Management Accounting
Professor Anil. K. Sharma
Department of Management Studies
Indian Institute of Technology, Roorkee
Lecture 37: Labour Variances-I

Welcome students, so we are in the process of learning about the labour variances. And in the previous class I discussed with you that how to calculate the basic four labour variances, that is the labour cost variance, labour rate of pay variance, labour efficiency variance, and the labour idle time variance, right? So, next variance in this category of the variances is in the labour variances are the labour mix variances, all the gang composition variances and the labour yield variances.

Gang (comp) composition variance or the labour yield variance, because we calculate the as in case of the material variances we calculate the material mix variances. So there is a mix of the labour also, labour is also has the mix so we call it as a gang composition. Because any form may require different category of the workers. Say skilled worker, semi-skilled workers and unskilled workers, right. So, different types of the workers are required to complete the different types of the jobs.

And that way the total labour composition makes or constitute of three, is a constituent of the three type of the labours that is the unskilled labour, semi-skilled labour and the skilled labour. It depends upon the requirement of the number of the people, that how many skilled people are required, how many semi-skilled people are required and how many unskilled people are required because price of the labour, rate of the pay of the labour is different depending upon the qualification and skills of the labour.

Because skilled worker will be costly expensive as compared to the semi-skilled and semi-skilled will be expensive as compared to the unskilled. So, we will have to be very carefully deciding the labour mix, if you require a unskilled worker and you replace the unskilled worker with the semi-skilled worker, so it means what you are going to do, you are going to increase the cost labour cost which we do not want to do.

Other way around it may be possible that if one skilled worker is not easily available or for example you require 5 skilled workers only 4 are available, so we may think about that can mix non availability of a skilled person be replaced by the 2 semi-skilled person that has to be seen. So we have to create a labour composition or the labour mix or the gang composition in such a manner that we are mix and going to create a optimum mix of labours or the workers in the organization and the cost of the labour is within the control cost of the labour is within the control.

So here comes up the position of working out the labour mix variances or the gang composition variances. When you calculate the labour mix variances or gang composition variances we have the four different situations we have to confront with the four different situations. And in those four different situations we will have to say learn about that if out of this four any situation is say adjusting in the firm then which formula will be useful or will be going to make use of because in the four situations, in the four conditions the formulas are different.

Little change in the formula, not very say significant difference is there but some change in the formulas are there. So we have to be very carefully, identify the existence of the labour composition the gang composition of the labour mix. And according to that you will have to find out that what type of the standard we have worked out because every firm will work out the standards that we required 2 skilled workers, we required four semi-skilled workers and we required eight unskilled workers, right.

So that kind of composition may be required and if that kind of composition is required, in that case we will have to think about that say, that it is a standard composition. So, what is that now actual composition because standard is decided 2, 4, 8, right. 2 skilled, 4 semi-skilled and 8 unskilled workers, actually whether they are easily available or not. It may be possible that in the place of the 2 skilled workers we have only 1 available and we have to replace that shortage of the 1 skilled workers with the 2 unskilled workers. So in that case what will happen?

Our real composition will be 1 skilled, 6 semi-skilled and 8 unskilled workers. So actually and standard we will have to find the difference, if the standard is with the actual or the actual is as per the standards and there is no problem at all no issues at all but if there is any difference, than we will have to look for and we will have to calculate the variances the labour mix variances or

the gang composition variances. So we will find out here the first situation the first case that, what is the first case for calculating the labour mix variances or you can call it as the gang composition variance.

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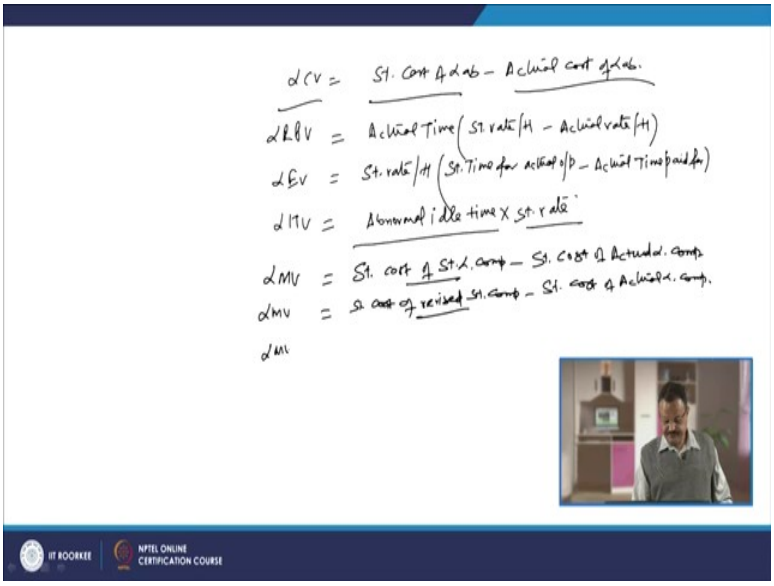

I will say here it is that I will call it as labour mix variance LMV, Labour mix variance and if you talk about the labour mix variance in that case the first situation is, if there is no change in standard composition of labour, if there is no change in standard composition of the labour force and the total time spent total time spent is equal to the total standard time. This is the first situation. I repeat it, if there is no change in the standard composition of the labour force and total time spent is equal to the total standard time, so how would you calculate this labour mix variance?

Standard cost of standard composition, standard cost of standard composition standard labour composition minus standard cost of standard cost of actual labour composition, Labour mix variance in a case, in the first case if there is no change in the standard composition of the labour force and the total time spent is equal to the total standard time, so the formula is standard cost of standard composition minus standard cost of actual composition, standard cost of the actual composition.

Second situation is, this is the first situation, that for example, there is no change. We decided that we require 2 skilled workers, 4 semi-skilled workers and 8 unskilled workers, that was the standard and the labour rate was also decided that, for example, for the skilled we will be paying 10 rupees hour, for the semi-skilled we will be paying 6 rupees per hour and the unskilled we will be paying 4 rupees per hour as per standard.

Actually when we hired the workers we could find that much required number of workers that as per the standard we could get the actual also and the cost which was pre decided as that was say, what was the cost of the standard for the skilled, semi-skilled and the unskilled same you could found out for the find out for the actual also. So, in that case it means simple, is very simple formula is labour mix variances standard cost of standard labour composition minus standard cost of the actual labour composition.

Because cost is same cost is not changing, cost per worker is not changing. So, for example, if it is the cost is, for example, 8, 6 and 4 per hour or the per worker per hour. So that will remain standard and equal is same, standard and actual is the same. As well as the composition of the worker is concerned there is no change in the composition of the workers also. So whatever we decided as standard that is the same in the actual also and we are getting the number of the workers, same type of the workers.

We are paying the price as it was the standardized price so there is no problem at all, no issue at all and we easily in a position to find out the variance. Second case of the labour mix variance will be, if the standard composition of the labour force is revised, if the standard composition of the labour force is revised due to the shortage of the particular type of labour and the total time spent is equal to the total standard time.

Now, there is a little change in the first part. We have to revise the standard as I told you that what we decide in the first case was, 2 skilled, 4 semi-skilled and 8 unskilled workers but for example we didn't find 2 skilled workers so for that we have to get only 1 skilled worker, we have to replace that 1 less skilled worker with 2 more semi-skilled workers. So, new composition will become like that will be the 1 skilled worker, then you will get how many 6 semi-skilled workers and 8 unskilled workers.

So there is a change in the composition in the skilled and semi-skilled type of the labour or type of the workers and for that we will have to know say change the, little change we will have to effect in the labour mix variance and the change in this formula will be what? Labour mix variance will be in that case, labour mix variance because standard is revised due to shortage of a one particular type of the labour so what will be the formula, standard cost of revised, standard cost of revised standard composition minus standard cost of standard cost of actual labour composition.

So, it means there is one change, here which is not in this case. So you are revising the standard, because there is a shortage of the 1 type of the labour and we are replacing the 1 less skilled worker with the 2 semi-skilled workers. So, now the new composition, new standards will be 1 skilled, 3 semi-skilled and 4 unskilled workers or in a way that is 1 skilled, 6 semi-skilled and then the 8 unskilled because of the shortage.

Because original standard was 2, 4 and 8 but now it is the revised one is 1, 6 and 8. So, that will be the change. So minor change you will have to make in the formula, so it will not be simply the standard cost of revised standard labour composition, but it will not be the standard cost of the standard labour composition but Standard cost of revised standard composition minus standard cost of actual labour composition, right.

Now, we go for the third case. In the third case labour mix variance, what is the third case? If the total actual time of labour differs from the total standard time of the labour, if the total actual time of the labour differs from the total standard time of the labour it means, what was the standard time decided was? That is not means with regard to the actual. Actually we have increased or decreased the number of hours.

We had decided that to complete a work we will be requiring the total number of hours that will we say the (to) total number of hours for the skilled, semi-skilled and unskilled workers that may be some 10 hours or the 20 hours were decided, but actually that was the standard. But actually when we went for the production composition is same but the number of hours has changed. So when the number of hours had changed it means now the actual hours had spent on the work are not same with the standard hours of the work.

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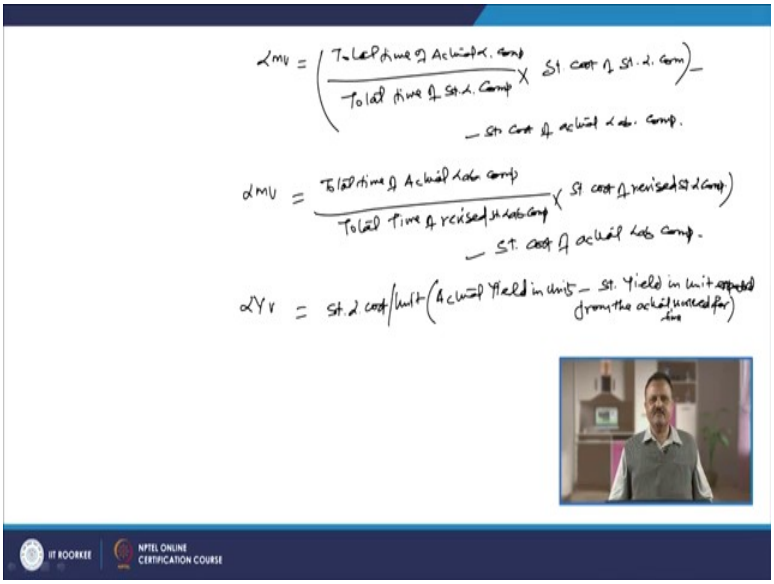

So, it means now there is a difference in the, that is why I am saying the third case is if the total actual time of the labour differs from that total standard time of the labour. So, what will be the formula we will be using now, that formula will be using for calculating the labour mix variance in the third case. So, the labour mix variances in the third case will be total time of actual labour composition divided by total time of standard labour composition into standard cost of standard labour composition minus standard cost of actual labour composition actual labour composition.

This is the formula, which is almost similar to the material mix variance. What was the formula that there the formula was the total weight of actual mix divided by the total weight of standard mix into standard cost of standard mix minus standard cost of actual mix that was the material mix variance. Here in this case you are replacing the material with labour, when you are replacing the material with labour.

What you are doing here is total time of the actual labour composition there it was the total weight of the actual material and here it is total time of the actual labour composition divided by the total time of the standard labour composition into standard cost of standard labour composition minus standard cost of the actual labour composition that is minus standard cost of the actual labour composition.

And now the fourth set of situation is labour mix variance fourth set of the situation is going to be, if the standard is revised, if the standard is revised due to any reason whatever the reason maybe if the standard is revised may due to non-availability of the labour, maybe due to non-requirement of the (say) standardized type of the labour. Any reason it could be that because of any reason if the standard is revised, if the standard is revised.

And total time of the labour differs from the total (say) total actual time of the labour differs from the standard time of the labour, so how would you calculate the labour mix variance in that situation. So, here you would have to little now make a change and the change would be something like total time of actual labour composition, so the formula will become like, total time of actual labour composition divided by total time of revised, now the word revised has to be added.

Total time of revised standard labour composition multiply standard cost of revised standard labour composition minus standard cost of actual labour composition. So, these are the 4 situations. First situation is that when the standard time and actual time are same, how to calculate the labour mix variance. Second is that when the total standard time and the actual time is same but the labour composition is revised so sometime at the place of skilled worker you replace the 1 skilled worker with the 2 semi-skilled workers

So, if that is the case then we have to have the misuse the second formula. Third formula is when the standard time or the total actual time is different from the standard time we have to find out the formula and that is the third formula we will have to use and the fourth is that if the standard is revised because of any reason there are the 2 conditions in the fourth formula, first condition is that the standard also revised and second change in the formula is that there is a difference in the actual time of labour and the standard time of labour.

So, number 1 there is a difference in the actual time of labour and the standard time of labour and the second or the first condition is that standard is also revised. So, when we are doing 1 case and then the standard and actual time is same you are using the first formula and second formula. But when that actual and standard time is different and if the standard is revised so you are using the third and the fourth formula.

So we will have to find out the problem, the situation that whether 2 times are same then first formula, 2 second formula 2 times are same but the standard we have to revise. So we revise the standard and actual is according to the revised standard so second formula. Third is when the 2 times are different, actual time different, standard time is different, then the third formula. And in the fourth formula 2 times are also different, actual time is different, standard time is also different and the standard is also revised due to shortage of a 1 particular type of the labour.

So in that case we will have to use the fourth formula. So, these 4 set of the formulas we will have to make use of and then we will have to arrive at the common conclusion that how to calculate the labour mix variances or the gang composition variances. Largely they are same with the material mix variances, here we are replacing the word material with the labour and in case of the material we are replacing the labour with the material.

Now, we go for learning about the last variance in this category and that is the labour YV, labour yield variance or the labour output variance. There we calculated the material yield variances because when we get the input, when we get the input, so we are to calculate the output in terms of the material that is the output and the input in terms of the input and output in relation to the input that is with regard to the material.

Here we have to find out the input and output with regard to the labour. What was the standard time? What was the actual time? And what was the standard say expected labour productivity? How much is the actual labour productivity that will be known as the fifth variance in this category after calculating the labour cost variance, labour rate of pay variance, labour efficiency variance, labour idle time variance, labour mix variance or last variance will be the labour yield variance or the labour output variance.

And in this case for calculating the labour yield variance formula is standard labour cost per unit, standard labour cost per unit of time, you can say standard labour unit of time multiply actual yield in units actual yield in units minus standard yield in units expected from the actual time worked for so this labour yield variance is that is the standard labour cost per unit, standard labour cost per unit of time into actual yield in units minus standard yield in units expected from the actual time worked for, expected from the actual time worked for.

I missed the time here it is the actual time worked for. So this is the formula helping us to find the labour yield variance. So, now we have learned about that like the material variances, you can calculate the labour variances also in case of the material variances we have the 5 variances, in case of the labour variances we have the 5 variances. One more variances in between that is labour idle time variance but largely first variance is the labour cost variance there it is the material cost variance, here it is the labour rate of pay variance.

There it is the material price variance, here it is the labour efficiency variance, there it is the material usage variance here one additional variance which is idle time variance and next one is the here the labour mix variance or the gang composition variance, there it was material mix variance and lastly it is same it is the labour yield variance in case of the labour and there it was the material yield variance in case of the materials, right.

So, now we have learned about that how to calculate the labour variances like the material variances. So now the next thing is we will be doing learning about is that we will be learning about for calculating the labour variances. For calculating the labour variances, now I have brought a problem sheet. We will start with again like the material variances. We start with the very simple problem and then we will move to the increase the level of complexity and then we will learn about how to calculate different variances with regard to the labour.

As in case of the material, we discuss 3 or 4 problems. We started with very simple problem and then we move to the complex problem and in that complex problem, if you remember we have discussed or we had covered up 2, 3 problems. There was the problem of the wastage, if there is wastage how to adjust that. There was a problem of opening and closing stock that if it is the problem of opening and closing stock how to adjust that.

And there was a problem of pricing of the opening stock, if the price of the opening stock is not given then what price of the opening stock of the material we have to take. So that was the complex problem which could address almost all kind of the material variances related problems. So, similarly in case of the labour variances also we will start with very simple problem and them we will move to the say the different other problem and will increase the level of complexity.

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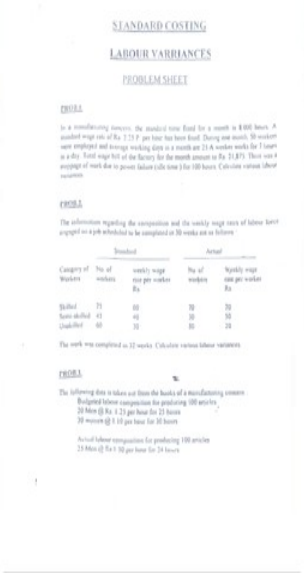

And here the first problem given in this sheet in this problem sheet is that is with regarded to the labour variances. First problem is very simple and if you look at this problem the problem given to us is; in a manufacturing concern the standard time fixed for a month is 8000 hours. That is the total 8000 hours the labour will work, different types of workers skilled, semi-skilled and unskilled. Total labour time in terms of hours was fixed as 8000 hours.

A standard wage rate of rupees 2, 25, 2 point rupees 2 and 25 paisa per hour has been fixed. During 1 month 50 workers were employed actual now you look at, during the 1 month 50 workers were employed and average working days in the month are 25, average working days in the month are 25. A worker works for 7 hours in a day, a worker works for 7 hours in a day. Total wage will of the factory for the month amounts to rupees 21,875. There was a stoppage of work due to power failure which you can call as idle time for hundred hours.

So with the help of this information we are required to calculate the different labour variances. So, here in this case you are given the standard number of hours we are given and the standard rate that is 2 rupees 25 paisa is also given to us. Fine, now we are given the how many workers and how many days, we are given the actually we have hired the workers in the different categories and they worked for 25 days a month and 1 day working hours were 7 in a day and total wage will for the factory, that is the actual wage will for the factory was 21,875.

And there is a problem of idle time also so that idle time was of the hundred hours and that idle time is you can call it as the abnormal idle time. When it is abnormal idle time nobody can help it when there is no power, labour is available on the plant but the power is not there, it is not the in efficiency of the labour .So while calculating the labour efficiency variance we will have to segregate these hundred hours and we will have to calculate the fourth variance separately. That is the labour idle time variance, right.

So, in this case now we will learn about what are the different variances we can calculate. See you are given the very plain information, simple information you are not given, we are given the 50 workers but the categories of the workers are not given to us. So, one thing is very clear that we cannot calculate the labour mix variance in this regard or in this problem. Second thing is we are not given the output that how much output was or how much input was given. How much output is expected that information is also not given to us?

We are simply given the standard and actual information with regard to the actual cost of the labour and the idle time. So, looking at this information it is a very simple problem, it is very clear, it is a plain problem and here in this problem we will have to calculate only originally 3 variances, labour cost variance, labour rate of pay variance and labour efficiency variance and fourth variance will be labour idle time variance because there is a abnormal idle time of 100 hours.

So, now let us calculate the different labour variances. Labour cost variance, we will have to calculate the labour cost variance so now we will go for it and in this first case we will have to do some pre calculations. Means before calculating these variances labour cost, rate of pay and efficiency variance, we will have to do certain calculations because we do not have the actual rate per hour. We are not given the actual rate per hour. We are given the standard rate per hour.

So, while calculating the labour rate of pay variance we will be requiring this actual rate and actual rate if it is not given to us, actual rate per hour if it is not given to us, so in this case you will have to find that.

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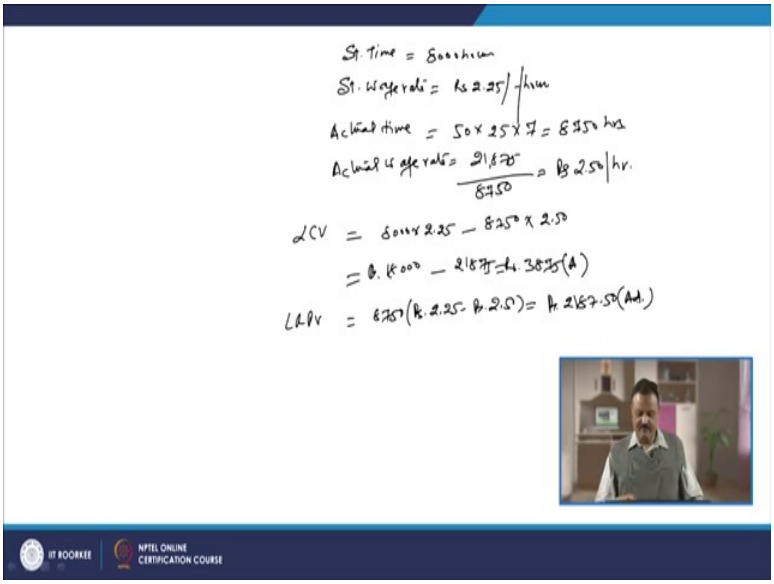

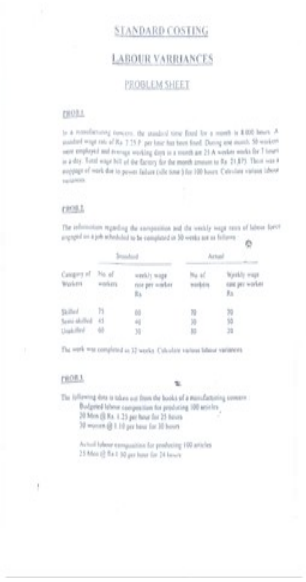

So before starting that in working out the variances first let us do the calculations, so what is the standard time, standard time is how much. We are given the standard time is 8000 hours. So it is 8000 hours and the standard wage rate is standard wage rate is equal to how much? Rupees 2.25, standard wage rate is rupees 2.25 per hour it is per hour and then we are given the actual time, then we are given the actual time. So if you look at the actual time how many, 50 workers. How many days in a month they work and how many working days are, working hours are in a day.

This much, so this will work out as how much. This is 8750 hours, 8750 hours. So, now you can easily find out the actual wage rate, actual wage rate and this is how much? 21,875 divided by how much 8750 actual hours. So the wage rate actual wage rate per hour is how much rupees 2.5 per hour, rupees 2.5 per hour actual wage rate is now we are able to find out.

Now, we have all 4 type of information, standard time is available, standard wage rate per hour is available, actual time is available, actual wage rate is available. So, finding out the initial 3 variances will not be a problem. So, now let us calculate the LCV Labour cost variance and in this case labour cost variance is standard cost of labour minus actual cost of labour. So, standard cost of labour will be 8000 hours mutilpe 2.25 minus.

We have given the actual time actual time is how much actual time is, given to us is 8750 and what is actual rate is it is 2.5. It is given to us already but let us calculate this way. So what is the standard cost of labour, standard cost of labour is 18,000 rupees, we can call it as rupees 18,000 cost of labour is rupees 18,000 and here it is the 21,800 and 21,875 which is given to us. So, there is no problem at all 21,875.

So, if you calculate this difference, this difference labour cost variance works out as how much 3,875 and it is adverse 3,875. Labour cost variances is rupees 3,875 which is unfavorable variances which is adverse variance. It means actual labour cost we have paid is more than the standard labour cost. What was the revised standards actually we have paid more than that and that difference comes up as by an amount of 3,875 which you call it as the adverse or the unfavorable labour cost variance.

Now, we will have to find out the reason for this whether the labour rate we have paid is more or the time actually spent by the labour is more than the standard. Because like the material cost variance labour cost variances is also a function of the labour rate and the labour this amount labour hours. So, we will have to see that if the labour hours used here actually spend are more than the standards with mean efficiency of the labour is effected negatively and that is the cause of the labour cost variance.

Or if it not the case then we will have to find out the second reason could be that the actual price we paid is more than the standard price. Prime facie it looks like that the standard price per hour was 2 rupees and 25 paisa and actual price we have paid is 2 rupees and 50 paisa per hour. So, it

means one possible reason looks here as is that we have paid the actual rate of the labour which is more than the standard rate. So, one reason could be that labour cost variance has become negative or adverse. May be the reason is that the labour rate of the pay variance is also adverse.

So, we will have to calculate now LRPV Labour Rate of Pay Variance. So what is the formula for that actual time and the actual time is how much? Actual time is 8750 hours and then is the standard time, labour rate of pay variance, when you are calculating the labour rate of pay variance is standard labour rate. Standard labour rate is how much, rupees 2.25 minus rupees 2.50. So, how much is this variance now. If you calculate this variance, this variance works out as rupees 2187.50 adverse. This is 2187.50 adverse.

So, one reason we have found out here is that labour cost variance has become negative by 3875. One reason is that we have paid the actual rate more by 25 paisa that standard rate was rupees 2 and 25 paisa actual we have paid is 2.5 paisa, 50 paisa it means we have paid per hour labour cost that is by 25 paisa paid extra. Actual price of the labour has exceeded the standard price of the labour. So, one cause of the labour cost variance is that labour rate of pay variance. So out of 3875 adverse variance to the extent of 2875 the variance has been negative because of the labour rate.

And, now we will have to check for the second part of also that is the labour efficiency that what was the standard time of the labour, how much actual time of labour has been spent and then we will have to reason whether both rate and the labour time are the reasons for increasing the labour cost or only one. So, it cannot be only one for the, we have already seen, their part of the negative variance labour cost variance is has been because of labour rate.

But part second part is can cause of this negative variance of the labour cost is also the labour efficiency and the labour time which was actually used is certainly more than the standard time. So labour efficiency variance and the labour idle time variance in this problem I will do in the next class. Thank you very much!