheads, is the cost of variable overheads is how much? That is Rs 45,000 that was standard but actual also has gone up that is 47,000. And finally there is given the information to us there was an increase in the capacity by 5 percent.

So, this last line that there was an increase in the capacity by 5 percent is only usable if you calculate the fixed overhead capacity variance. For that you have to first calculate the fixed overhead volume variance, then the capacity variance. Because why we calculate this in a relation to the volume because then the volume of the production increases because of any reason may be you are working in the month for more number of days as against the standardized number of days.

Or if you are say in any case you are using the plant capacity to its fullest level or may be little more than what we were doing in the past. So that change in the capacity because of increased number of days or because of the better utilization of the plant, fixed overhead cost behaves inversely. I told you earlier also the behaviour of the fixed overhead cost is that it changes inversely in case of per unit cost.

Because if the number of production volume of the production is large, fixed overhead costing remaining the fix, per unit cost comes down, means larger the production per unit fixed overhead cost is lesser and lesser the production, fixed overhead cost per unit is higher. So, to relate it with

the volume because fixed overhead are the fixed. If you produce or use them, for producing the larger number of units, your per unit cost will come down.

And if you are not able to do that, your per unit cost will be very high and that is to a larger extent is expected by the or effected by the capacity utilization. So this last line we will not be using because we are not going that much in detail. Then we are calculating the fixed overhead volume variance and then the capacity variance so this is of no use to us. Only we will be using these first say important parts of the information where we are talking about the number of units both standard and actual.

Where we are talking about the number of working days that is standard and actual, where we are talking about the variable overheads standard and actual and then we are talking about the fixed overheads standard and actual. So, if you now solve this for calculating these different variances we have to solve this problem, so what is the formula? Simple formula is actual output.

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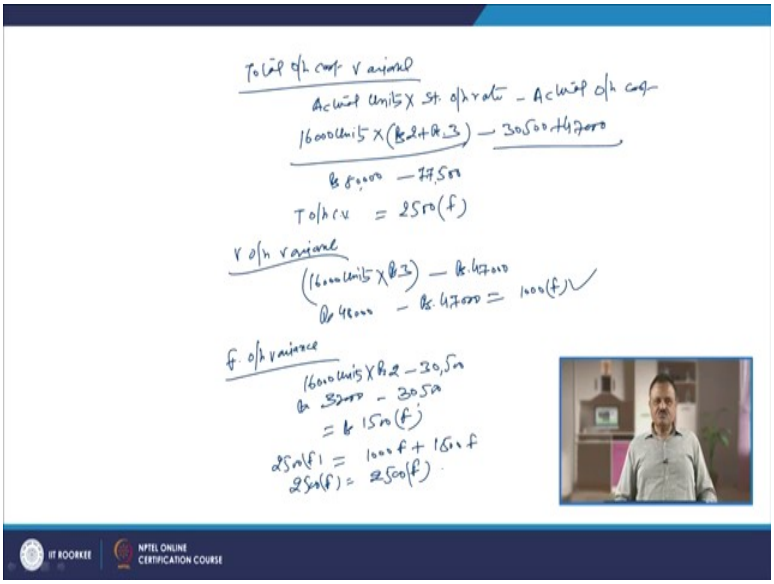

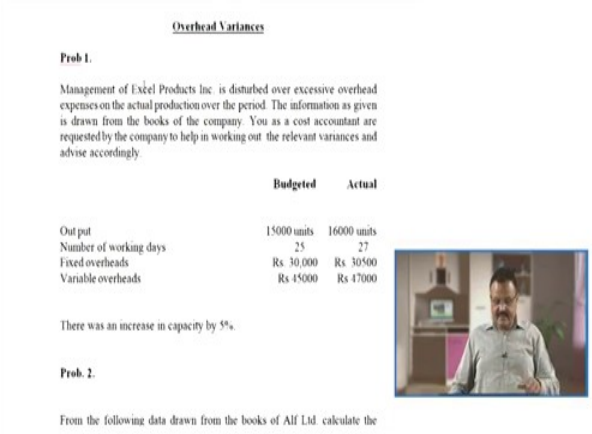

Overhead Variances

Prob 1.

Management of Exèel Products Inc. is disturbed over excessive overhead expenses on the actual production over the period. The information as given is drawn from the books of the company. You as a cost accountant are requested by the company to help in working out the relevant variances and advise accordingly.

	Budgeted	Actual
Out put	15000 units	16000 units
Number of working days	25	27
Fixed overheads	Rs 30,000	Rs 30500
Variable overheads	Rs 45000	Rs 47000

There was an increase in capacity by 5%.

Prob. 2.

From the following data drawn from the books of Alf Ltd. calculate the

So, first we are calculating the total overhead cost variance, total overhead cost variance, total overhead cost and what is the formula? Very simple formula is given to us that is the actual units, formula is actual output or units into standard rate, standard overhead rate minus actual overhead cost minus actual overhead cost. Now, what is actual output? You are given very clearly that actual output is 16,000 units.

So, we will use this 16,000 units and we have to multiply it by something and for multiplying it by something we have to calculate the standard overhead rate, standard overhead rate that is per unit. We have discussed that standard overhead rate per unit that is the standard overhead rate per unit. So we have to calculate this standard overhead rate per unit so we have to take it as because this information given to us is in the form of variable and the fixed.

So if you will look at the fixed overhead cost you can find out what is the total fixed overhead cost, 30,000, right? And, what are the number of units? Standard I am talking about, the standard overhead cost per unit is 15,000 so fixed overhead per unit is 2 rupees and in case of the variable overheads the cost given to us is 45,000 again the standard number of units are 15,000. So this is three right so it means, now we have to find it out that the this total cost is 16,000 units.

And multiplied by what, we have to multiply it by something and that something is rupees 2 plus rupees 3 rupees 2 plus rupees 3 and then is the actual overhead cost. What is the actual overhead cost here? Actual overhead cost if you look at this becomes 30,500; 30,500. It is given to us

30,500 this is the fixed and the variable is how much, plus 47,000. So this will give you these two sets of information will help you to calculate this total overhead cost variance and for calculating this how much it works out as?

Rupees 80,000 minus this is how much 77,500. And what is the variance total overhead cost variance is, total overhead cost variance is how much? This is going to be 2,500 but it is favorable. Our standard cost was high, our standard cost was 80,000 in total both variable and fixed and the actual cost has come up is how much 77,500, so it means total overhead cost variance has become favorable that is by 2,500 rupees.

Now, we will further dissect into variable overhead variance. Now, we will calculate the variable overhead variance, variable overhead variance and for calculating the variable overhead variance again what you have to do is? First part is going to remain the same that is 16,000 units, actual output into standard variable overhead rate per unit that is the standard variable overhead rate per unit and what is the variable overhead rate per unit that is rupees 3 and minus what is the other part, actual variable overhead and if you look at the actual variable overheads what is this information?

This amount is 47,000 so it means this is the rupees 47,000. So, it is rupees 48,000 minus rupees 47,000 so your variance is going to be how much? This is going to be 1,000 but again favorable. So, one is we are found out first dissection of the fixed overhead variance that is 1,000 favorable. Now, we go for the fixed overhead variance, for fixed overhead variance sorry, for the fixed overhead variance, number of units are again we have to take is actual output 16,000 units multiply it by something like fixed overhead rate and what is the fixed overhead rate?

Fixed overheads are 30,000 and production is, standard production is 15,000 so this rate is 2 rupees 2 and minus what is the say fixed overhead cost? This fixed overhead cost is something like you can say that this amount is 30,500. This is the cost here that is the 30,500. This is the actual this production actual fixed overhead cost so how much it works out as rupees 32,000 minus 30,500 and what is the fixed overhead variance? This works out as equals to rupees 1,500 and this is also favorable.

So, we have been able to find out that the total overhead cost variance this is given to us that is 2,500 favorable. Variable overhead cost variances 1,000 favorable and the fixed overhead cost variance is the 1,500 favorable. So, if you now calculate it that is what is the total fixed overhead, total overhead cost variance is 25,000; 2,500 favorable and this is 1,000 favorable plus this is how much 2,000, sorry 1,500 this is 1,500 again it is favorable

So it is 2,500 favorable equals to 2,500 favorable, so we are able to find out this information and we are able to analyze these variances and if you look at these variances like that is the total cost is our standard cost was 80,000 as the total overhead cost, but actually we are able to keep it under control and we have found out that your total actual overhead cost is somewhere 77,500 so we found out the favorable variance of the 2,500 rupees and further will be dissected it into the fixed overhead variance and variable overhead variance.

So we found out that this positive variance has been upto 1,000 because of the variable overhead cost and upto 1,500 because of the say fixed overhead cost and both being under control your total overhead cost variance has become favorable, it has come positive. If you compare this, this information here why this has means happened so? This might be possible; we are not going for the further variances so this might be possible that our production has gone up by 1,000 unit right.

That is standard production was 15,000 units, actual production is increased by 1,000 units. So it is increase up to 16,000 units, number of working days have also increased. Our standard working days per month were 25 but we have worked for 27 days that is again a very positive factor and when you talk about the fixed overheads, so there is a very, you can call it as both the overheads have cross the limit.

Standard overhead was 30,000 standard fixed overheads were 30,000 but you see this is must be beyond the expectations that the fixed overhead cost has also increased may be by 500 but it is more. This should not happen normally. Fixed overhead cost should not change and in this case if you look at variable overhead cost, the variable overhead cost has also means gone up from the 45,000 to 47,000 but there is no point means there is nothing to worry about.

Because if your production is increasing from 15,000 to 16,000, naturally your variable overhead cost will go up because variable overhead cost per unit goes in the same manner as a production goes up there is positive and direct relationship. In case of the fixed overhead this cost per unit there is inverse relationship. So, in case of the variable overhead there is nothing to worry about what is the fixed overhead cost increase from 30 to 30,500.

It should not have happened may be you are producing 15,000 units or you are producing 16,000 units, may be you are working for 25 or 27 days but this cost has gone up or may be that could be one reason that production has not affected the fixed overheads but may be the number of days have affected the fixed overheads because we have worked for the two more days from 25 to 27.

So we have worked for that but still this cost has increased, so because fixed overhead cost is 30,000 so it should have remained as 30,000 it has increased so we have to look for this change this increase in the cost. But even we do not look it that. This is not a very serious difference; it is not a very serious amount. So, we can find out that say calculating overhead variances are important but we can do a superficial analysis of the overhead cost for this component being not very large even if you calculate the total overhead cost variance and the say your fixed and variable overhead variances individually.

So you will get an idea that whether the total overhead cost is under control or it is going beyond the standards and in case of the fixed and variable overhead cost whether it is within the control or it is going beyond the control and then we can apply the check. So, this is the first problem I could do here and the second problem you can do yourself by using the say different formulas I have already given to you.

And calculate these three broad variances that is the total overhead cost variance then the variable overhead variance and the fixed overhead cost variance. So this way we can learn further more about it with regard to the standard costing, I will stop here and means further this no point to means keep on discussing on this topic. Largely there was the most important component in this area was or in this particular topic was.

Material variances those we have discussed in detail then the second important was the labour variances we have discussed those variances in detail and third one is the overhead variance so looking at the importance of the overhead cost, I have given you the broad idea about how to calculate the overhead variances and how to calculate them, what are the formulas and how to analyze them.

So, with regard to the standard costing I am stopping here and now the next thing which we will learn is that is the next technique another technique of controlling the cost or dealing in a very competitive and difficult market situations that is called as marginal costing. So in the next class we will start talking learning about the marginal costing and learn about how the marginal costing can be made use of by the firms in the different market situations for the relevant management decision making processes. Thank you very much!