Management Accounting
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Lecture 55: Applications of ABC - I

Welcome all! So, now we are in the process of learning about activity based costing. In the previous classes, I discussed with you the concepts of the ABC and try to clarify that how ABC activity base costing is better than the pay option or the total costing system while say calculating the total cost of production and then fixing up the selling price. So, we have seen theoretically that what are the major differences that how the problem of overcosting of the products and undercosting of the products can be taken care of.

And if we move to the ABC from the absorption costing system in that case I think it will be a better option for the companies to correctly cost their products and then price the products. But the limitation is I told you is of this system is that it is very, very expensive. So, before implementing this system from we must make sure that there fixed expenses are very high and there is a complete diversity of the products. They are manufacturing more than 2 products, 1 or 2 products means 3, 4, 5 products they are manufacturing.

So, ABC is implementable. Now, after this conceptual discussion and the basic learning about the ABC now today in this class as well in the next class we will discuss 1 case which will help you to understand that how means the ABC helps us to calculate the actual cost of production correct cost of production as compared to the total cost of production and what is the major difference between the 2 techniques, right. So, if you talk about these differences and you want to learn about. Please understand this first case carefully and after that when I solve it you have to carefully understand it that how I have solved it. What are the important say considerations I have born in mind?

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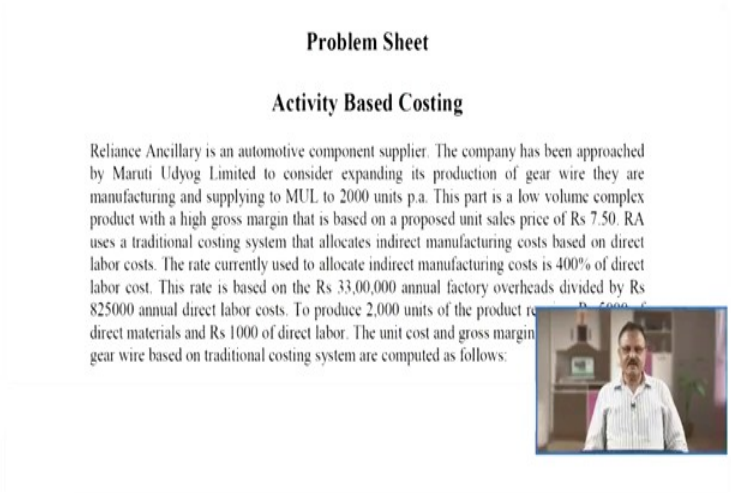

Say this case is Reliance Ancillary automotive component supplier. This supplier is an ancillary unit who is supplying its components to the inputs to the Maruti Udyog limited and Maruti Udyog is the final user of their products. So, they are only say they are manufacturing different products but 1 product which they are supplying to Maruti and there is some problem in the costing system of this this company this reliance ancillary.

And whatever the cost they are calculating by calling the total cost system the that is not basically the correct cost that is much less as compared to the actual cost. So, we have now to understand that how they are calculating the cost as at present and how means the correct cost can be calculated, right. So, if you talk about calculation of cost say cost being calculated here, I have given the total details in this case. First we will understand the case carefully and then we will solve it.

So, Reliance Ancillary is an automotive component supplier. The company has been approached by Maruti Udyog limited to consider expanding its production of gear wire. They are manufacturing and supplying it to up to 2000 units per annum, right. This part is a low volume complex product with a high gross margin that is based on a proposed unit sales price of 7 rupees and 50 paise. Per unit price which that ancillary reliance ancillary is selling to Maruti is at 7 rupees 50 paise.

Reliance ancillary uses a traditional costing system that is the absorption or the total costing system that allocates indirect manufacturing cost based on direct labor cost. I told you many times that overhead cost indirect overhead cost or fixed cost that is allocated largely on the basis of either the material or on the proportion of labor or on the basis of labor and not directly because there is no other basis. So, in this case they are allocating it these indirect costs or the fixed overheads on the basis of direct labor.

The rate currently used to allocate indirect manufacturing cost is 400 per cent of the direct labor cost. If 1 rupee is the direct labor cost then the overhead cost is the 4 rupees. So, it means that you can understand that the fixed cost is very high and indirect cost is very high. So, first requirement of implementing ABC in this firm is fulfilled that yes they are manufacturing multiple products so that diversity is also there and the cost fixed cost part indirect cost part that is also very high.

The rate currently used to allocate indirect manufacturing cost is 400 percent of the direct labor cost, fine. This rate is based on rupees 3300000 annual factory overheads divided by 825000 annual direct labor cost, right. So, it means what is the total cost here; that is the total means the total overhead cost is 3300000, right; 3.3 million annual factory overheads and they have to be divided by what that is the labor cost. What is the labor cost here; 825000 is the annual labor cost. So, automatically the overheads are 4 times of the annual labor cost.

To produce 2000 units of the product requires 5000 units of direct materials and 1000, sorry. To produce 2000 units of the product it requires rupees 5000 of the direct material and rupees 1000 of the direct labor. So, material cost is 5000 rupees labor cost is 1000 rupees and then the ratio of the say overhead to labor is 4 times.

So, it means depending upon the total allocation because these 3300000 they are incurring for the total firm all the products they are manufacturing. So, how much it has to be allocated to this gear wire product. We will have to find some basis for that. The unit cost and the gross margin percentage for the gear wire based on the traditional costing system are computed as follows.

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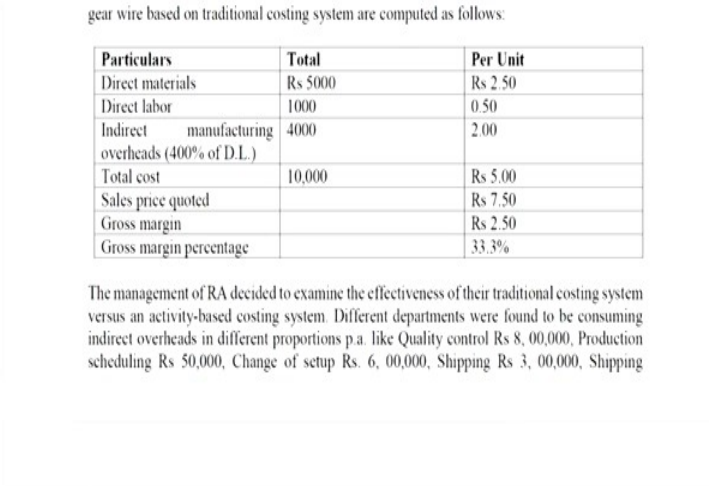

gear wire based on traditional costing system are computed as follows:

Particulars	Total	Per Unit
Direct materials	Rs 5000	Rs 2.50
Direct labor	1000	0.50
Indirect manufacturing overheads (400% of D.L.)	4000	2.00
Total cost	10,000	Rs 5.00
Sales price quoted		Rs 7.50
Gross margin		Rs 2.50
Gross margin percentage		33.3%

The management of RA decided to examine the effectiveness of their traditional costing system versus an activity-based costing system. Different departments were found to be consuming indirect overheads in different proportions p.a. like Quality control Rs 8, 00,000, Production scheduling Rs 50,000, Change of setup Rs. 6, 00,000, Shipping Rs 3, 00,000, Shipping

So, you see that this information is given here and this information is means you can understand. Currently we have prepared what you call it as a cost sheet. They have already prepared the cost sheet and this cost sheet is on the basis of say the total costing system or the absorption costing system where they directly say material cost is how much; 5000 rupees for this particular product not for all the products of the firm.

Labor cost is 1000 rupees direct labor cost is 1000 rupees. So, per unit material cost is 2.5 rupees and the labor cost is 50 paise per unit, right. Indirect manufacturing overheads are 400 percent of the direct labor so if the per unit direct labor cost is 50 paise then how much is the overhead cost that is 2 rupees. And then your total amount of the overhead cost is 4000 rupees. So, in that case you can say what is the total cost; total cost is 10000 rupees and per unit cost is how much; that is 5 rupees.

So, it means because they are manufacturing how many units; 2000 units of this product so, total cost both direct and indirect cost works out as 10000 rupees and this your per unit cost is 5 rupees. Selling price is how much; selling price is offered to them which is given above in the upper part if you see, selling price is given to them that is being offered by Maruti is and Maruti is saying we need more units from you. So, you expand the production and we will buy this product from you at rupees 7 and paise 50.

7.5 rupees we will buy this product from you. So, if the firm calculates it cost of it on the basis of the total costing absorption costing system; this works out as how much, 5 rupees per unit. And selling price offered by Maruti is 7.5 rupees and what is the gross margin? Gross margin is 2 rupees 50 paise and in terms of the percentage of the say it is as the percentage of the selling price percentage of the cost is this is 33.3 percent, right. This is gross margin if you calculate here.

That is the 33.3 percent the gross margin. So, company is very happy. This Reliance Ancillary is very happy that they are manufacturing a product for 5 rupees and they are able to sell this product in 1 go to 1 single customer that is Maruti Udyog limited and there is no need to search for any other buyer any other market any other place so, they are very happy and they are thinking they are earning a profit of 2 rupees and 50 paise. It means that the gross margin on this product is 33.3 percent.

This is the current information while preparing the cost sheet on the basis of the total costing system or the absorption costing system. Now, we will have to find the defect that whether this product is accurately costed at rupees 5 under costed at rupees 5 over costed at rupees 5. And once you know the exact cost of the product means after implementing the ABC then we will able to know that how much selling price should be fixed should have been fixed by the reliance ancillary.

Now, this paragraph is very important. After this table after this cost sheet the paragraph is very important and all the indirect cost information, all the overheads cost information; overheads are 3300000 total for the entire factory not only for this product I am saying that is 3300000. Total information is given to us. So, what they are writing here?

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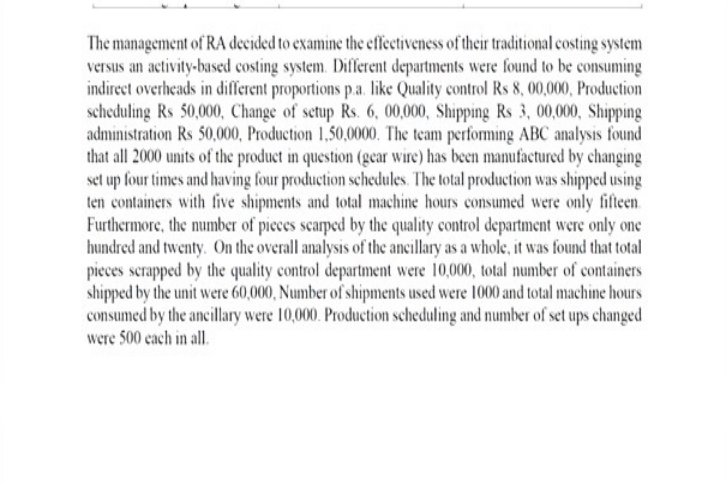

The management of the Reliance Industries decided to examine the effectiveness of their traditional costing system versus an activity based cost system whether they are rightly means valuing their product costing their product or there is some problem of the over costing or the under costing. Different departments were found to be consuming indirect overheads in different proportions, right.

In different departments were consuming these overheads in different proportions. For example, say like quality control cost is how much; 800,000, 800000 quality per annum means this information is per annum. Different departments were found to be consuming indirect overheads in different proportions per annum annually. The total quality control cost is 800000 rupees for all the products not for this product, okay.

This is the total indirect overheads that is these 3300000. Production scheduling is 50000 rupees change in the production means change of the setup is 600000 rupees total for all the products. This is a factory level cost. Shipping is 300000 rupees, shipping administration is 50000 rupees and production is the production labor cost is the 150,000 rupees. So, the team performing ABC analysis found that all 2000 units of the product in question that is the gear wire have been manufactured by changing the setup 4 times and having 4 production schedules.

Means setup change is 4 times and how many production schedules are; 4 production schedules are there, the productions are there. The total production was shipped using 10 containers with 5 shipments and total machine hours consumed were only 15. Total hours consumed were only 15, right. Then furthermore, the number of pieces scrapped by the quality control department were only 120 in this case in this product case. That is the total pieces for this gear wire were scrapped by quality control department on whom we are incurring lakh rupees as our total cost are how much, only 120.

On the overall analysis of the ancillary as a whole it was found that the total pieces scrapped by the quality control department are 10000. All the products their scraps their defective products are found to be 10000 and only 120 are for this product. Total number of containers shipped by this unit were 60000. Number of shipments used were 1000 and total machine hours consumed by the ancillary were 10000 hours. So, this is the information about the ancillary. And production scheduling and number of setups change were 500 each in all.

Production scheduling and number of setups changed were 500 each in all. This information is given to us and this information is first the information is total detail of the 3300000 of the say indirect cost is given to us and how that 3300000 indirect cost is being used for all the products and for this product in question that is also given to us. So, now on the basis of this information what we have to do is; we have to now find out something required.

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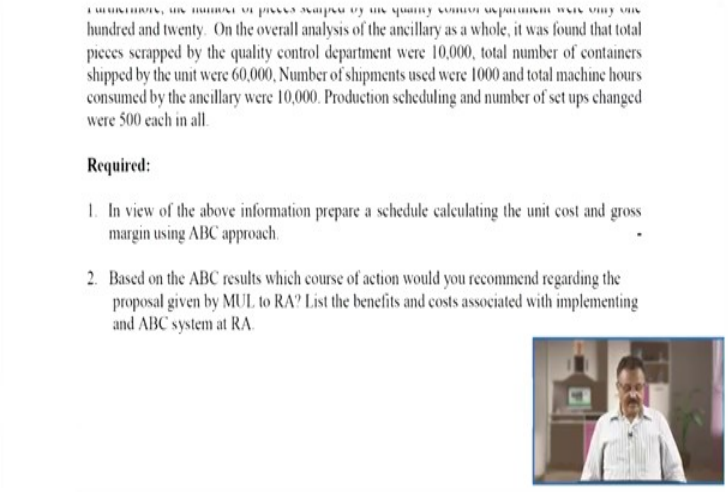

direct materials and Rs 1000 of direct labor. The unit cost and gross margin percentage for the gear wire based on traditional costing system are computed as follows:

Particulars	Total	Per Unit
Direct materials	Rs 5000	Rs 2.50
Direct labor	1000	0.50
Indirect manufacturing overheads (400% of D.L.)	4000	2.00
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Gross margin		Rs 2.50
Gross margin percentage		33.3%

The management of RA decided to examine the effectiveness of their traditional costing system versus an activity-based costing system. Different departments were found to be consuming indirect overheads in different proportions p.a. like Quality control Rs 8,

In view of the above information prepare a schedule calculating the unit cost and gross margin using ABC approach. So, as per the absorption costing total costing approach that your cost sheet is already prepared that is in the upper part the cost sheet is given that is already prepared and we have found out that the total cost is 5 rupees and selling price is 7.5 rupees. And the gross margin is 33.3 percent. Now, here in this case, we have to find out that number 1 is first of all we have to redo the whole thing and prepare a new cost sheet by following the activity based costing system.

Second thing is based on the ABC results; which course of action would you recommend regarding the proposal given by MUL to RA? Means whether they should accept that 7 rupees 50 paisa as the price per unit or they should not accept or they should ask for something increase or decrease in price because if the cost is different certainly the price has to be different. List the benefits and the costs associated with implementing ABC system in by implementing ABC system in the Reliance Ancillary, right.

Now, our job is now to prepare this statement that is based upon the activity. one statement is already with us. We already have calculated the costed price and now we have to prepare another statement and then we have to calculate the new price under the ABC. So, now let us do it and understand what is the difference in the total cost between the or under the 2 different costing systems or the costing approaches.

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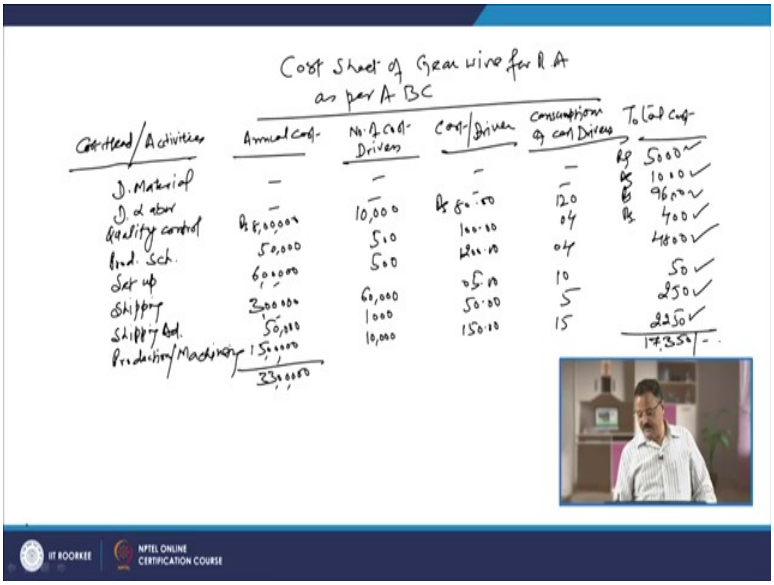

Gross margin		Rs 2.50
Gross margin percentage		33.3%

The management of RA decided to examine the effectiveness of their traditional costing system versus an activity-based costing system. Different departments were found to be consuming indirect overheads in different proportions p.a. like Quality control Rs 8, 00,000, Production scheduling Rs 50,000, Change of setup Rs. 6, 00,000, Shipping Rs 3, 00,000, Shipping administration Rs 50,000, Production 1,50,0000. The team performing ABC analysis found that all 2000 units of the product in question (gear wire) has been manufactured by changing set up four times and having four production schedules. The total production was shipped using ten containers with five shipments and total machine hours consumed were only fifteen. Furthermore, the number of pieces scarped by the quality control department were only one hundred and twenty. On the overall analysis of the ancillary as a whole, it was found that total pieces scrapped by the quality control department were 10,000, total nu shipped by the unit were 60,000, Number of shipments used were 1000 and t consumed by the ancillary were 10,000. Production scheduling and number

Required:

1. In view of the above information prepare a schedule calculating the unit cost and gross

So, now we will prepare the ABC cost sheet. So, cost sheet of you can write here as cost sheet of ,cost sheet of gear wire for RA Reliance Ancillary as per ABC activity based costing as per ABC cost sheet of gear wire cost sheet of gear wire for reliance ancillaries as per the say your ABC activity based costing system activity based costing system.

So, we are preparing a new cost sheet. We are doing a new cost analysis. So, cost sheet of the gear wire for Reliance Ancillary as per the ABC activity based costing system because previous cost sheet is already there with you and we have calculated the cost as 5 rupees. Let us see how

much is the actual cost here we will try to find it out. So, for calculating this cost here we have to put some headings here and these headings are activities one, second is you can call it as the annual cost annual cost of different activities you can say.

Then is the number of cost drivers number of cost drivers and then we have to calculate the cost per driver. Cost per driver means cost per unit cost per hour. So, that we have to calculate is the cost driver. Then is the consumption of cost drivers consumption of cost drivers and then we have to find calculate the total cost finally here. So, the total cost of the product that is the gear wire. So, here activities, annual cost, number of cost drivers, cost per driver, and consumption of the cost drivers and then it is the total cost, right.

So, first of all we will talk about the say the direct cost which we take here. I am not taking here the activities but you can call it as the activities. One more thing you can add here it is the cost head/activities so what is the cost head given here? First of all you take the material cost because you cost material cost direct cost labor cost is direct cost. These all things are not required because that is directly proportional to the product. So, first you will write here direct material cost.

Direct material cost is how much? Nothing will be coming here. And finally this amount will straight away go here a rupees this amount is rupees 5000, right. Now, we write here direct labor cost. Direct labor cost is here we have to put nothing and how much is the direct labor cost; it is rupees 1000. Now, we will be talking about the different activities for allocating the indirect cost which earlier we have been allocating as 400 percent of the direct labor. But now, we will not do it.

So, we will have to find out the different activities. And first activity is the quality control quality control. So, what is total amount required for the quality control here? The cost given to us is that is the total amount of the cost given to us that is say rupees how much; we have to check it. That cost given to us is something like that 800000 rupees. So, this cost is rupees 800000. Total cost is rupees 800000, right? Yes. Total cost is rupees 800000 and annual cost driver how many products have been checked that is the 10000 hours we have been working on it.

So, you talk about it. We have to see here that how many times. So if you talk about it was found that the total pieces scrapped by the quality control department are 10000. So, it means per piece

cost we have to calculate. For all the departments we are say checking the quality control and checking the pieces are 10000 and the cost per driver if you calculate here that works out as 800000 divided by 10000 so this works out as how much; 80 rupees. This cost is 80 rupees and then we will talk about is the next part that is the consumption of cost drivers.

For this purpose total how many products are scrapped? For this the products scrapped are 120, right. So, we will write here 120 products are scrapped. So, you have to calculate the cost multiplying 80 rupees per product per unit and multiplied by the 120 scrapped products. So, how much this amount is; this amount works out as rupees 9600. This amount is rupees 9600. So, direct material cost for this product is 5000 rupees labor cost is 1000 rupees quality control cost is total cost is 800000 rupees for the firm as a whole.

Then the number of drivers are 10000. Total products scrapped are 10000 but all the products put together not for this. And per driver cost is that per product per scrapped product cost is 80 and then the consumption of the cost driver in this case in gear wires only 120 products are found scrapped so, how much is the cost for finding out those scrapable products that is 120 multiplied by 80. So, this amount works out as 9600. Next thing is the production scheduling; next activity is the production scheduling.

Production scheduling is how much is the cost here total cost given to us is 50000 rupees. Scheduling the production is this. So, total cost is 50000 rupees and in this case how much means scheduling are done that is for the let us check the scheduling done here. That is for the 500 times. So, total cost we have to calculate for this amount. It is given to us last line. Production scheduling and number of setups change per 500 in each at all. So, it means how much that cost is; 500.

Production scheduling is then 500 times. What have you written here? Production scheduling and number of setups change were 500 in each all. So, it means what is this cost. We have to take this cost here as 50000, 500 per unit. What is the per unit cost? 100 and then is the consumption of drivers in this case 4. 4 times the production scheduling has been done. So, it is 4. So, how much this works out as total amount works out in this case is 400. This amount works out as 400. Now, next is the setups change of setups.

Total setups and change of the setups are this. So, what is the setup cost given to us here; that is 600000. Cost given is the 600000 and how many times the setups are changed depending upon the production runs. They are 500 so the cost change setup cost per cost is coming out to be 1200 rupees, 1200 rupees. So, in this case 4 times the setup is being changed so it means how much it works out as rupees 4800, rupees 4800. This is setup time or change of the setups. So, this we have calculated.

Now, we talk about the shipping cost of the shipping. Shipping is another activity and total cost of the shipping is given to us. If you calculate the total cost of shipping then this total cost of shipping is how much; it is the 300000. What are the total shipments we have done here, the containers is shipped are that information is given to you is container shipped are 60000. Containers shipped are 60000. So, you have to divide this 300000 by 60000. So, this amount works out as how much 5 rupees.

This is the cost here 5 rupees and number of the shipments we have made is how much how many shipments are made here is 10. So, this works out as how much 50 rupees. This works out as 50 rupees, right. After shipping the next cost is what we have with the after shipping the shipping administration is the next. So, if you talk about the shipping administration what is the cost of shipping administration here? Shipping administration the cost of shipments is 50000 rupees.

This cost is 50000 rupees and how many shipments are there how many products are shipped; 1000, right. So, it means what is the per driver cost; 50 rupees. This cost is 50 rupees and what are the total shipments, 5. What is the cost here, 250, 250 rupees and then is the production of the products production or you can say machining production or machining. When you are doing machining or you are going for the production here it means what is the cost here 1500000 highest cost is the 1500000.

Machining or the production cost is 1500000. This is highest number and how many units are manufactured total that is 10000 units, right. So, machining is 10000. This is machine hours. Machine has run for 10000 hours so it means here cost driver is 150. Cost driver is 150 and per driver cost is 15 rupees and what is the total cost here? So, for this product is this works out as 2250. This cost works out as 2250. So, it means what is the total cost here is it total amount

works as how much 300000. So, it means we have to take care total cost given to us was 800000. This production scheduling is 50000 then it is setup costs 600000 and then shipping is 300000.

Then we have this cost of this shipments this shipping administration is 50000 rupees and production machining depending upon the machine hours so machining cost is the 1500000. 15 and 8 23, 23 and 6 is 29, 29 and 3, 32 then 50 plus 3 is 53 so this cost works out as 3300000. This we had to earlier how much we were allocating the cost this 3300000 being added to different products as say the 4 times of the direct labor but the total cost is 3300000 and in this case you should calculate for this product.

How much this works out first part we have total is material cost is 5000 labor cost is 1000 quality control cost for this product is 9600 then next is the quality after this production scheduling cost is 400 rupees. Then next head is the setup cost is the 4800 rupees and then is the shipping cost is 50 rupees and then is the shipping administration 250 rupees and production or machining of the product is that is as per the number of hours we are using that is 2250. So, it means if you now calculate this total allocation of indirect overheads here.

So, out of this 3300000 rupees for this 1 particular product the overheads to be allocated are if you total it up this works out as how much 17,350. This is the total cost indirect cost. So, now you can easily find out what is the direct cost. These are 3 costs are important for us now. This is 1 cost this is another cost and this is another cost. These 3 costs are important for us now. So, we have seen here the total cost which works out here that is the how much. It will not be somewhere more than or you can say that is the cost is 17 and 22 and 23. 23,350 rupees is the total cost.

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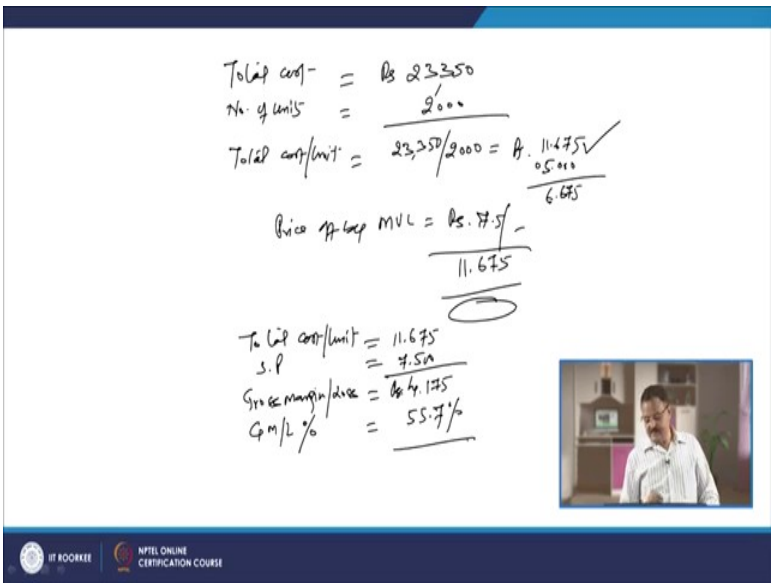

Total cost I will take here as total cost for manufacturing this product is how much 23,000 I am not preparing all the columns now only the last column I am preparing. This is 23,350 this is the total cost. Now we have to see here that how many units we have manufactured here; number of units number of units we are manufacturing here are how many, 2000. So, you can calculate now the total cost but per unit.

If you calculate the total cost per unit then it works out as how much total cost total cost per unit is how much; total cost per unit is you are dividing this number of 23,350 divided by 2000. So, this will work as how much; rupees if you calculate this cost this comes up as rupees 11.675. This is the cost 11.675. This cost is 11.675. So, this is actual cost, right. This is the actual cost. What was the cost as per the total costing system?

If you go by the total costing system or absorption costing system cost was how much; 5 rupees, right. How much is the difference in the cost; 6.675, 6.675. This is ABC. This is the ABC that is the 6.675 is the activity based costing means the difference we are working out with the help of the activity based costing 6.675 rupees and you are when you are working this otherwise this cost was coming up as how much; 5 rupees. So, it means now what is the problem where is the problem?

What is the selling price offered by Maruti? The selling price offered by Maruti here is if you think about how much price they were offering they were offering the total price is that is the say difference we have already calculated 6.675 and the price offered by the company is how much; 7.5. price offered by maruti is how much; that is 7.5 rupees, right. So, any product which is costing us how much; 11.675 so it means you can understand what is the difference we are incurring here the difference in the price.

If you calculate this difference in the price you will be able to understand what is the difference in the price now if you take out. We will take the difference in the price as what is the total difference here we had taken. Total cost is 11.675 So total cost per unit is total cost per unit is how much this is 11.675, right? And what is the price selling price offered by Maruti selling price offered by of this company is that is a purchase price of the Maruti is how much they have offered is 7.5, right?

So, what is the total difference here? If you calculate the gross margin gross margin/loss this amount is going to be how much that is root is 4.175 and gross margin percent gross margin oblique loss percentage you take here this comes off as how much 55. If you calculate this as the percentage this is 55.70 percent. So, now we find out here is the price offered by the company by the buyer is 7.500 and the total cost which we have worked out here is 11.675 percent. So, you can understand what is the difference in the 2 costing systems, right?

Previous costing system is saying our cost of production is 5 rupees, right? And we are selling the product at 7.5 rupees so it means we are very happy but then we have reworked the whole thing as per we see cost is working out for this product gear wires is 11.675 rupees. So, you can understand the difference. So, why this difference has come how this difference is going to create the serious problem in the overall costing system of the company and how to correct it I will discuss with you in the next class. Thank you very much!