Cost Accounting Prof. Varadraj Bapat School of Management Indian Institute of Technology, Bombay

Lecture - 19 Material Cost Variances

[FL]. In our last session we had started discussion on standard costing and variance analysis. Now what are the steps in standard costing? The first step was setting up of standards. So, we have to set reasonable standards which apply as a benchmark for achieving that in the normal operations then second step is we measure the actual and compute the variance.

Variance is a deviation between standard and actual and the third step is variance analysis that means, breaking down the variance into it is causes and try to know the reasons. I hope you have understood this much. Now, coming to the causes of variances we know that it can be broken down into 3 main causes.

(Refer Slide Time: 01:31)



Efficiency related, price related and volume related of that volume related is mostly applicable to fixed overheads.

(Refer Slide Time: 01:42)



For variable cost like material labour, there are 2 major causes; efficiency related and price related.

(Refer Slide Time: 01:49)



Then we had discussed these simple formulas to break down the material variances into it is causes.

So, the total material cost variance is a difference between standard cost and actual cost. That is why it is standard quantity into standard price minus actual quantity into actual price, then material price variance is a difference between prices that is standard price minus actual price in bracket multiplied by actual quantity and for usage variance it is a difference between the quantity standard quantity and actual quantity into standard price.

Now, one question that may arise in your mind is whether this quantities refer to input quantities or output quantities. Keep in mind that we are talking about input quantities because we are calculating cost variances cost is an input. So, we will consider the input quantity.

You may have one more doubt as to why here your actual quantity while why you here you got a standard price. Last time you have discussed it. Right now instead of just discussing it theoretically I would like to take you to a case try to solve the case. I think while solving it you would have understood why what is the logic of keeping this as a formula. Please take up the case of Vishnu Limited.

(Refer Slide Time: 03:35)

Z 🖬 🖉 - 19 - 14	NAME AND DESCRIPTION OF	Const Accession of the					×
Narmal Page Page In Narmal Page Page In Layout Preview Worldook	net Teplane for the first former over a boling	n roliny Save Swith Workspace Windows	Auros Auros				
89	A A	В	С	D	E	F	
1 Que	estion						
2 Visl	hnu Ltd.						
3 Stan	ndard						
4 Outp	out units 500, Input Units 650 @ 8 pu						
5 Actu	lal						
6 Outp	out units 600, Input Units 750 @ 9 pu						
7							
8 Com	npute Material cost variances						
9			1				
10							
12							
	/wh /0 /	04				2000 0	+1
O Type	here to search 🔱 🗄 🗎 😧 💼 😰 🜃			1	~ 10 JL 01 d	6 ENG 19-06-2019	R.

I hope you have got the printout. If not take the printout first and try to solve it along with me. This is a very simple case very small case. The standard as per the company's record is output units are 500 and input units are 650 at the rate of 8 per unit. In reality for the same period the actual output units are 600 and the input units are 750 at 9 per unit and we have to compute material cost variances.

Now, tell me how will you proceed. If you want once again I will show you the formulas. We have to calculate these 3 variances cost, price and usage. Now have a look at the case very small just 4 5 3 4 items look at them carefully and tell me how will you proceed. So, in material cost variance you know that we are comparing the quantities and we are comparing the prices.

So, shall we compare output quantities or input quantities that the first thing. I think we have already discussed it our comparison is essentially for input quantities because we are calculating cost variance. So, 750 is a input at 9 rupees. So, we are spending on 750 not on 600. There will be some inherent loss in the process. So, when we put in 750 units we get output of 600. As per the standard if you put in 650 units you get output of 500 ok, but 750 refers is what we purchase at 9 rupees. So, what we need to compare our input units. That is first.

Now, can we directly compare 750 with 650 and 9 with 8. This is bit confusing you can compare 9 with 8 because 9 is a actual price and 8 is a standard price. So, you know that it is a difference of 1 rupee, but can you compare 750 with 650. The answer is no because 750 is a input for output of 600 units while at standard 650 is a input for output of 500 units.

So, we cannot compare input which is for 2 different outputs. Got it? We have to standardize it or we have to bring them one equal footing. For example, suppose a student of one board a state board give the exam for 700 total marks of 700 CBSE student gives exam for 900 marks can you compare the absolute marks.

You cannot. Either you have to converted into percentage or convert one marks into another with equal weight age. Same way you cannot compare 750 with 650. First of all you have to write actual which you can directly write no problem in that, but calculate the standard for actual output and then that standard and actual will be comparable. For calculating the material cost variances we will have to understand that we need to revise the standard as per the actual output. (Refer Slide Time: 07:48)

X) H	0 · 0 · 1	Tim Trans Grandelines
10	Forme must Replayed Formalis Data Review View Advantat	+ O = d II
100	Q Copy - If a d = 1 − 1 − 1 − 1 − 1 − 1 − 1 − 1 − 1 − 1	al format as Neutral Calculation China Call
0	Shoed 5 Fort 5 Mignet 5 Noder 5	Pole Cells Litting
	A	B C D*
4	Standard	
5	Output units 500, Input Units 650 @ 8 pu	MATERIAL COST VAR -510
6		MATERIAL PRICE VAR -750
7	Actual	MATERIAL USAGE VAR 240
8	Output units 600, Input Units 750 @ 9 pu	
9		0
10	Compute Direct Material cost variances	\
11		. In the second s
12	Standard	Actual
13	Output units 600, Input Units 780 @ 8 pu	Output units 600, Input Units 750 @ 9 pu
14	6240	6750 -
15	WN	
16	Standard INPUT	
1	780	· · · · ·
Featy		
-	🕐 Type here to search 🛛 🖗 🖻 📴 📴 📴 📴	

Now, let us see how it is done. Firstly, you try to write down the standard and actual and try to solve it along with me. Actual is very simple to write. Output is 600, input is 750 at 9. So, 750 into 9. The input actual input cost will be 6750. I think everybody would have got.

(Refer Slide Time: 08:24)

2 H	O	
10	O.C. Calls (1) -> -> =>	and Force as Andrew Concentration of the Concentrat
	A	в
7	Actual	MATERIAL USAGE VAR
8	Output units 600, Input Units 750 @ 9 pu	
9		
10	Compute Direct Material cost variances	1
11		
12	Standard	Actual
13	Output units 600, Input Units 780 @ 8 pu	Output units 600, Input Units 750 @ 9 pu
14	624	0 6750
15	WN	
16	Standard INPUT	
17	78	0 0
18	=650/500*600	
19	5	
20	the set of	
Paady N	O Tope here to search 3 El 🗭 🗖 📦 🕅 🖾	

As far as the standard is concerned you will have to make some extra calculation. First of all you will need to calculate the standard input because as per the given problem the input was output was 500 for which the input was 650.

Now, since the actual output has increased to 600 company will be permitted to use more raw material. That is the standard input for actual output. So, I have tried to calculate it here 650 divided by 500 into 600 because the output has increased we need to output has gone up from 500 to 600 we need to increase the input proportionately which gives us 780 as a standard input. So, for calculating the standard cost we have written output units as 600 and input units as 780 at 8 rupees. So, it gives us standard cost of 6240.

So, now we are comparing 6240 with 6750. Now we have to calculate 3 variances first is cost then price and then usage. As per as the cost variance is concerned I think you know the formula it is a comparison of standard cost with actual cost. So, it is a comparison of 6240 with 6750. So, 6240 minus 6750 you get minus 510 indicating that it is an unfavorable variance.

Now, to break it down there are 2 causes; one is because of price related reasons. You can see your the prices increased from 8 to 9. So, in bracket we will take standard price 8 minus actual price 9. It is a difference of one multiplied by actual usage that actual usage is 6 is 750.

So, now the variance is 750 adverse. Are you getting? It is minus 750 or 750 adverse you can also see what is written here in bracket. Please compare it with the formulas which were discussed just now. So, the formula I will repeat once again it is standard price minus actual price into actual quantity of input. So, it is 7 minus 750.

Now, the other variance is usage. That is 240 favourable. So, in usage you are comparing the 2 inputs. So, standard input is 780 actual input is 750. So, department could have you 7 u t units, but they have use only 750 units. So, they have saved 30 units. So, it is plus 13 bracket into standard price that is 8. So, you get 240.

Now, just cross check it plus 240 minus 750 you will get minus 710. So, material cost variance is now broken down into price part and usage part. Have you got it. Please see it again and we will also be giving you some practice questions that also you should try because similarly you are going to calculate for labour as well as variable or it is fine. So, try to understand the concept correctly.

Now, we will discuss further on other types of variances. So, we have just discussed material variances and also done one case on it.

(Refer Slide Time: 12:56)



Now, let us go to labour variances. Now as far as the labour is concerned what could be the reasons for labour variances? It can be because of change in the design or quantity, because of poor working condition, because of wrong scheduling, because of improper placement of people. All these lead to change in the efficiency; that means, either more hours consumed or less power consumed.

The second part is because of the rate. Due to increments or high level cause or because of overtime the labour rate can also change. So, basically the labour variance is divided into 2 causes efficiency related causes and quantity or hour related causes. I will just show you the formulas.

(Refer Slide Time: 13:53)



So, the labour cost variance. This is the total variance it is a comparison of standard cost with actual cost.

So, standard hours into standard rate minus actual hours into actual rate; now it is broken down into rate related issues just as in material their got material price variance here we are having labour rate variance ok. So, labour rate is equal to rate variance is equal to actual hours into comparison of labour rates. So, standard rate minus actual rate getting it.

Now, the efficiency variance is comparison with number of hours consumed. So, labour efficiency variance is standard rate into standard hours in standard hours minus actual hours. There can be third variance that is known as idle time variance. Now idle time is a time which is vested because of some reason like lack of instruction or lack of power etcetera.

So, idle time variance there is nothing to compare whatever our idle hours are all loss. So, idle hours into standard rate. It is always adverse because idle time is always a negative variance. Got it? So, labour cost variance can be divided into rate, efficiency and time. Now, we are not solving separate cases for it. If you study this material carefully similar formulas are applied for labour also. Fine? (Refer Slide Time: 15:45)



Now, we will go to the third variance. They are known as overhead variances. They may happen because of this reasons like a wrong planning or over absorption or under absorption which happens due to extra units produced or less units produced than what was budgeted, sometimes reduction of sales.

Now you may wonder that why reduction of sales can affect overheads. It can affect overheads because reduction of sales leads to reduce quantity and reduce quantity affects the fixed overhead absorption. There can be break downs or power failures. These are various reasons for overhead variances. (Refer Slide Time: 16:25)

• Variable OVerheads (OH) Variance • Variable OH Cost Variance= (Standard	ce d
Hrs X Standard Variable OH Rate) - Actual OH Cost	_
 <u>Variable OH Expenditure Variance</u>= (Actual Hrs X Standard Variable OF Rate) – Actual OH Cost 	= -1
Variable OH Efficiency Variance= (Standard Hrs - Actual Hrs) X Standard (Variable OH Bate	
Dr. Varadraj Bapat 26	

Now, please have a look at the formulas. Now variable overhead variances are pretty similar to the material or labour variances which we have studied. So, variable overhead cost variance; this is standard hours into standard variable over rate minus actual cost. It is always a comparison of standard and actual cost. The next is variable overhead expenditure variance. This is the amount which has been spent.

So, actual hours into standard variable overhead rate minus actual overhead rate then variable overhead efficiency variance; now this variance is caused because of efficiency related issues. So, it is a comparison of standard hours minus actual hours into standard variable overhead rates.

Now, if you are getting sort of boggle down just compare it with the labour rates because they are more or less same. So, instead of labour cost there we have variable overheads, then labour rate you can just see we have got variable overhead expenditure and labour efficiency a similar one is variable overhead efficiency. Are you getting it.

So, variable overhead cost is broken down into expenditure part and efficiency part. Expenditure part indicates that excess pending was done. Efficiency part indicates that more hours were consumed because more hours leads to changes of overhead absorption because the overheads are being charged at standard variable overhead rate ok. So, this is variable overhead variance. (Refer Slide Time: 18:29)



Now, let us go to fixed overhead variance. Now fixed overhead variances again first one is very simple that is fixed overhead cost variance. This is the absorbed overhead or the standard overhead minus actual overhead then the expenditure variance this is the amount spent. So, budgeted hours into standard rate that is the budgeted amount minus actual overhead amount and volume related issues volume is because of more or less quantity. So, it is standard quantity minus actual quantity into standard rate ok. Now this is the breakdown of fixed overhead variance.

(Refer Slide Time: 19:13)



Now, the last type of variance that is the sales variance. Now we make some budget of sales. In the market we know that actual sales can differ; one reason is obviously, because of prices because our budgeted price and the market price can vary that is known as a price variance, the second is because of market size. So, the commodity in which we are dealing with the size of the whole market might increase or decrease that affects our sales, the third one is because of market share.

For our company we have got certain percentage of share of the whole market that share may get affected because of competitors. So, if competitors are aggressive and if their campaigns effective our market share can shrink. Other way round if we are effective our market share can increase. These are the major reasons for sales variances.

(Refer Slide Time: 20:26)



Now, these are the formulas again very similar to material variances. The total one is known as sales value variance. This is budgeted sales minus actual sales, then sales price variance which is the comparison of prices that is actual price minus budget price into actual quantity then we have got sales volume variance. Volume here refers to quantity. So, it is a comparison of quantity actual quantity minus budgeted quantity and we multiplied by budgeted price. So, total value can be broken into price related reasons and quantity or volume related reasons. Getting it? Now, the last part we have already seen different types of variances.

(Refer Slide Time: 21:20)



Now, we can understand the advantages and disadvantages. The important advantage is you can make sensible comparison because of standard costing because we have set objective standards the actual performance can be compared with an objective benchmark, then for management they can employee management by exception.

So, instead of looking at all aspects they can just concentrate on those cases where there are heavy deviations.

(Refer Slide Time: 22:00)



That is these are the major advantages. We will see then other advantages also. It is a very good mean for performance evaluation because otherwise manager will be always unhappy that implies or not performing, employees will always feel that they are not being fairly evaluated, but in standard since an objective standard is set and it is communicated in advance it becomes easy to compare the variance.

The next is it also gives more stable price because the prices are based on standard cost they do not change every now and then. So, output prices also need not be changed frequently. There are a few disadvantages also that it is too comparison and too much comprehensive to use because it is not very easy to set up the standard costs and keep on revising it. So, it becomes difficult to use it in practice.

It is very difficult to estimate prices and rates because market keeps on changing that becomes the that makes applicability of standard costing with difficult. It may not be useful in the market scenario where technology changes frequently because unless there is a stability it becomes difficult to set the standard and keep comparing it over a period of time and the fourth point is the focus in standard costing is on minimization of cost which is a positive side, but quality of the service is often ignored because of excessive emphasis on cost.

So, these were the advantages and disadvantages of marginal costing. So, with this we will stop here. I will request you to go through the material case again and again. Next time we are going to discuss the cases on the fixed overheads. Till that time let us stop here. Please revise the case which we have already solved [FL].