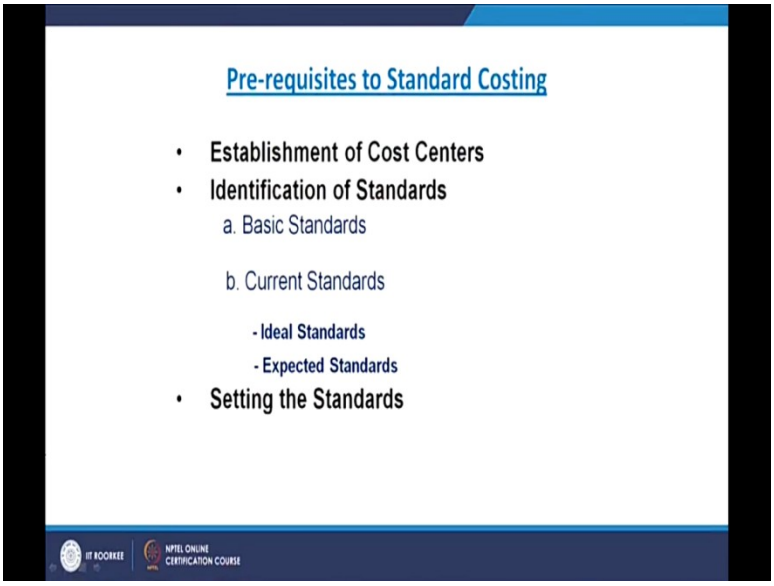
Management Accounting
Professor Anil K. Sharma
Department of Management Studies
Indian Institute of Technology, Roorkee
Lecture 30: Pre-requisites to Standard Costing

Welcome students. So we are in the process of learning about the Standard Costing and in the previous class I discussed with you that how the standard costing is different from the budgetary control or the budget and budgetary control systems and how it is useful in controlling the cost of production. So before we go ahead with the different parts of the Standard Costing and learn about this technique in detail. We will discuss and learn about the some prerequisites of introducing or implementing the Standard Costing system in any organization in any manufacturing or the service organization, right.

(Refer Slide Time: 1:12)



Now the prerequisites are largely three, one is the establishment of the Cost Centers, number two is the identification of the Standards and three is basically the setting the standards, right. Once we have identified the cost centers, we have say identified the standards, different kind of the standards, then we will go for the, with the process of setting up the standards. So establishment of the Cost Centers, in one manufacturing organization in one form, there could be different cost centers, units and sub-units and since we have to control the total cost of production. So it will not be possible until and unless at what level of the total manufacturing processes the cost has

gone up. Because if you know, if I know I have divided the whole firm to the different cost centers, then what we will happen? We were expecting that the total cost of the product should be say for example we talk about this pen and the cost of this pen was, we were expecting as fifty rupees but actually this cost has come up as sixty five rupees.

Now at what level that cost has gone up without any proper cost centers establishing the cost centers, you won't be able to know how that fifteen rupees extra cost has come up. So for that first thing is we divide the whole firm into the different cost centers. Cost center begins with in case of the manufacturing products, begins with the procurement raw materials, purchase of the raw material. You would agree with me that in any manufacturing process fifty to fifty five percent or sixty percent cost is because of the material, it is the material cost. In this pen say fifty percent or fifty five or say sixty percent cost of this pen is just because of the material we have used to manufacture this pen, so this is biggest contributor to the total cost of the production, largest contributor to the total cost of the production.

So we will have to start from there only, material procurement. So there can be one center, cost center first cost center which will be known as the purchase department or the procurement of material department and we can fix up the pre-decided price pre standardized price that we will have to purchase the raw material, per unit of the raw material or different raw materials at this price, right. Because I told you the exports are involved in deciding the standards, the fixing of the standards they know it, what are the different types of materials that are required, where they are available in the market, at what price they are available in the market, where we should procure that material and at what price we should procure that material, from where we should procure the material. So on the basis of that, the purchase department, the procurement department is communicated the information or the standards.

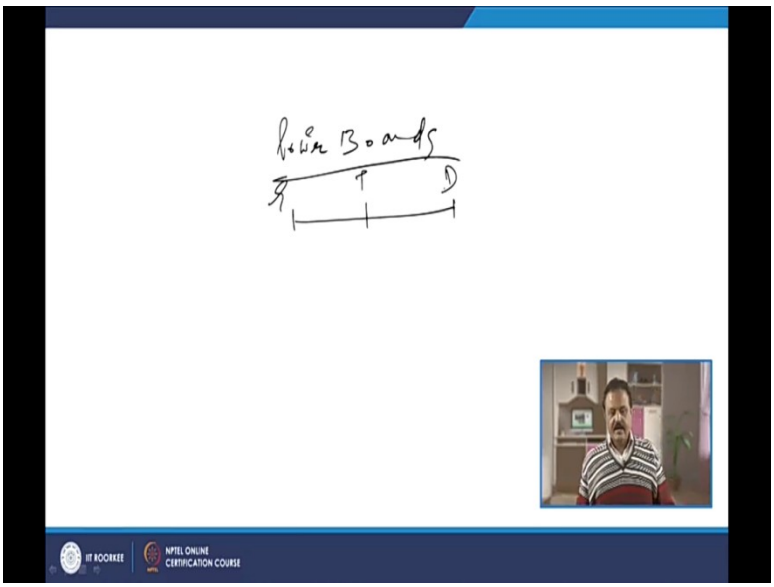
Second could be the say now the storage department, once the materials comes into the firm, because purchase department job is to purchase the orders, identify the source, negotiate the price and fix up the say place the order. When the material comes, then it has to go to the store, store can be the another cost center, because at the store level also the cost is cost, storage itself has a cost, investment made in the material has a cost, inventory inventory cost is there, right which is the storage cost, which is the investment cost, which is the obsolesce cost right and even the out of stock cost.

So store, if it is not properly managed or maintained then the material can get spoiled there also and or that material can become obsolete and we will have to pay the cost for that. So storage department can be the one department which can be the one independent center. Then from the storage the material goes up to the different manufacturing processes. So, all for example if there is only one manufacturing process, then that is the cost center. Say for example material passes through four different processes sub-processes that one is the semi-finished, then second semi-finished, third semi-finished, then let the fourth definitely be the finished product. Then either you can divide the four processes into four responsibility centers or you can say, say that the total manufacturing component is the one responsibility center.

From the production it goes to the market, partly it goes to the market partly it goes to the warehouse, because everything is not sold in the market straightaway from the plant. If it goes to the market then distribution cost is the one center, sales after sales service centers these are the two different centers. Material coming to the warehouse again it has the cost, storage cost and that is the one more center. So whole means this components and sub components which are contributing to the total cost of the production, they can be identified as independent individual centers and we can find out at what level what cost is expected and then at next level what cost is expected that way you can device the total standard cost of the product.

And tomorrow when you go for the say, exercising the cost control comparing the standard cost with actual cost, you can find out, because you know what was the purchase, standard purchase price of the material, how much price has actually been paid, what was the storage expected cost, how much storage has incurred, what was the processing cost, how much actually processing cost has incurred, what was the distribution cost, how much actually distribution cost has been paid and how much was the sales and after sales service, we know it in advance we know the actual figures also. You know exactly you know that at what level the cost has gone up, right.

(Refer Slide Time: 7:04)



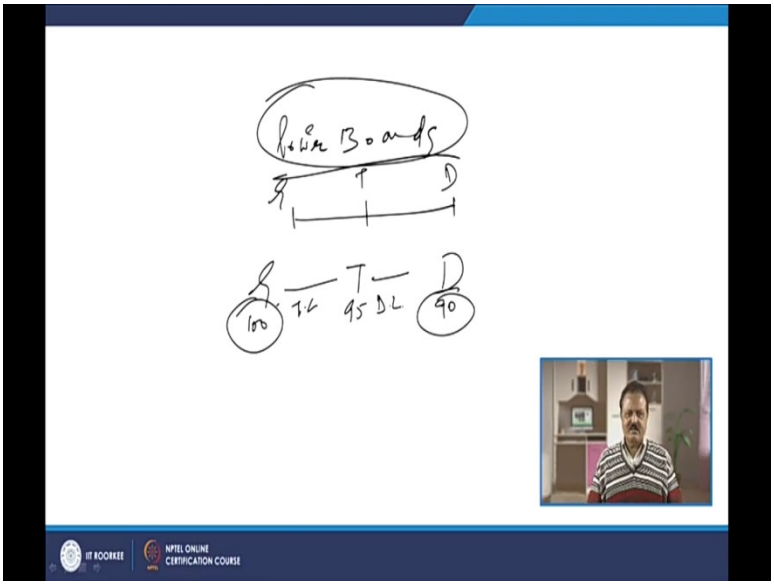
Now I will tell you one classical example about this cost control and in this case will share the I we will discuss the example of the power generating companies right, power boards. These are the power boards you must be knowing that today we have the power companies. So earlier there were the power boards at the different state levels who were generating and distributing the power so they had, largely their operations are divided into the three levels one is this then is this then is this. This is called as the generation, this is called as the transmission then this is called as the distribution.

Now earlier when the power board was there it was a single entity and power board was responsible for all these three operations. They were generating power also, they were transmitting the power also from the place of generation to the one say central grid and then from that grid the power was being distributed to the by that board itself to the consumers to the users.

For example we anticipated that the per unit cost of the electricity which is coming from the generation to the consumer that is expected to be five rupees, but actually the cost has gone up, that has become eight rupees total, if you talk about the total investment cost, total generation cost, transmission cost and distribution cost, total cost has increased and whatever the revenue be we have got by selling the power to the people we have not been able to match that because of our total investment is very high, per unit cost is very high. The revenue we are getting from the

people is very less and ultimately what happened, these power boards started suffering the losses and when they could not sustain the losses, most of the power boards are in a very bad financial position and some of the states have closed the power boards.

(Refer Slide Time: 9:27)



Now to improve the system what the government has done these days, this power sector has been divided into the three different entities. One company is the power board who are responsible for the generation part, they will only generate electricity and another body is created who are responsible for the transmission of the power and third is the distribution sector which is largely privatized.

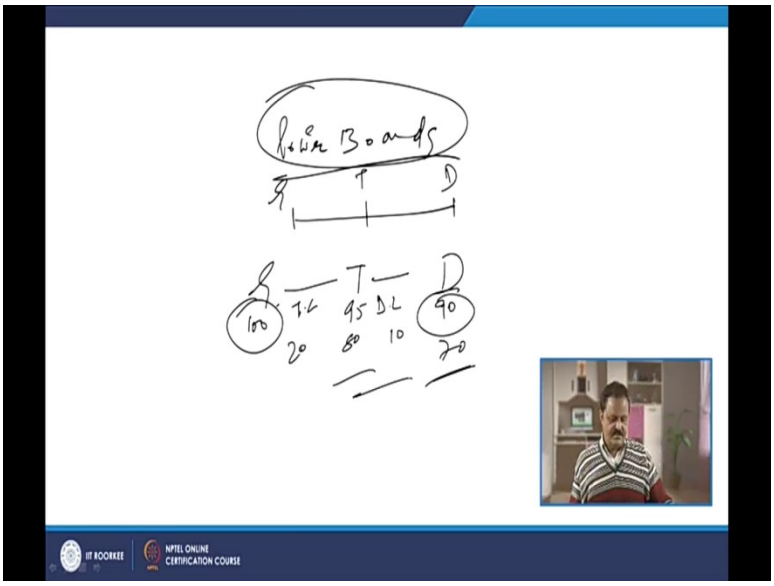
So generation, company generates the power and that gives to the central grid or the marketing company who is known as the transmission company, right. So power generated, after knowing the normal losses after providing for the normal losses. For example 100 unit of the power starts from here right, so we know that as per the normal transmission losses we expect that 95 units must reach here and from this transmission to distribution 90 units must reach here.

So it means you can say that what is the total cost for generating the 100 units plus the transmission and distribution cost, that entire cost has to be recovered from these 90 units, right. so it means the total cost will be divided by the 90 units because this is the, we have generated 100 and normal transmission losses are you call it as T.L transmission losses are 5 units, we can

expect normal losses are there and then for transmission to distribution again the distribution losses are again 5.

So it means that we can understand that the 10 units start from the generation level, only 90 units reach after providing for the 90 units reach up to the distribution company and the costing has to be in a way that the total cost incurred for this 100 units we have to recover by selling the 90 units in the market, so that cost will be total cost will be divided by the 90 units and plus margin of the companies all the three levels and then that will be charged by the people, right.

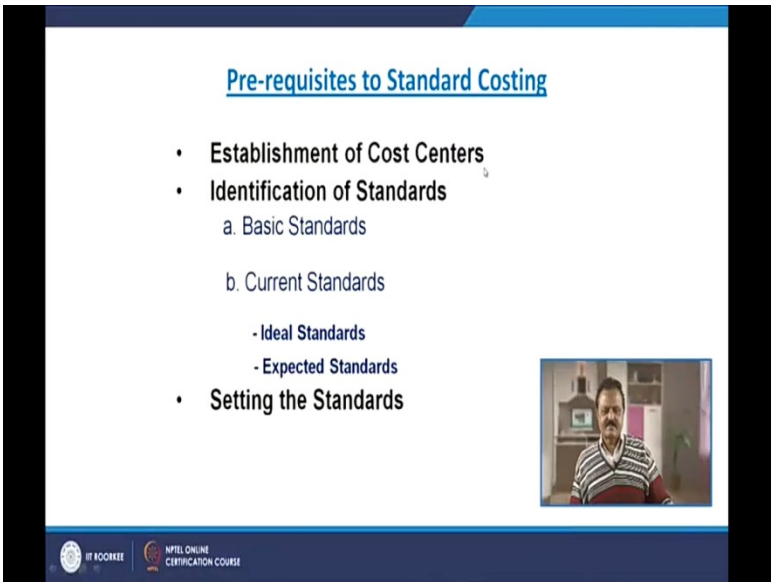
(Refer Slide Time: 10:46)



So it means now you know it that how much units were generated and passed onto the transmission company, expected loss was 5 units but if for example here say not 95 but 80 units were reached and at this level only 70 units have reached, it means that expected loss was what 5 units at this level at this level units. But here we see 20 units at this level and 10 units are lost at this level it means now we can easily find out. These are the three cost centers, one is the generation, second is the transmission third is the distribution and we can easily find out where the problem has come up, whether the generation is the problem or whether the transmission is the problem. So problem is between this spell, this to this stretch or from this to this stretch we can easily find out and fix up the responsibility.

Earlier when there was just one entity, one single entity then all the three operations are done by one single entity, it is not possible to find out, how many units be generated, how many units be transmitted, how many units be distributed in the market, so how can you control the cost. So same is the case with the dividing the whole firm into the different responsibility centers and fixing up their responsibilities because we know in advance that what is expected level of the cost at the one given level of the responsibility center.

(Refer Slide Time: 12:06)



Number two is the identification of the standards. In conceptual part, in the theory in the say normal standard part if you want to know about the theoretical basis of the standards then we know that standards are largely of the two broad categories. One are basic standards and second are current standards. Basic standards are basically you can say that they are sent for the long term, long term period of time that we are introducing one product in the market.

For example when Nirma was introduced in the market for 10 Rupees per unit, so might be that they have set the standard that will keep the cost of production up to 7 Rupees per unit per kg and that cost will be I think for next 3 to 4 years we think we can expect, we can manage with 7 rupees show only and we can keep on selling the product for 10 Rupees for next three four years, so that was the basic standard right. That is the broad guideline you can say, basic standards are the broad guidelines and then keeping that broad guideline we started with 7 Rupees as the manufacturing cost of the washing powder of the 1 kg of Nirma.

Now next 6 months we have to review the standards and then those standards which keep on little we keep on updating or changing, they are called as Current Standards, means where you are incorporating the changes taking place in the different points of time because of the any change in the factor, maybe the raw material cost has gone up, labour cost has gone up. We were expecting that raw material cost will not increase; the labour cost will not increase but it has gone up. So you have to means we have to keep on revising the standards so they are known as the Current Standard as per the current period of time, we can say the current budgeting horizon, for example it is 3 months or 6 months or 1 year.

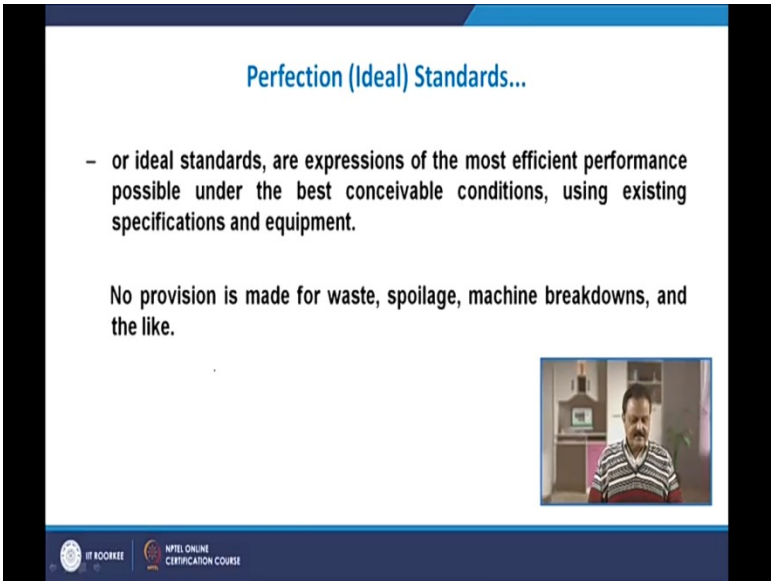
In the current standards also we would say everything goes well. If everything goes as per our expectations then what should be the cost that is called an Ideal Standard. But ideal standard, to attain ideal standard is possible all the times. Now you are saying that you want to manufacture the washing powder, the caustic soda should be available at this price but maybe because of any natural calamities from where the caustic soda is coming from the mine there the production has gone down so we are not able to match the price, price has gone up. Sometimes the supply is a problem we thought that normal supplies are maintained in the market but because of rainy season because of the supply chain problem the caustic soda is not available in the market.

So one standard is the ideal standard that is the everything is available as per our expectations, what should be the cost and then we have to adjust the ideal standards to the attainable standards which are called as expected standards. So finally we will be more concerned about this standard which is called as the expected standards. Expected standard cost that after adjusting for everything as per the current time or the current situation or the current scenario in the market. What is the expected cost of production that is called as the finally standard cost. That is why I began which was discussed in the beginning the difference between the three and their difference when we discussed was the say your different compositions and these different compositions we discussed in terms of that expectations, standards and the standard costing.

So three differences we try to find out in the beginning, so those three different standards are like that and ultimately the standards which are finally developed or evolved are called as the expected standards, most desirable standards, most desirable standard costs, most expected standard costs. Once you have say means thought in your mind after considering all the factors then we keep on calculating the cost for the different inputs and we convert that into the

standard, so that means the expectations are then converted into the standards or the standard cost, standard cost also standard selling price also. We set the standards for both, cost also cost standard also we fix up selling price standards also we fix up and then we go for the actual production in the market.

(Refer Slide Time: 16:18)



So when you talk about the ideal standard, just told you we can read also what is written. Perfection or the ideal standards are expressions of the most efficient performance possible under the best conceivable conditions using existing specifications and equipment. No provision is made for waste, spoilage, machine breakdown and the like, means everything will go as per our expectations, as per our schedule, as per our liking but that seldom happens. So if that is going to happen you are going to have the minimum possible cost the ideal cost in the ideal situation but that is far from the reach.

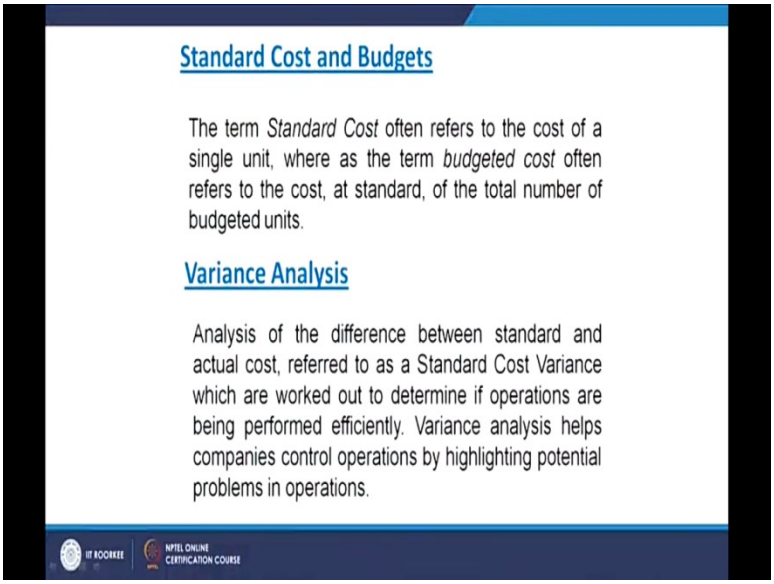
So then we go for something like we call it as currently attainable or expected standards. They are the standards attainable standards based on levels of performance that can be achieved by realistic levels of efforts that can be achieved by the realistic level of efforts. Now for example, you talk about the many products that have the agricultural material as the input and we anticipate that the ideal standard is that everything goes well, there is good rain, good harvest, good crop and good quality material at the reasonable prices available in the market that only we can think, we can only anticipate. But whether there will be good rain, good harvest, good crop

and good quality of material in the right amount quantity coming out in the market that is means not in our hands.

You can think that this should be but we cannot make that to happen so for that we have to go for developing something that is called as currently attainable standards. So in currently attainable standards allowances are made for normal defects, spoilage, waste and the nonproductive time. We have to make provisions for that so that finally the attainable standards can be worked out.

Now we talk about the standard cost and budgets, I have already talked to you but let us go through what is written here. The term Standard Cost often refers to the cost of a single unit whereas the term Budgeted Cost often refers to the cost at standard of the total number of the budgeted units. Then we talked about the first schedule of the budgeting if we recall what was that, sales schedule, total sales we are going to make. There we do not talk about or we did not even talk about that the product A this much of the sales, product B this much of the sale, product C this much of the sale, we were talking about the total sales of the firm.

(Refer Slide Time: 19:13)



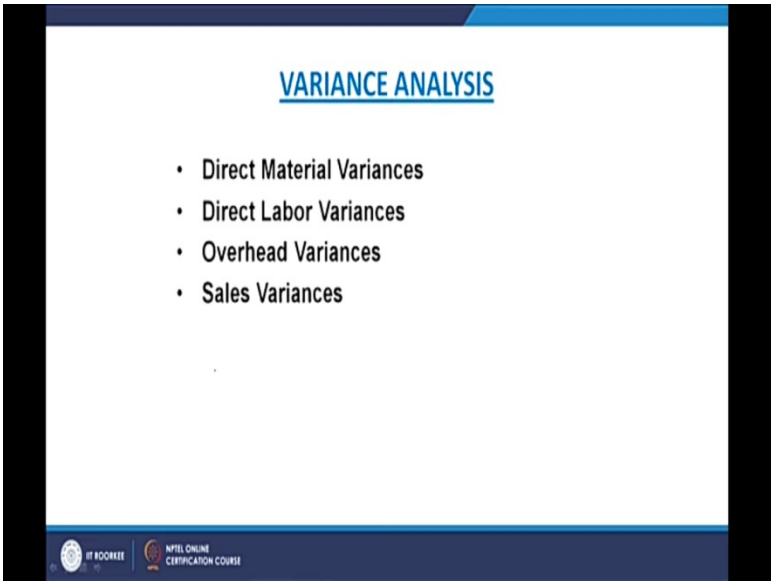
Here we are talking about the product wise , unit wise, so here we are talking about the one unit, there we were talking about the in the budget we are talking about the all units produced and sold in the market with regards to all the products in the manufactured by the firm. And what is its Variance Analysis, analysis of the difference between Standard and Actual cost referred to as a

standard cost variation means which are worked out to determine if operations are being performed efficiently. Variance analysis helps companies control operations by highlighting the potential problems in the operations.

We expected this much to be the material price, per unit of the price of material should be this much but we have got a different price, we are paid the different price. Why? It may be possible that the reason was controllable, it was agricultural material. When we developed the standard we thought we will procure the material when there is the season and we will store that material and we will get the material during the season at the throwaway price, we will buy that in bulk and then we will store the material. But that was not done by the firm, it was not purchased during the season and later on when you are buying from the mandi or the secondary market then you are paying the higher price.

So if the reason was controllable but no action or no effort has been made to control that reason that means we have to hold the people responsible, (procure) procurement department is responsible and we have to check those say reasons so that next time these variances do not occur and you are able to or move towards the standards or achieve those standards which are called as ideal standards.

(Refer Slide Time: 20:52)



Then we talk about something like at now the, Variance Analysis. When we talk about the Variance analysis we go for the various types of the variance analysis which are largely four type of the variances, material variances, labour variances, overhead variances right, because again here we divide the total cost of production into two broad components Variable cost and the Fixed cost. And variable cost largely caused by these three important components, raw material, labour and the other overheads and these three are the direct cost or variable cost. What is the direct material we are using, that is the main component of the cost of production.

In this pen plastic and ink are the two materials we have used and that is the main component in the cost of contributing to the cost of this pen. So it means we have to say be careful about this component. In this specs what is the major material that we are using, the plastic. So plastic component is the or the glass, plastic component that is the important component here. So material is the major component which contributes towards the 50 to 55 to 60 percent of the total cost of production. So first we will analyze the variances with regard to the material.

Second contributor is after this 20 to 25 percent cost or somewhere you can control the cost of means this second component. You can bring it down to 15 to 20 percent and that comes up because of the labour, the second largest contributor into the total cost of the production is the labour. So after the variance we will go for the analysis of the labour variances. And the remaining 15 to 20 percent of the cost of the product comes up because of the third component of the cost and that third component of the cost is the overhead.

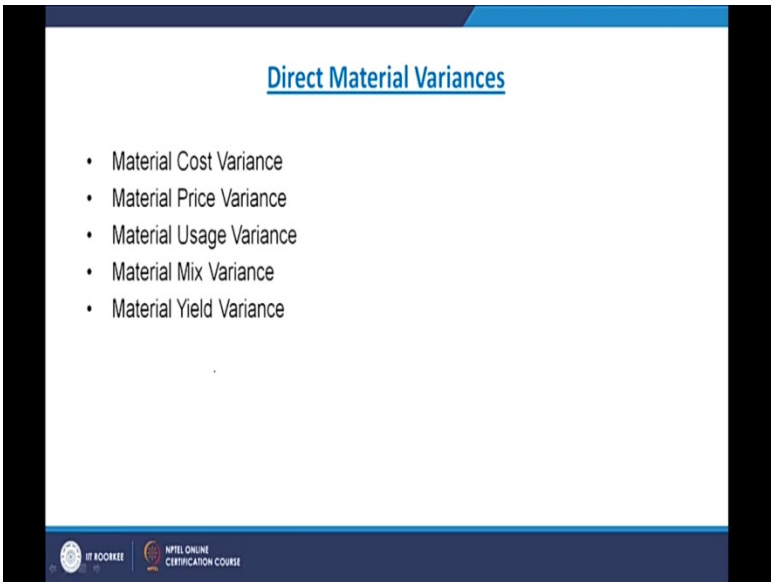
So we will go for the variance analysis of these three and the variable cost or the direct cost. Second component is the fixed cost; there we cannot expect any kind of the variances. Fixed cost remains the fixed whether you manufacture the one unit, you manufacture 1000 units you do not go for the production, you go for the production, you do not manufacture anything, you are going to pay the fixed cost. You are going to pay the plant, building, the machinery depreciation you are going to pay the salaries to the permanent employees; you are going to pay for the rent or the other fixed equipments or installations. So it means you cannot minimize that cost.

But we will have to make sure there also that no fixed cost is going to increase and it is going to remain the same irrespective of the any level of the production. And then next variance we calculate is the Sales variance. What is the sales level be anticipated expected and how much

sales we have attained in the real sense, what variances are there and why those variances were there.

And the fifth variance can also be there which I have not mentioned here and that is the Profit variances. When you go for, you must have seen in the budget part, when you go for say you start with the sales budget and then you prepare the budgeted profit and loss account, so that budgeted profit and loss account. Here if you want to arrive at the organizational profit or loss you have to calculate the profit at the each and every product level. You should be knowing that out of the four products we are manufacturing, which one is contributor to the maximum biggest contributor to the total profit of the firm which is the second which is the third, which is the fourth. So that any time if you have to change the product mix, you know it in advance the performance of the product.

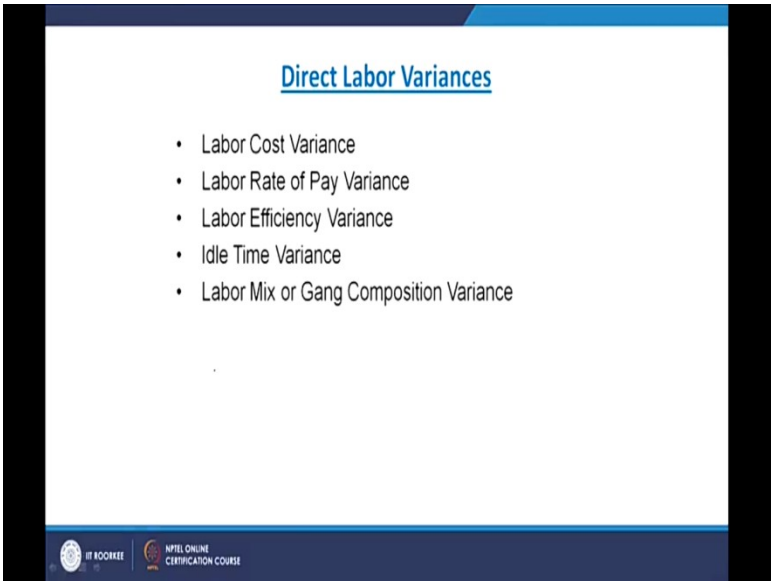
(Refer Slide Time: 24:39)



So now we will talk about the different variances quickly and in the next class I will be then talking about the say means the process that how to calculate these variances. So under the material component we calculate how many, five variances, Material cost variances, material price variance, material usage variance, material mix variance and material yield variance, right. How to calculate these variances, what is he meaning of these variances I will discuss with you then we will know the formulas to calculate these variances, then we will solve problems to

know the process of the calculation of these variances and then try to find out the process of analyzing these variances, right.

(Refer Slide Time: 25:19)



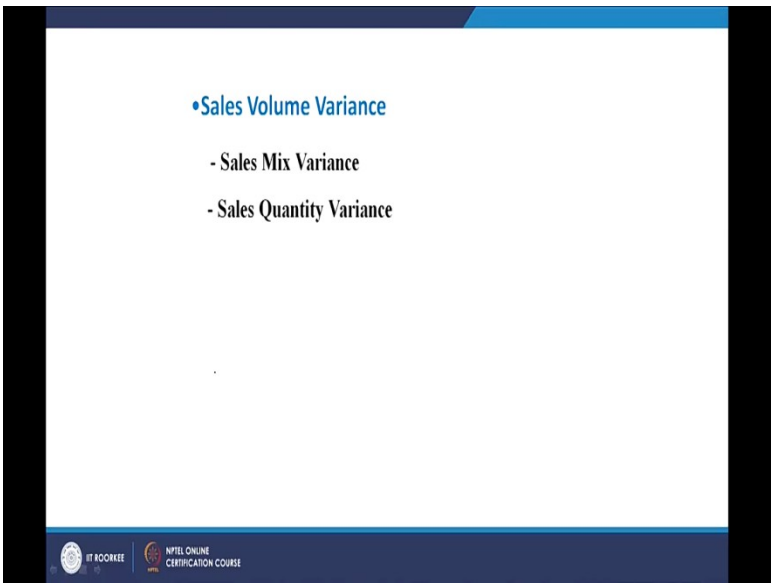
Now we go for the next part that is the labour variances, like material in case of the labour also we calculate the four or five variances. These five variances are again labour cost variance, labour rate of pay variance, labour efficiency variance and labour idle time variance and the labour mix or gang composition variance. These five variances we will calculate in case of the labour also and then in case of the overheads, we calculate different variances, like broadly we divide the overheads into two broad categories, Variable overheads and the Fixed overheads.

So we will calculate the variances for the variable overheads also and the fixed overheads also and then we will try to find out the difference in the two variances and the impact of these two variances on the overall say you can call it as the performance of the overheads.

(Refer Slide Time: 26:15)

And then the Sales variances, Sales variances are you can say sales value variance and sales price variance. So value of the sales is total and value becomes as is the function of the price. So in the sales we will calculate the sales value variance, we will calculate the sales price variance and then we will calculate the sales volume variances, because value is depending upon the price and price also depends upon the volume of the production and sales.

(Refer Slide Time: 26:43)

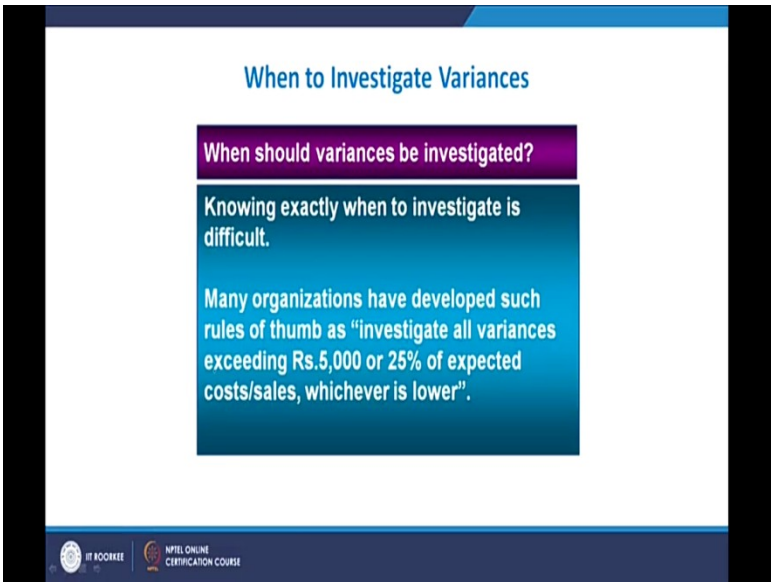


So we are have to calculate the two variances here and under the sales volume category that is the sales mix variance, sales quantity variance, right.

And then is the profit and loss variance that we fix up the budgeted profit each, product wise and how much profit we actually attained from those different products right. So we have already set the standards for that and then we compare the budgeted and the actual profits so that anytime If there is any problem in the manufacturing process, say raw material is not available only, labour is not available or some product we want to find out has become least profitable.

We want to drop the product, if you want to introduce the new product deciding and re-deciding the product mix you can decide on the basis of the products who are the biggest contributors to the total profit, who are the least contributors to the total profit and who are the best one to be retained and who are the worst one to be dropped. So profit variances are very very important.

(Refer Slide Time: 27:51)



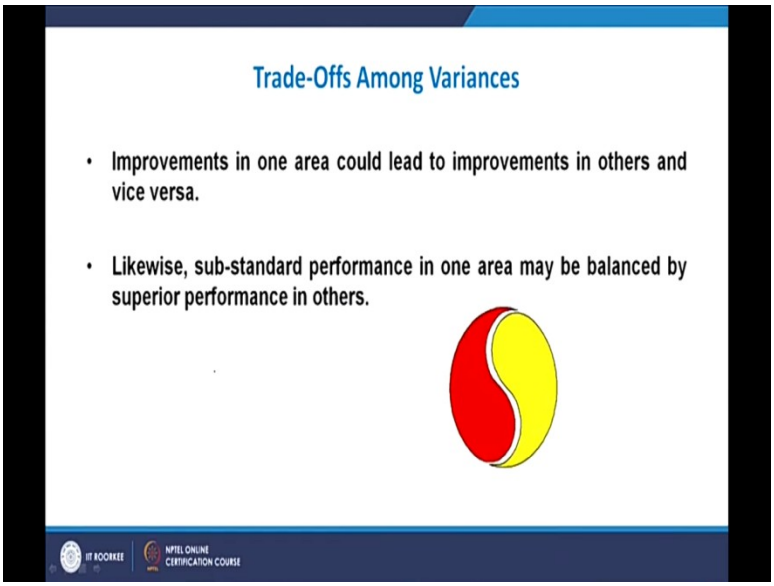
So question arises, I have already discussed this part with you during the budgeting process, but gain let us recall it. When to investigate the variances, when should variance be investigated? Knowing exactly when to investigate the variances is very very difficult, it is written here. But largely we can set the threshold level. I have told you in the previous classes during the budget discussions that either in terms of the percentage or the absolute value, we can fix up the

threshold here, because ultimately the cost and benefit analysis that we have to do every time and in case of the variance analysis also the analysis is important, right.

For example in this case we have written many organizations have developed such rules of thumb or threshold levels as investigate all variances exceeding Rupees 5000 or 25 percent of the expected cost sales, whichever is lower. Either you can fix up the threshold level in the absolute terms or in the percentage terms. If it crosses 5000 more than 5000, maybe the material cost, the labour variance or the overhead variance, if it is more than 5000 we will investigate it or in terms of the percentage if it is the 25 percent as compared to means the actual as compared to the budgeted, again we will say go forward.

So you can either fix up the actual standards or threshold levels or you can in terms of the percentage you can fix up the rule of thumb standard or the threshold level. Once it crosses that level, we will have to investigate the variances.

(Refer Slide Time: 29:19)

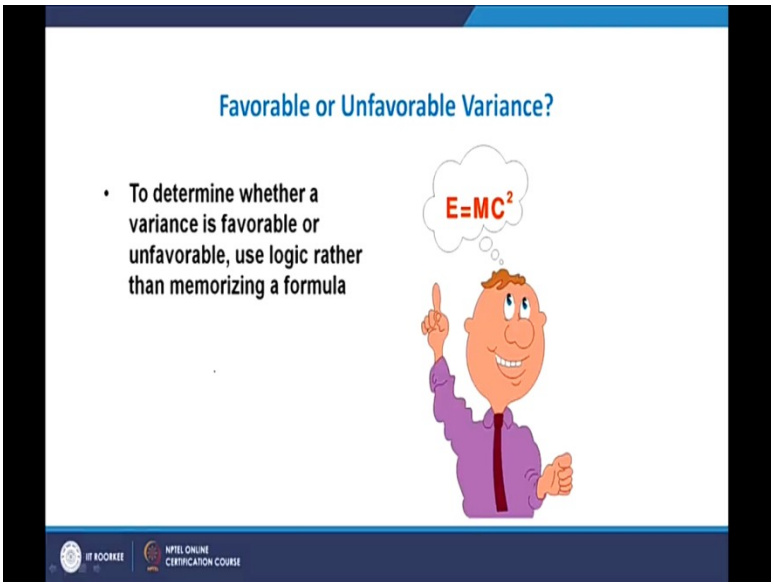


And then Trade-offs among variances, improvement in one area can lead to the improvement in other areas and vice versa. Likewise sub-standard performance in one area may be balanced by a superior performance in other areas. It may be found out that it is not the case that all the products will perform equally or all the markets in which the firm is operating they will perform equally. No. But we should try to means make it happen that is at losses in one market or less

profit in one market could be made good from the other market, losses from the one product or lesser profits from the one product should be made good in the from the other products and overall profits of the firm should not be affected.

So if it is possible we can do that and that is going to happen if you know that which product is the biggest contributor to the profit which one is the lesser contributor to the profit, which one is the loss making product. So that you can take the corrective actions and finally whatever the budgeted profit for the given period of the time for the firm as a whole remains same or that can be attained.

(Refer Slide Time: 30:28)



And lastly I will discuss with you is Favorable or Unfavorable variance. You call it is favorable, for somebody it may be favorable, for somebody it may be unfavorable, right. And here you see to determine whether a variance is favorable or unfavorable use logic rather than memorizing a formula. Use logic right, for example we thought that the price of the raw material should be say 10 rupees per unit right, but actually when we procure the material from the market we found it for say 13 rupees per unit right.

Now 10 if you compare keep on comparing 10 with the 13, then you would say variance is there because standard was there and we have paid 13 rupees. But if in the given situation or the current situation even the firm has got that material for 13 rupees which was otherwise available

in the market for 20 rupees, then still you should be knowing it well in advance or in a proper manner that there is no variance.

You do not compare 10 on the 13, do not kill fly on fly, you have to be rational here that that was the standard price if everything goes well, for example if it was agricultural material and there is no crop, the total crop is we can call it as devastated or there is a loss of the crop. No good material is coming in the market and whatever material is coming in the market that is at a higher price, still the purchase department has been able to manage a material which is available 20 rupees in the market for 13 rupees, you should not keep on comparing 13 rupees with 10, you should compare in this case 20 rupees with the 13 and you should appreciate the efforts fo the procure procurement department, right.

So here E equals to MC square, excellence is equal to motivation plus double of the commitment, right. So this is the formula given by the renowned scientist but we apply in Management also, E equals to MC square and that is the motivation and double of commitment, if there is a motivation among the employees and the different stakeholders of the firm to improve the performance and they are committed ones then certainly you say that the variance analysis should be done in that spirit, in that logic in that manner so that we can say that whatever we wanted to achieve we have achieved that and it has happened because of the motivation and the commitment of our employees.

Do not simply keep on comparing the numerical values with the numerical values, sometimes you have to apply the logic also. So you can normally apply the numerical values but you apply he common sense also and then you see that whether actually the variances are there or the variances are not there, right. So now this is the one problem which we will discuss, like this we will have so many other problems also.

I will bring so many other problems here and then we will discuss these problems and we will try to know about the say the process of calculation of the different variances but before doing this kind of the problems, in the next class I will discuss with you first the formulas of calculating the different variances and then we will solve these problems. So first we will start with the material variances then we move to the labour variances then we will move to the overhead variances. So, that all I will discuss with you in the next class. Thank you very much!