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## Lecture - 20 Overhead Variance

[FL] In last few sessions we have been discussing on standard costing and variance analysis. So, I hope you remember the steps in standard costing, where we set the standard, record actual, calculate variances and then analyze the variances. In the last session we are discussed about material cost variances and the same formulas very similar formulas will be used for labour and variable overheads. We have discussed that fixed overhead variances; however, are slightly different which we are going to solve cases on in the today session.

So, let us start with the case on Brahma limited I hope you have got the printout it is a very small case very small problem read it carefully and we will try to compute the fixed overhead variances.

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So, it is mentioned that in the factory 10,000 units are budgeted in a month with budgeted fixed overheads being 15,000 which comes to 1.5 per unit. Now the actual output during the month was 11,000; that means, it is slightly more 10 was budgeted, but

11 is produced and actual fixed overheads are; however, same that is 15,000. So, we will have to compute the fixed overhead variances.

Now have a look at the formulas and let us think how to go above, is there any overhead variance first of all, because budgeted is also 15,000 actual is also 15,000, is there variance. The answer is yes, because we follow a system where in the overheads are absorbed on per unit basis. So, if you see the budgeted calculation it gives fixed overheads at 1.5 per unit, since the number of units have gone up to 11,000 the overheads which will be absorbed that is overheads which are charged will also increase 11,000 at 1.5.

So, there are some variances, broadly speaking there are 3 variances under fixed overheads one we are having is a fixed overhead cost variance that is a total variance, it gets subdivided into 2 parts fixed overhead expenditure variance and fixed overhead volume variance.

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1	Brahma Ltd			
	Fixed overhead variance = Actual output x Standard fixed overhead			
2	rate – Actual overhead	Std OH-Act OH		
3	= 11000 units x Rs. 1.50 - 15,000 = Rs. 1500 Fav.			
4	Expenditure variance = Budgeted overheads – Actual overheads	Bug OH-Act OH		
5	= Rs. 15,000 - 15,000 = Rs. 0			
	Volume variance = Standard overhead rate (Actual output –	]		
6	Budgeted output)	Std OH-Bug OH		
7	= Rs. 1.50 (11000 units – 10000 units) = Rs. 1,500 Fav.			
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So, let us try to look at this I have given you the formulas here in the solution please read it once again. So, fixed overheads variance that is the total variance is based on the calculation of standard overheads versus actual overheads. Now the standard overheads are based on actual output I hope you remember we had done it in the materials problem. So, actual output into standard fixed overhead rate gives you the standard overhead for the period. When we compare it with the actual overhead we get fixed overhead variance this is the total variance, then that is broken down into budgeted variance into expenditure variance which is a comparison of budgeted overhead with actual overhead and volume variance which is a comparison of actual with budget, are you getting me. So, broadly it is a difference between actual and standard within that we have inserted one more aspect that is budget. Now when you compare actual and budget you get expenditure variance, when you compare standard and budget you get volume variance ok.

Now, let us start with the first the total variance, we have done it orally that since we have manufactured 11,000 units the actual output at 11,000 into 1.5 these becomes the absorbed overheads minus 15,000. So, as we were discussing 11,000 into 1.5 minus 15,000 it gives a variance of 1,500 favourable.

If you observe carefully you will realize that the favourable portion of overhead is not because of expenditure, it is purely because of volume because of budgeted output was 10,000, but the actual output has become 11,000. So, we have produced 1,000 extra units at 1.5 we are able to charge additional 1,500 to those units, but the actual expenditure remains unchanged that is at 15,000. So, as per as the total fixed overhead variance is concerned it is 15,000 1,500 favourable.

Now, if you come to expenditure variance it is a difference between budget minus actual I hope you are able to solve it. So, budget was 15,000 actually is also 15,000 so, there is no variance. As per as the expenditure is concerned the budget and actual exactly match so, there is no expenditure variance and now compute the volume variance. So, standard fixed overhead rate it is a comparison of actual output and budgeted output. So, 1.5 is a rate and we have produced 1,000 units more so, you get 1,500 favourable as a variance, are you getting me.

So, this 1,500 favourable plus 0 gives me 1,500, actually overhead variance is a total variance it is broken down for 2 reasons, one is a expenditure related reason that is company has spent more or less than what was budgeted got it, that is why it is a difference between budget overhead minus actual overhead. I will give you one more formula for volume variance to make it more clear. Basically volume variance is a comparison of standard overhead with budgeted overhead getting it, I will just write it down maybe you can also note it I am just give you alternative formula please note this

alternative formula also, we are basically comparing standard overhead with actual overhead in between the budget is also inserted.

So, if you compare budget with actual it is called expenditure variance, if you compare standard with budget it is called volume variance, which is mainly because of units related reasons or outside related reason and overall is standard minus actual I think it is reasonably clear with you.

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1	Mahadev Ltd.								
2	Item	Budget	Actual						
3	No.of working days	20	22						
4	Output per man hour	1 units	0.9 units						
5	Overhead Cost (Rs)	1,60,000	1,68,000						
6	Man-hours per day	8,000	8,400						
7	Calculate overhead Variances.								
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Now, let us go to another case that is a case of Mahadev limited, this is little bit more in detail. So, read it carefully it is very small they have given us number of working days both the budgets and actuals are available it is 20 versus 22, output per man hour as per budget is 1 unit as per our actual it is 0.9, overhead cost is 160 budgeted actual is 168, man hour is per day was budgeted 8,000 actual or more 8,400, compute overhead variances.

Now, look at it carefully first of all what are the difference variances we are how to calculate, I will just go to last problem for clarity. We are going to calculate the total variance which is fixed overhead it gets broken down into expenditure and volume. Further volume can be broken down into more reasons, volume essentially means the actual output and budgeted output are different right.

Now, what are the causes of this difference, in the last case that is Brahma limited no more information was available, but here in case of Mahadev limited some more information is available. So, volume variance can be broken down into 3 parts, if you observe this carefully you will realize that, the first part is about number of working days they have worked for more days than planed initially that is called as a calendar variance, you will see that there is a difference also in the number of hours worked per day that is known as capacity variance.

That means they have used more capacity and there is also a difference between output per man hour as per plan and as per actual, that is because of the efficiency. So, overhead variance divided into expenditure and volume, volume in turn is divided into calendar, capacity and efficiency, are you getting me. What leads to calendar variance is a difference in number of days, what leads to capacity variance is number of hours worked per day and what leads to efficiency variance is number of units produced within the hour which you have worked because that is the efficiency part.

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2	1x 166320= Rs 166320	1x184800=Rs 184800	01x176000=Rs 176000	Rs 160000	Rs 168000	
4	Working Notes: SR = budgeted FOH/bur	dgeted hours = 1,60,0	00/1,60,000 = 1			
5	RBH = (22/20) x 1,60,00 AH = 22 x 8,400 = 1,84,	00 = 1,76,000 800				
3	AQ = 1,84,800 x 0.9 = 1 SH = 1,66,320/1 = 1,66	,66,320 ,320	0			
0	Mahadev Ltd.	- СРСИ.СРДН = Rc 15	490(4)			
2	EOH Capacity Variance	= SRAH-SRRBH = Rs 8	,800(F)			
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Now, here since there are many factors we have made slightly a different type of table which might make it slightly easy for you. So, just try to understand this terms first see the overall budget is known as standard cost of sorry overall standard for the given output is known as Standard Cost of Standard Fixed Overheads, short form is SRSH. What SRSH stands for is standard rates so SR and SH is standard overheads. At the other

end is Actual Fixed Overheads it is given as ARAH, ARAH means actual rate and actual overheads, fine.

In between 3 factors are inserted one is Standard Cost of Actual Overheads so, actual output is taken, but standard rate it charged so, it is called as SRAH. Then Revised Budget Budgeted Fixed Overheads so, SRRBH; that means, standard rate is used, but revise budgeted hours are apply on that it is applied and the third one is Budgeted Fixed Overheads that is SRBH because budget is calculated at a standard rate.

So, SR, SR stands for standard rate, but budgeted hours, are you getting me. This BH stands for budgeted hours, actual stands for actual hours, because overhead calculation is essentially hour based, it is based on number of hours you worked. So, rate is on hours you will observe that first 4 columns are all on SR; that means, standard rate per hour will be charged, where as the last column is AR so, actual rate will be charged, getting it.

Now, instead of telling you more let us see what working notes can be prepared, because they will take us to the final solution. Now firstly, SR is calculated what is SR, SR is a standard rate, now if you look at the given information we know the fixed overhead cost which is 160 and you know that the number of working days is 20, man hours per day is 8. So, if you multiply 20 into 8 you get 160 and in 1 hour 1 unit is produced so, number of hours required is also 160.

So, 160 upon 160; that means, rupee 1 per hour is a standard rate you can just see the calculation once again, see standard rate is budgeted fixed overheads upon budgeted hours you may wonder that why it is called standard, keep in mind that standard rate and budgeted rate is same. In fact, budget is prepared on the basis of standard rate, do you remember while discussing budgets we have seen that budgets are based on standard rates. That is why we do not know the rate when they calculate budget they actually start with the rate.

Here what is happening is, we know the budgeted overheads which is 160 and budgeted hours have been calculated which are 160, if you are getting confused I will just show you once again try to multiply this 20 by 8000 20 into 8000 you will get 160, that is the budgeted man hours getting it. So, 160 upon 1,60,000 upon 1,60,000 so, 1 rupee per hour is a standard rate.

Now next is RBH that is Revised Budgeted Hours now this revision is not with respect to efficiency this revision is because of number of days, you will realize that this 160 I will just take you again here was based on 20 into 80,000. So, in 1 day we work for 8000 hours such 20 days we work.

Now, since actually we have work for 22 days there is a requirement to revise that budget. So, revised budgeted hours is 22 upon 20 into 1,60,000; that means, revised budgeted hours. Suppose everything else is unchanged just because instead of 20 days we have work for 22 days we must have worked for 1,76,000 hours what it that is nothing, but revised budgeted hours.

Now, next calculation is AH, stands for Actual Hours, now it is given that we have worked for 22 days and everyday not only it is more days every day also we have worked more that is 8,400 so, 22 into 8,400 1,84,800 is the actual hours. Now in the actual hours how many units you have prepared, as per the norms the rate is 1; that means, output for man hour if you work for man hour you make 1 unit as per the budget, but as per actual it is only 0.9. That means, by working for one hour our workers have only produced 0.9 units that is why AQ, AQ is the actual quantity of output is 184 into 0.9; that means, 1,66,320.

And one more calculation is SH, SH stands for standard hours now, as per the budget or as per the norms rate is 1; that means, 1 hour is 1 unit that is why, based on the actual output that is 1,66,320 the standard hours for that much of production should have been 1,66,320, are you getting. Actually we have worked much more 1,84,800 [FL] we do not know, but they have put it in terms of hours much more, but in terms of output it is only 1,66,320 units so, standard hours is 1,66,320 getting it.

Now, we will try to calculate this 5 figures, see we are yet to even go for calculation of overheads, but it is very important to calculate these 5 figures carefully, once you do that I think rest of the work is very simple you have to just divide find the difference and you will get the variance.

So, let us first start with actual, because that is very easy to get in fact here the actual cost is already given. So, ARAH which is the actual is 168 we have directly written it as ARH got it. Next is SRBH it is go better to go from right to left because easier to calculate, SRBH is also given that is this figure we call it SRBH because standard rate for budgeted hours, budgeted hours are 160 standard rate is 1. So, SRBH that is budgeted fixed overheads is 160, now SRRBH that is revised budgeted hours at standard rate.

Now, look at RBH that is revise budgeted hours are 176, standard rate is 1. So, how much is SRRBH 1 into 176 so, it is exactly 1,76,000 so, getting it I hope you are clear till now. Now go to SRAH so, taking actual hours but at standard rate, now the actual hours are 184 standard rate is 1 so, 1 into 184 so, SRAH is 1,84,800.

Now the last one is SRSH so, pick up the standard hours which is 1,66,320 our standard rate is 1 so, SRSH is 1,66,320 are you getting it. Now once this 5 calculations are done you have not only done it you have also understood it, it is very simple to calculate the overheads.

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Now, let us go for calculating each variance, I am starting with the fifth one because that is the total variance, it is known as fixed overhead budget variance or sometimes it is called as fixed overhead expenditure variance. So, it is a difference between this and this, standard rate or standard hours and that is standard overheads compared with the actual overheads. So, SRBH into ARAH I will try to open everything so, that it is more clear to you.

Now next is comparison between the volume. So, we have compared 160 and 168 first that gives us the difference of 8,000 adverse that is known as fixed overhead expenditure

variance. Now fixed overhead volume variance you know that volume is because of change in units so, we are comparing SRSH with SRBH got it SRSH and SRBH, see first one we compared this and this. So, we have not considered volume side we are just looking at what was budgeted and what was what is incurred, that gives us this 8000. I started with this because it is easy to calculate then we went into number of units. So, it is a comparison of SRSH with SRBH so, it is 1,66,320 versus 1,60,000.

Now, you will see that we have produced more units so, we get a positive variance 6320 favourable now this 6,320 is in term divided into 3 parts. Now there are 3 reasons for it, one is a calendar part calendar means because of more units of work because of more days what happened. So, calendar variance is SRRBH with SRBH. So, you can see it is a comparison with these 2 176 was absorbed versus 160 so, you get 16,000 favourable.

One more reason is capacity; that means, every hour how much more we have worked, we know that instead of 8,000 per hour we have worked for 8,400 that is a difference between these 2 figures SRAH that is standard hours for standard rate for actual hours with standard rate for revised budgeted hours. So, differences 8,800 favourable got it SRAH with SRRBH.

And the last one is a efficiency part; that means, within the hours we have worked how much units we have produced. So, it is a difference between SRSH with SRAH you will see there is a lot of adverse in that 18,480.

Now, if you compare efficiency if you add efficiency plus capacity plus calendar the total of these 2 will be your volume are you getting me, because we were breaking down volume in for 3 reasons capacity related reasons, calendar related reasons and efficiency related reasons, are all together we have put in a positive performance 6,320 favourable, but on expenditure side it is a slightly negative performance, because we have spent 8,000 more. Now all together that is if you compare SRSH with ARSH or in other word standard with budget.

Then you will get the total fixed overhead variance getting it total variance; that means, 1636 1,66,320 with 1,68,000. So, you will get 1,680 adverse. So, this is a total of volume plus expenditure I hope you have got it we have gone a little fast, but please try to solve more such cases and then it will become more clear to you, with this we are also completing our course of 10 hours I hope you have found it very useful we are started

with discussion of what is meant by cost accounting, what is management accounting, then we have seen that we have gone for calculation of what is known as CVP and BEP analysis or marginal costing, which is extremely useful for decision making.

After that we have discuss the budgetary control which is useful for decision making as well as control purposes and towards the end we have discussed standard costing which is a primary technique for cost control purposes. Overall cost and management accounting will be useful for both decision making as for as well as control. I hope you become very active in the discussion forum put up your question also try to solve others questions, please try to get some standard textbook on cost accounting or you can also see the notes which we will share.

So, that you can do more practice and there will be a conceptual clarity and that clarity you will also be able to use in your real life scenarios, to cut down the cause as well as take more objective and fair decisions. This is going to be useful both for students it will be also useful for self employed people who might be doing their own enterprise or business. So, it will be a lifelong useful conceptual learning for you with this I will stop here [FL].