

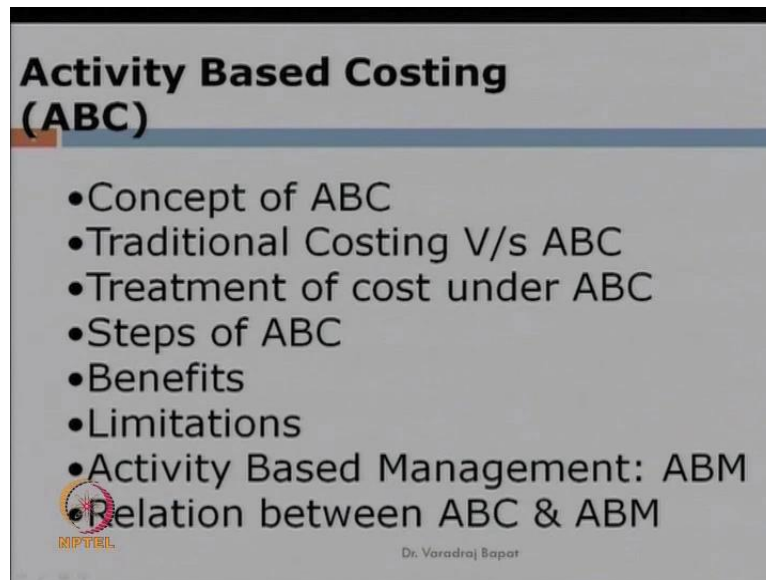
Managerial Accounting
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Indian Institute of Technology, Bombay

Module - 11
Lecture - 25
Activity Based Costing and Management

Today, we will continue our discussion on activity based costing. To give a little bit background towards the beginning, when we started discussion on cost accounting, we discussed about cost center. If you remember cost center is a unit of business popularly, maybe, called as a department, where all costs are accumulated and accounted for. So, the steps in traditional cost accounting is number 1; allocation. So, all costs are segregated into direct and indirect. Direct costs are directly charged to the cost center. Indirect costs are apportioned to the cost center. If required, they maybe reapportioned from service cost center to production cost center. Fourth step is absorption


In absorption, the costs are charged from cost centers to units. So, essentially, every cost has to be charged to cost center, and then it gets charged to cost units or the products in the traditional system. Activity based costing is a challenge to traditional system. It seeks to relate the costs directly, to products. So, costs are incurred, because of some costs. So, cost drivers are identified and costs are directly, linked to the products without necessarily, they going through a cost center. Let us see now more in detail about what is a procedure and methodology of activity based costing, and we will also solve some cases on the same.

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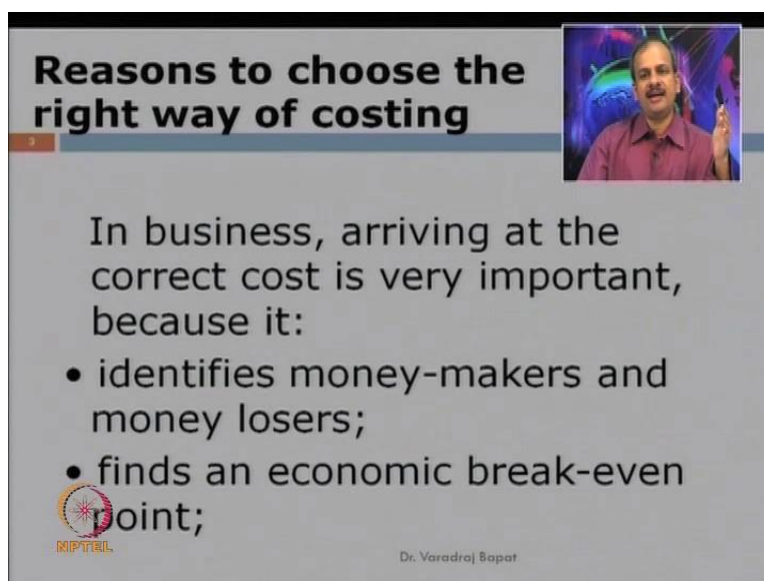


Activity Based Costing (ABC)

- Concept of ABC
- Traditional Costing V/s ABC
- Treatment of cost under ABC
- Steps of ABC
- Benefits
- Limitations
- Activity Based Management: ABM
- Relation between ABC & ABM

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Reasons to choose the right way of costing

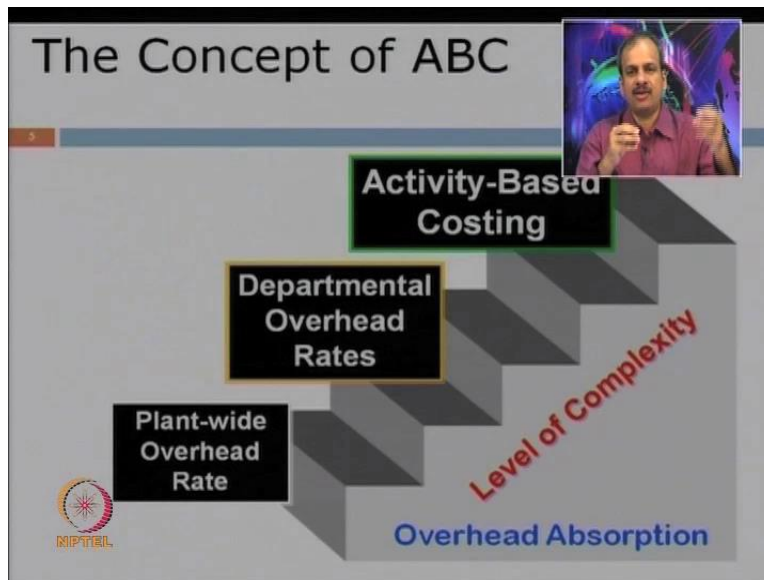
In business, arriving at the correct cost is very important, because it:

- identifies money-makers and money losers;
- finds an economic break-even point;

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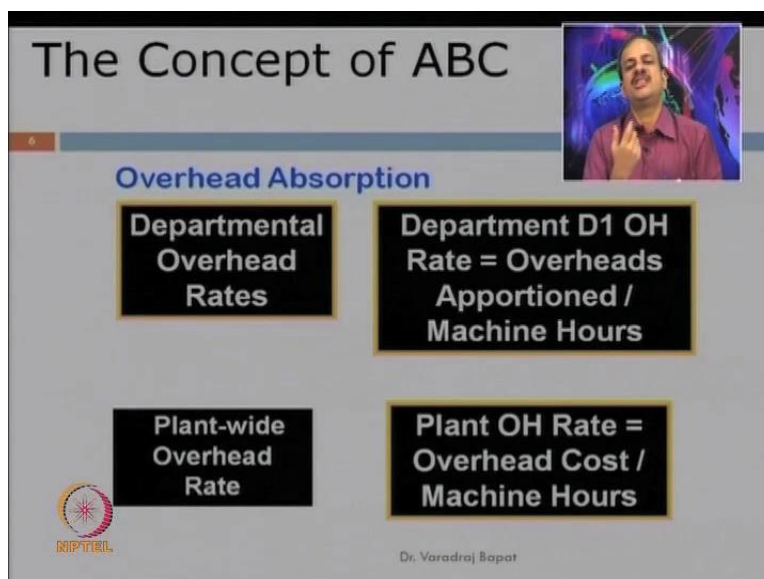
So, we are in the last session, already started some discussion on activity based costing. This is the broad coverage in the session. You already know why it is very important to get the correct cost, because most of the decisions are based on the cost. So, if we feel that our cost is high and maybe, we price it high, then we lose out in the competitive market. Sometimes, we feel that the cost is low. We may be selling it below the cost. Again, there is a loss to the company. There may be lot of economic decisions, like make or buy, like whether to outsource or no; they all depend on cost. So, it is very important that correct cost is calculated

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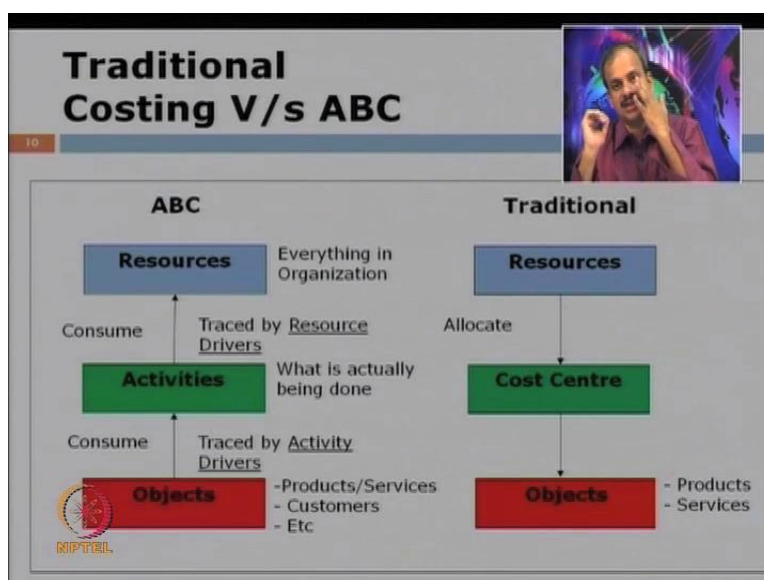
Now, as for a b c is concerned, this is how it happens; very simplistic system is plant based overhead where, we have only one cost for the whole plant. Little bit improvement is a departmental or cost center based overhead rate where, the costs are identified per cost center, and then they are absorbed. In activity based costing, it is more complex, more sophisticated where, we identify each activity, each cost driver for the activity, and then the costs are charged.

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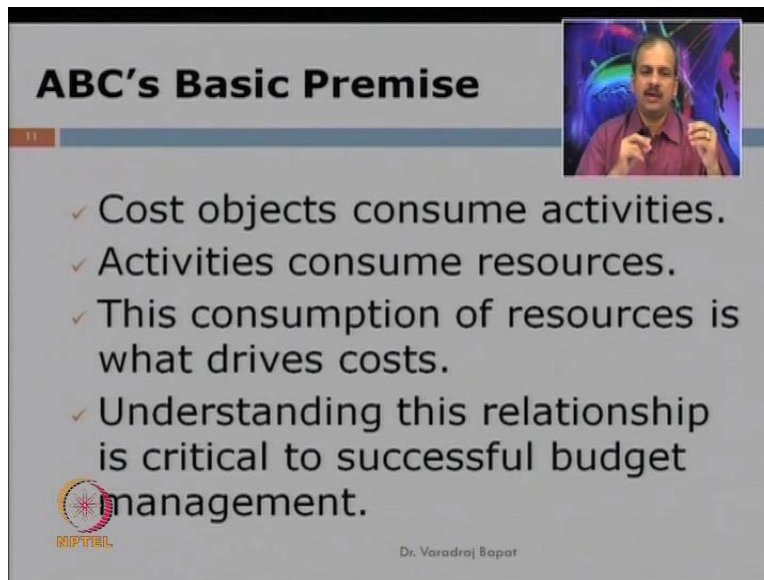
We have just now, discussed this. So, in plant wise overhead rate, we get the total overhead cost divided by the total hours. We get the plant wise overhead rate. The departmental system, we calculate the overhead for the department, and then divided by some base. Here, in this case, machine hours is taken as an example, which gives us departmental overhead rate. In cost, a b c costing, we try to relate the cost; that is a resource consumed to work accomplished; that is unit produced. This serves as a good management tool, because it leads to better allocation of resources. Have a view; how does a b c move and how does the traditional cost accounting system move? In traditional cost accounting system, the resources are allocated or apportioned to cost centers, and then they are charged to cost objects.

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In a b c, first the cost objects are seen. They are traced by activity drivers. So, cost objects are products, services, customers and so on. You look at the activity drivers, so that, we can identify the activity that what has actually, been done, and then activities are traced by resource drivers, so that for particular activity, which resource; how much is consumed is seen, from objects to activities and from activities to resources; this is how the costs are linked.

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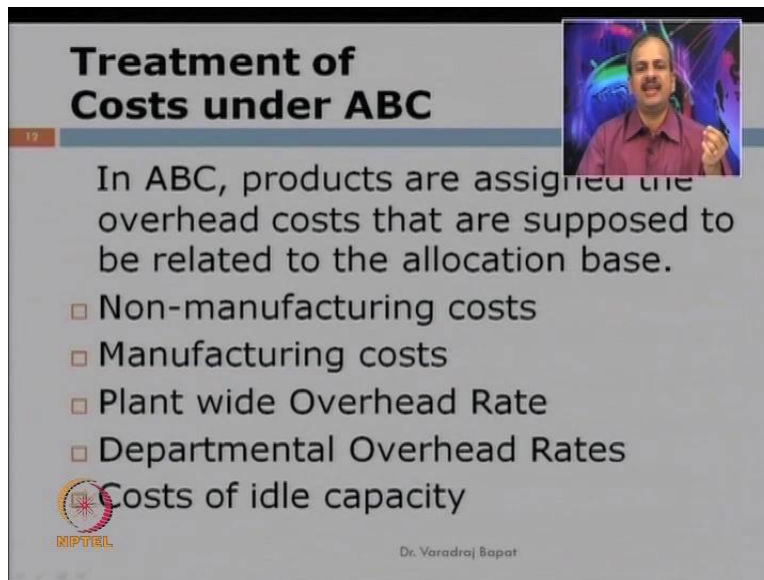
ABC's Basic Premise

- ✓ Cost objects consume activities.
- ✓ Activities consume resources.
- ✓ This consumption of resources is what drives costs.
- ✓ Understanding this relationship is critical to successful budget management.

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Up to this, we had done in the last session. The basic premise of this a b c is that cost objects consumed activities. So, for a particular customer or for a particular product, certain activity has to be performed. So, they consume activities and activities in turn, consume resources. So, to do that activity, let us say a machining process is being done. So, you require 3 hours of machining. So, machining becomes an activity and that machining in turn, consumes resources; may be power, maybe machine, depreciation and so on. So, consumption of resources is something, which drives the costs. So, in cost accounting, we try to understand this relationship.


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Treatment of Costs under ABC

In ABC, products are assigned the overhead costs that are supposed to be related to the allocation base.

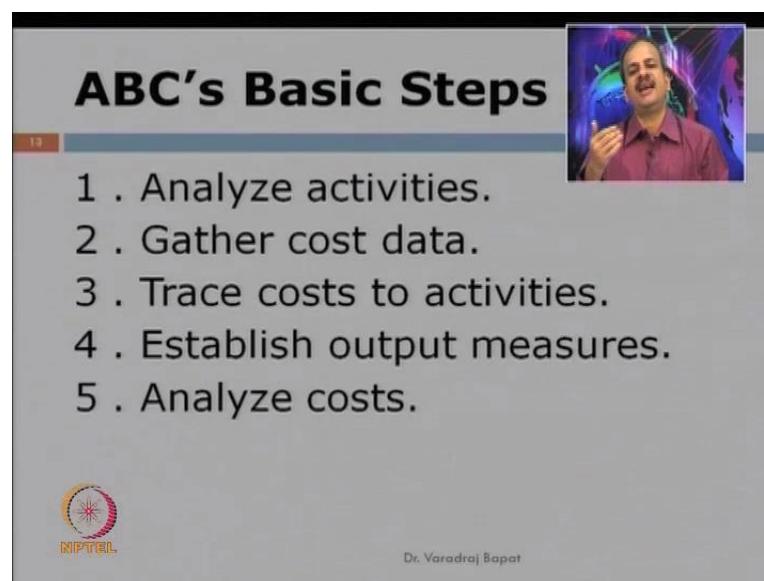
- Non-manufacturing costs
- Manufacturing costs
- Plant wide Overhead Rate
- Departmental Overhead Rates
- Costs of idle capacity

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This slide features a title 'Treatment of Costs under ABC' and a small video inset of a man in a purple shirt. The main text explains that in ABC, products are assigned overhead costs related to an allocation base. A bulleted list includes: Non-manufacturing costs, Manufacturing costs, Plant wide Overhead Rate, Departmental Overhead Rates, and Costs of idle capacity. The MPTEL logo and the name 'Dr. Varadraj Bapat' are at the bottom.


Now, in a b c, products are assigned to the overhead costs, that are supposed to be related to the allocation base. So, various costs are identified, and then they will be assigned. So, these are the basic steps in a b c. First is analysis of activities, gathering of data, trace the cost data to activities, establish the output measures, and then analyze the cost. So, for each activity, we get the costs; see for what it is incurred, and then link that cost.

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ABC's Basic Steps

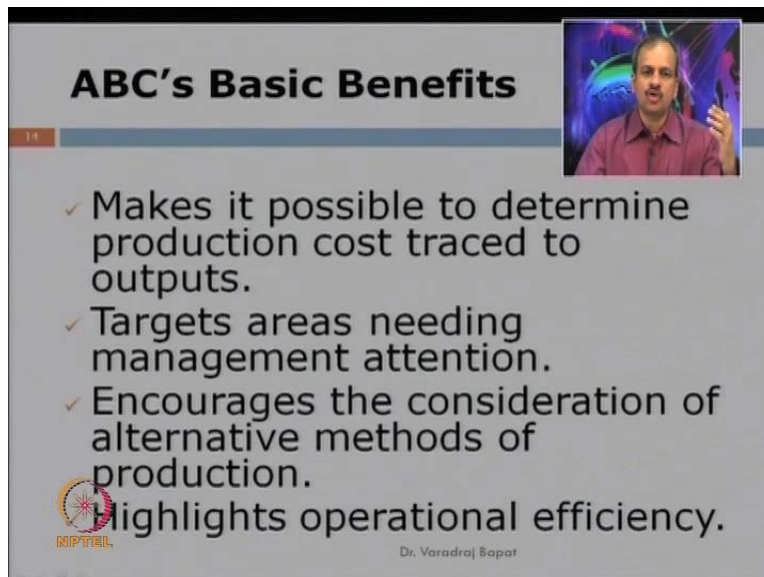
- 1 . Analyze activities.
- 2 . Gather cost data.
- 3 . Trace costs to activities.
- 4 . Establish output measures.
- 5 . Analyze costs.

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This slide features a title 'ABC's Basic Steps' and a small video inset of a man in a purple shirt. The main text lists five steps: 1. Analyze activities, 2. Gather cost data, 3. Trace costs to activities, 4. Establish output measures, and 5. Analyze costs. The MPTEL logo and the name 'Dr. Varadraj Bapat' are at the bottom.

So, the advantage is we better, able to determine the product cost to output. Then, what are the important areas, target areas for the management gets identified and alternate methods of production or outsourcing, etcetera. maybe looked at.

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Slide 14: ABC's Basic Benefits

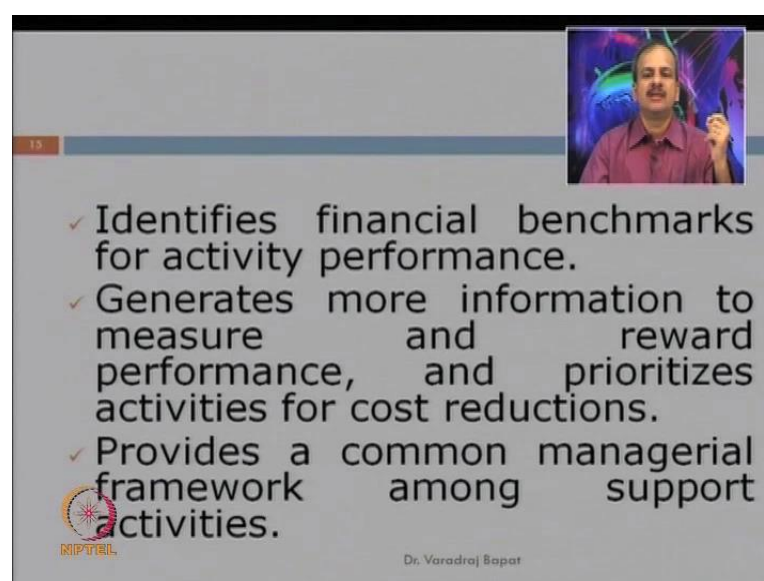
- ✓ Makes it possible to determine production cost traced to outputs.
- ✓ Targets areas needing management attention.
- ✓ Encourages the consideration of alternative methods of production.
- ✓ Highlights operational efficiency.

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These are some more advantages. That financial benchmarks can be easily, identified for activity performance. Then, there is a common managerial framework for the resource support activities and so on.

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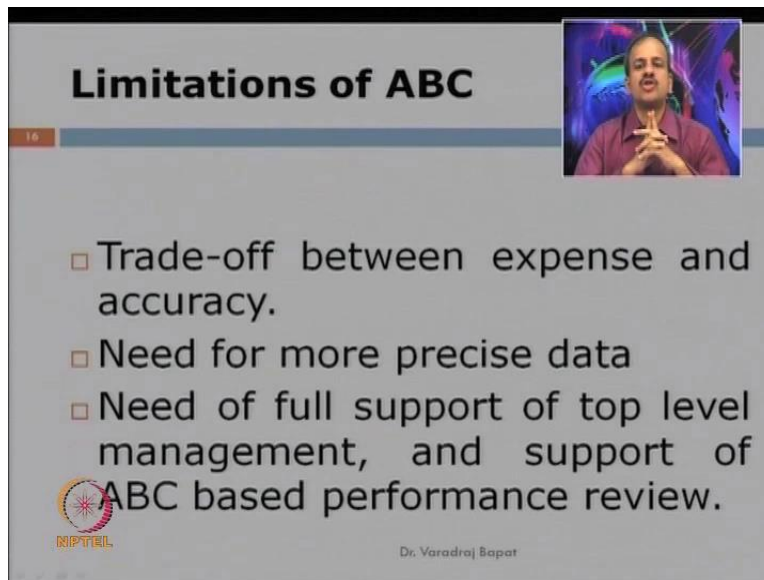
Slide 15: ABC's Basic Benefits

- ✓ Identifies financial benchmarks for activity performance.
- ✓ Generates more information to measure and reward performance, and prioritizes activities for cost reductions.
- ✓ Provides a common managerial framework among support activities.

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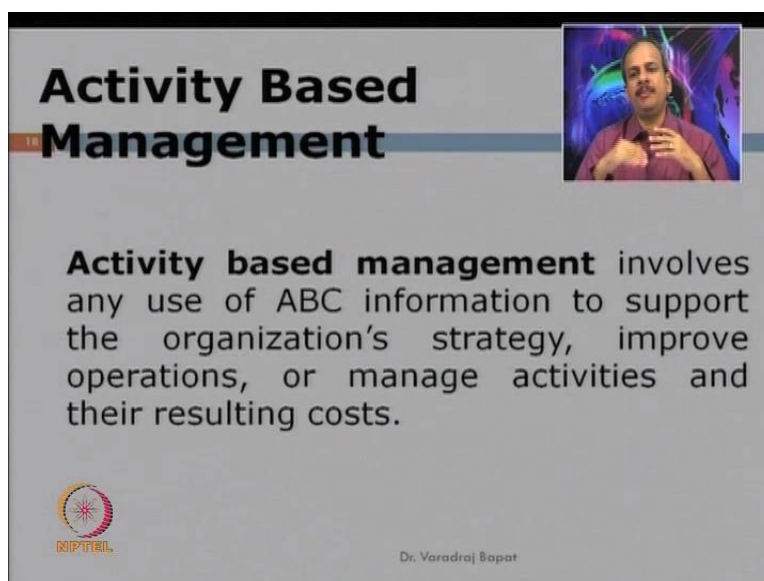
Limitations of ABC

- Trade-off between expense and accuracy.
- Need for more precise data
- Need of full support of top level management, and support of ABC based performance review.

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There are some limitations also, because activity based costing is more complicated process than the traditional costing. It requires more efforts to identify the costs. So, one needs to see the tradeoff between expenses and accuracy, and the need for more precise data. Need of support of the top management is also, required for collection of data and for implementation of the system.

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Activity Based Management

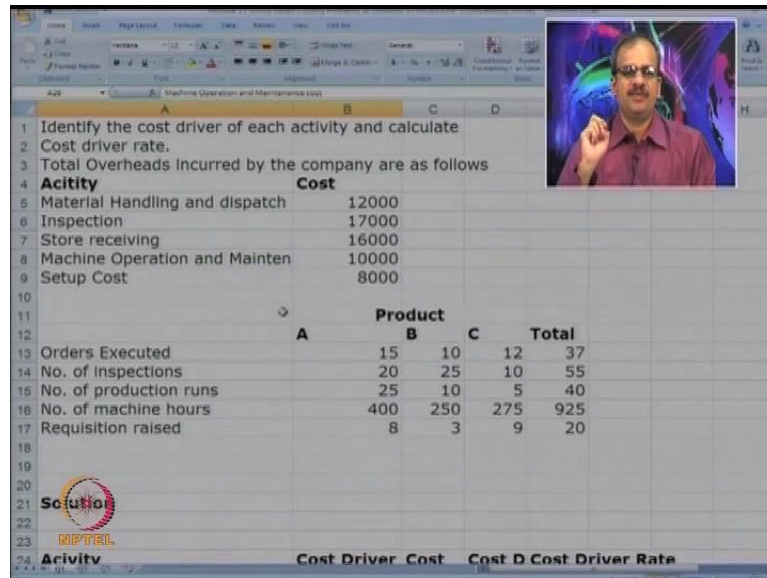
Activity based management involves any use of ABC information to support the organization's strategy, improve operations, or manage activities and their resulting costs.

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Sometimes, there may be cases of overstated cost or understated margins, because here, it is some more complex system. So, there could be some chances of errors. From a b c, we will

try to understand now, activity based management, but before that, we will see some cases, so that, we are able to more relate what we have discussed to the practical situation. Now, let us see actually, what is a cost driver and how does it operate.

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Activity	Cost
Material Handling and dispatch	12000
Inspection	17000
Store receiving	16000
Machine Operation and Mainten	10000
Setup Cost	8000

	Product			Total
	A	B	C	
Orders Executed	15	10	12	37
No. of inspections	20	25	10	55
No. of production runs	25	10	5	40
No. of machine hours	400	250	275	925
Requisition raised	8	3	9	20

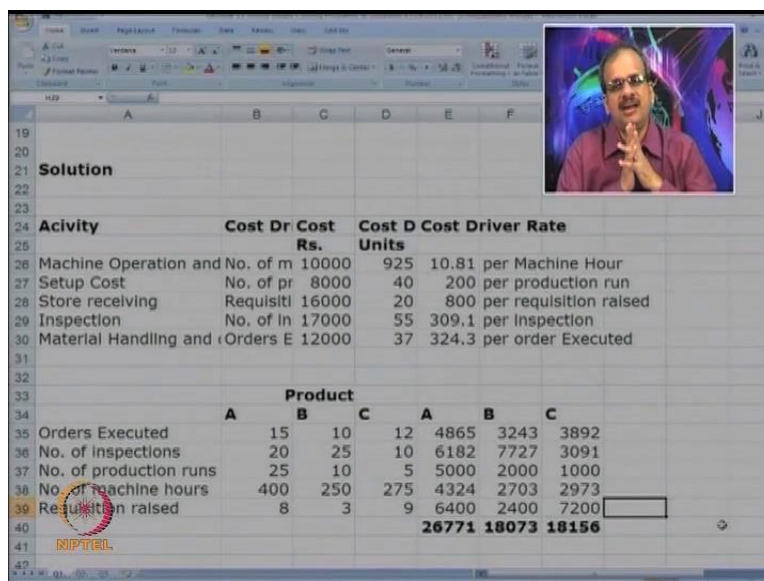
Here, a small case for you. Now, the overheads incurred in a particular company or in a particular plant is given. Material handling and dispatch is 12000; inspection 17; stores receiving 15; machine operations 10, and setup cost 8; this is a typical cost structure. Some more data is given where you have got orders executed, number of inspection, number of production runs, number of machine hours and requisitions raised. There are three products; a, b and c. So, for each product, the data about the orders, inspections and so on, has been collected.

Now, how will you link the cost to the activities? Can you suggest, what could be the cost drivers? Just think over that first item, material handling; what will be the appropriate cost driver for the same? You can easily relate it that material handling has some relations with orders executed. So, we will try to link material handling to orders executed. Next is inspection. Inspection, what could be the appropriate cost drivers? Again, if you look at the information given, you can see that the number of orders are given. So, we can link inspection cost easily, to number of orders. Then, store receiving, setup cost and so on.

Now, let us try to look at the identified cost drivers. So, first cost was machine operation and maintenance. You can just go up and check that machine operations and maintenance. The

best cost driver is naturally, the number of machine hours. Setup cost, we have got number of setups or number of production runs, which is same as setup. Then, store receiving, the requisitions raised for inspections, the number of inspection for material handling, the number of orders. So, the cost as are given, have been put here, and the total for the related cost driver is given. So, you know now, the activity. You have identified the cost driver. So, we look at the cost of the activity and the cost driver unit for the same. So, number of machine hours 925. So, 10000 upon 925; we get 10.81 as the cost per machine hour. So, the cost is identified per unit of the driver. For setups, 8000 is the cost; 40 setups; so 200 per machine hour and so on. So, for all the five activities, five drivers are identified. Then, we know we have calculated or we have collected the cost driver units for the same and now, we know the cost driver rate or the cost per unit of the cost driver. Now, go back to three products; a, b, c. We want to know the cost of a, b, c, and it is easy now, to go for it. How to calculate now, the cost for a, b, c?

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Activity	Cost Dr Cost Rs.	Cost D Units	Cost Driver Rate
Machine Operation and No. of m	10000	925	10.81 per Machine Hour
Setup Cost No. of pr	8000	40	200 per production run
Store receiving Requisiti	16000	20	800 per requisition raised
Inspection No. of In	17000	55	309.1 per Inspection
Material Handling and Orders E	12000	37	324.3 per order Executed

	Product			A	B	C
	A	B	C			
Orders Executed	15	10	12	4865	3243	3892
No. of inspections	20	25	10	6182	7727	3091
No. of production runs	25	10	5	5000	2000	1000
No. of machine hours	400	250	275	4324	2703	2973
Requisition raised	8	3	9	6400	2400	7200
				26771	18073	18156

For product a, we know how many orders are executed and now, we know the cost per unit of that cost driver. So, we will try to calculate, based on this data; the cost for each of the products. Now, you know for a, the number of orders executed and you also, know the cost per order executed, which is 3.24. So, what will be the cost of a, is very easy to identify. So, 15 into 324.3; that is the number of order executed. So, you can see now, each of this number of orders, have been multiplied by 324. So, we get the cost of 4865, 3243 and 3892 for the three products.

Now, for number of inspections, we know the number of inspections; we will multiply by cost per inspection. I am adding a dollar, so that, it can be dragged later. So, you get 6182, 7727 and 3091. Now, number of production runs; again, we know the cost per production run, which is 200. So, we have 25 multiplied by 200; so 5000, 2000 and 1000, respectively. Machine hours, which is the major cost, multiplied by cost per machine hour, which is 10.81. Number of requisitions raised; again, we know the cost per requisition, which is 800. Now based on the per driver, cost per cost unit of cost driver, we could calculate the cost incurred, overhead cost incurred on the three products. Now, if you take sum, you will get the total cost of each of the products a, b and c; is it clear? Again, if you go back, you will realize that we had the raw costs. You can take a sum and check. So, total cost was 63000. In a traditional system, you might have identified only one related factor. This is a machining department. You may have identified machine hours, and gone for machine hour rate, and then calculated the cost of three products. Here, we have identified the cost driver for each of the cost, calculated the cost per cost driver; that is a cost per machine hour; cost per production run; cost per requisition and so on. Using that information, calculate the cost for three products. So, just check by doing the sum; so 63000. So, total overhead cost of 63 has now, been properly charged to three products a, b, c, for this particular period; is it clear?

Let us look at one more case for more clarity. Now here, a b c limited has for products. Now, the costs are given under different heads. Now, the company is absorbing the overhead cost to individual products on labor hours. You can see here the major cost is on direct labor. So, they perceive that the labor is a major input and using labor hour rate and now, company is thinking of moving from labor hour rate to activity based costing. So, they have collected some more data as to their three products w, x, y and z. So, they have calculated or identified the cost, as well as testing hours, labor hours, production runs, machine hours and requisition rate for their four products. So, you have been asked to calculate the total cost of the product using the traditional method and also, using a, b, c. Now, think over; how will you do under traditional method; what will be the way?

In traditional method, first, we will take the total overhead cost. We will take the total number of labor hours; divide the total cost by labor hours; we will get cost per unit of labor hour; that is cost per labor hour, and then depending on the number of labor hour for each product w, x, y and z, we will charge all the cost to the respective product. Let us see now, how it is done. Here I am able to see the total as per a b c system. I am just looking for how it

can be done in the traditional system, but let us start with a b c. Under the a b c system, you know that the cost is identified per cost driver.

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Company is absorbing overhead cost to individual product on labour hours. Now company is thinking to convert to activity based costing.

	Product W	Product X	Product Y	Product Z	
Direct Material	400	600	300	500	1800
Testing Hours	150	300	200	250	
Labour Hours	1500	5000	2000	4000	
No. of production runs	20	25	40	30	
No. of machine hours	700	900	400	500	
Requisition raised	20	25	15	20	

Calculate total cost of the products on basis of traditional method followed by company and ABC. Compare the results.

Solution

Calculation of the cost driver rate

Activity	Cost Driver	Cost Rs.	Cost Driver Rate	Product W	Product X	Product Y	Product Z
Direct Material Cost	Direct Material	27000	15	6000	9000	4500	7500
Labour cost	Labour Hours	50000	4	6000	20000	8000	16000
Machine Maintenance cost	No. of machine	15000	6	4200	5400	2400	3000

So, first cost, you can see here, was the direct material cost. Now, the direct material is the cost driver for it and you know that the total is 27000; cost driver, it is 15. Here, the per unit cost was given. I will just try to take some for more clarity. Now, direct material; the amount was 27. Cost driver rate is 15; it is calculated as $c \div b$; that is the cost as given, divided by the sum of b to e ; the figures which, I have just now shown. So, the total direct material consumed was 1800. Now $27000 \div 1800$; we get the cost per cost driver as 15. Now, for a particular product, that is product w, we have seen that it is 400×15 . So, we get 6000 and so on; is it clear? So, the total cost of 27 on material was charged to w, x, y and z.

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activity based costing.

	Product W	Product X	Product Y	Product Z	Total
Direct Material	400	600	300		
Testing Hours	150	300	200		
Labour Hours	1500	5000	2000	4000	12500
No. of production runs	20	25	40	30	115
No. of machine hours	700	900	400	500	2500
Requisition raised	20	25	15	20	80

Calculate total cost of the products on basis of traditional method followed by company and ABC. Compare the results.

Solution

Calculation of the cost driver rate

Activity	Cost Driver	Cost	Cost Driver Rate	Product W	Product X	Product Y	Product Z
Direct Material Cost	Direct Material	27000	15	6000	9000	4500	7500
Direct Labour cost	Labour Hours	50000	4	6000	20000	8000	16000
Machine Maintenance cost	No. of machine hours	15000	6	4200	5400	2400	3000
Testing Cost	Testing Hours	9000	10	1500	3000	2000	2500
Stores Receiving	Requisition raised	6000	75	1500	1875	1125	1500
Setup Cost	No. of production runs	9200	80	1600	2000	3200	2400

Now, let us go to next cost. Next cost is direct labor cost, which is 50000. The appropriate driver for number of labor hours, which you know, is 12500. So, 50000 divided by 12500; we get direct labor hour rate as 4 rupees. Now, this 4 rupees is multiplied by the number of hours for w, x, y and z. So, 4 into 1500; that is 6000, then 4 into 5000; that is 20000 and so on. So, 6000, 20000, 8000 and 16000; this is the labor cost for each product. Now, machine maintenance cost; machine maintenance cost is purely, on machines. So, it is charged on the basis of number of machine hours. We know that the machine maintenance cost is 15 and the number of machine hours are 2500. So, 15 upon 2500; 6 rupees becomes a cost driver rate. Now, that based on 6 rupees, it comes to 4200, 5400, 2400 and 3000.

Now, the testing cost; testing cost again, the total testing cost is 9000. The number of testing hours, which is already given to us, becomes the cost driver. So, 10 rupees is the rate per testing hour. Using that 10 rupees and the number of testing hours, we can calculate 1500, 3000, 2000 and 2500. Now, next is stores receiving. Now here, the requisitions raised, is the appropriate cost driver, because you raise the more number of requisitions. There will be more cost on receiving the stores. Now, 75 rupees per requisition, becomes the cost and here, the costs are charged to w, x, y and z. Next is setup cost. You know that the setup depends on number of machine runs. So, each time, the machine runs, started some extra cost in the form of setup cost is incurred. So, now, 9200 divided by total runs, that is 1115, 115, we get 80 as the cost per production run. So, again, the costs are calculated for w, x, y and z. Then, take total; we get 20800, 41000, 21225 and 32900. I hope it is clear to you. So, activity cost driver

was identified, and then the rate was calculated. Using that, we could get the total cost for each of the products.

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Activity	Cost Driver	Cost	Cost Driver Rate	Product 1	Product 2	Product 3	Product Z
Direct Material Cost	Direct Material	27000	15	6000	20000	8000	16000
Direct Labour cost	Labour Hours	50000	4	4200	5400	2400	3000
Machine Maintenance cost	No. of machine	15000	6	1500	3000	2000	2500
Testing Cost	Testing Hours	9000	10	1500	1875	1125	1500
Store receiving	Requisition rate	6000	75	1600	2000	3200	2400
Setup Cost	No. of product	9200	80				
		Total		20800	41275	21225	32900

Now, how will it happen in the traditional system? In the traditional system, we have two direct costs, which is direct material and direct labor, which will be charged in the same way; there is no problem, but all other overhead cost are to be absorbed on the basis of machine hours. So, first, we try to take some of overhead costs, which you know, is machine maintenance, testing, storing, and setup; we get 39200. So, 39200 is the total cost. We divide it by the number of labor hours. It is the company's policy to take labor hour as the base. So, 39200 charged using the total of labor hours, which is 12500. We get the labor hour rate. I will just show for more clarity. So, 39200 divided by 12503.16 per labor hour, is the rate. Now, this rate is multiplied by number of labor hours for each product, which is given to us; 1500, 5000 and so on. So, once you multiply that, you get 4704, 15680, 6272 and 12544. This is a traditional system. In traditional system, instead of segregating the overhead into machine maintenance, testing, storing, setup and so on, the total overheads are taken; one base is decided. So, total overheads for that plant, divided by the base, which is number of labor hours. So, the total upon labor hours; we have got 3.16, and using that rate, the costs have been calculated,, and then the total is done. So, we get the costs of four products as 16704, 44680 and so on.

Now, you can compare the system; under a b c system, the cost of the product, and under the traditional system. It has been compared in the table. Before comparison, let us first make a total. So, that it is clear to you that it is essentially, the same cost, which are divided. So, you can see the total cost was 116200 in the a b c system, and same under the traditional system. However, how it is charged, is different. Now, in the traditional system, for product w, the cost was 16704, whereas, under a b c, it is 20800. For product x under the traditional system, it is more; it is 44680, whereas, under a b c, it is 41275. So, you can see, if you take the total costs which is charged; it remains the same. However, there is a difference from product to product. Some products are overcharged in the traditional system. Under a b c, we get a better cost calculation. I hope now, it is more clear to you, but still, let us do one more case

Now, have a look at one more company; ABC electronics. It makes three types of audio players 1, 2, 3, and monthly maintenance cost incurred is like this; 1800 and so on. So, as per their budget, this becomes their typical maintenance cost. Now, for each of the model, they have identified, they have collected some information, like machine hours, units rework and so on. We have to calculate the total cost of product using a b c, and under the traditional system, and then naturally, compare them. So, how to proceed now? Now, no solution is available. I would like you to give a try, and then we will try to solve it together. So, how to go ahead? So, if you take a sum, you have total cost of 3200, which is to be allocated to three products or three models; model 1, 2 and 3. So, now suggest how to go about. Let us first, do what will happen under a traditional system, because it is more simplistic in nature. We will also try to take a sum of each of the cost drivers. Yes, tell me now, how to proceed.

Suppose we try to calculate under traditional system. In traditional method, what we essentially, do is first we look at the direct costs. Now, there are two direct costs; direct material and labor. In direct cost, there is no change; whether, it is traditional system or a b c, we have the direct units, which we will be using. So, for direct material, the number of units are given, and we also know the total. So, we will take the total here. Next is direct labor. Again, the number of direct labor hours are known to us. So, we get cost per unit for material and labor, which is anyway, going to be common; whether, it is a traditional method or under the a b c. So, we will say, this for direct costs. They are not going to change. Now, let us look at overheads. In the traditional system, all overheads will be clubbed and we will calculate a single rate for all the overheads. So, let us take all the overheads. So, the total overheads, production overheads are 1400. In the traditional system, whether, it is testing or machining

or rework, etc. is ignored. We say that the total production overheads are 1400. We will use some basis. Typically, the basis is number of machine hours. So, what is a total number of machine hours as is given to us? You can see here; the total number of machine hours are 1200. I am just pushing down the solution, so that we get to do it on our own.

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		Cost Rs.	Cost Driver				
Direct Material Cost	Direct Material	1000	0.417				1000
Direct Labour cost	Labour Hours	800	0.400	280	200	320	800
Production Overheads	No. of Machine	1400	1.167	466.7	583.3	350	1400
				3200	1163	1117	920

ABC Method							
Activity	Cost Driver	Cost Rs.	Cost Driver Rate	Model 1	Model 2	Model 3	
Direct Material Cost	Direct Material	1000	0.417	417	333	250	
Direct Labour cost	Labour Hours	800	0.400	280	200	320	
Testing Cost	Testing Hours	400	0.800	120	200	80	
Machining cost	Machining Hours	200	0.167	67	83	50	
Rework Cost	Units Reworked	150	0.017	21	96	33	
Ordering Cost	No. of Orders	350	2.500	125	75	150	
Engineering Cost	Engineering Hou	300	0.143	129	71	100	
Total Cost		3200		1158	1059	983	3200

So, 1400 is the total production overheads, and number of machine hours are 1200. So, 1400 upon 1200; we get 1.16 as the overhead rate. This is known as overhead absorption rate per machine hour, right, which is 1.67. Now, how will you calculate the cost for the product or for the particular model? Now, that we have three models. Please have a look at it again. See, we have got direct material cost as the first cost item. We are first, doing in the traditional system. Direct material cost, we know that it will go by cost per unit. So, we have got 1000 as a total cost, 2400 units. So, 0.41 is the rate; 0.400 is the rate for direct labor hour. Now, for a particular model, the number of machine hours are given, which is given here, sorry, not machine hours. The number of direct material units; you have to go back, which is given in b 16. So, we will try to take that, and multiply it by cost driver. So, 1000 into 417; in the second case, it is 800 into 0.467, which is 333. In case of third product, you see, it is 2400, sorry, it is 600 into rate. So, this is how we get it. Every time, we have multiplied it by the rate 0.416. So, we get 417, 333 and 250 as the material cost for each of the models. Same way for labor cost, we will look at the number of labor hours, and we will multiply it by the rate. So, number of labor hours is 700 multiplied by rate, which is 0.6. Now, it can be dragged. So, you get 280, 200 and 320.

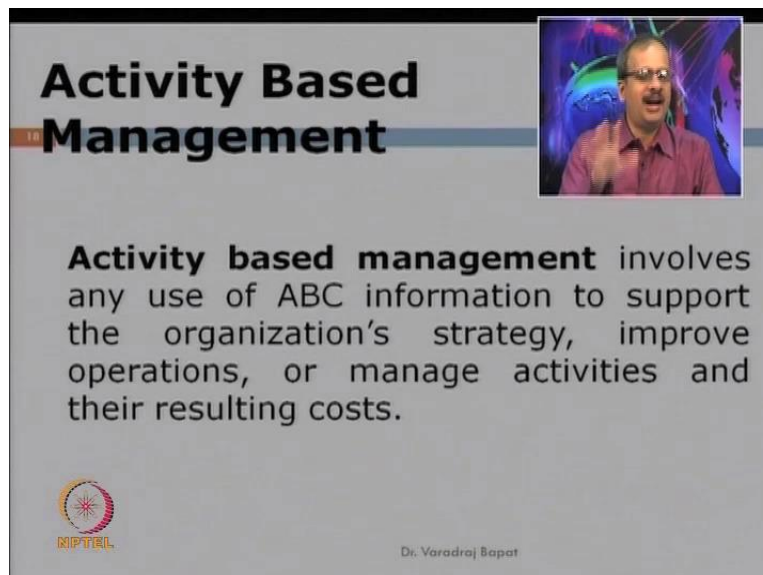
Now, as far as the production overheads are concerned, in production overheads in the traditional system, there is no concept of cost driver. In traditional system, we have calculated the overhead absorption rate per machine hours. So, we will go by number of machine hours to charge the production overheads, and we know that the total cost is 1400. It will be absorbed using machine hour rate, which is 1.167. Now, for each of the models, we will look at the number of machine hours, and multiplied by rate per machine hour, which is 1.167. So, you get 466, then 253 and 250. We will also take total. So, the total for model 1, 2, 3 is 1800 and 1400. So, the cost as was originally, allocated has been now, apportioned to the three products. Now, if you take the sum, you will get the cost per model; for model 1 as 1163; cost for model 2 as 1117 and cost for model 3 as 920. This is what is done in the traditional system. You can see that the total cost of 3200 has been absorbed.

Now, let us see how, what will happen in a b c. I hope now, you are able to calculate, you will be able to calculate it on your own. This is our third case. Now, can you tell me what should be done in a b c? In a b c, anyway, labor and material cost; there is no change, because they are the direct costs, but as far as the overheads is concerned, instead of looking at the total overheads as 1400, we look at testing, machining, rework cost, ordering cost and engineering cost separately, and for each of the overhead head, identify the cost driver. Now, go back to the data and look at the cost driver. So, the first is testing cost; what will be the cost driver for it? You are right; the testing hours becomes the right cost driver. Next is machining cost; what will be the cost driver? Here, it is machine hours. Rework cost, ordering cost; in ordering cost, you have got number of orders and for rework cost, you have got units reworked and so on. So, we identify the cost driver for each head, and then calculate the rate per cost driver. Now, let us see how it has been done.

In a b c system, this is how it will look like. For direct material and labor, it is known for testing cost; testing hours, machining cost; machine hours, rework cost; units reworked, ordering cost; number of orders and engineering cost; engineering hours. So, we have taken the cost for each of them. Cost driver units have been identified, and then the cost driver rate has been identified separately, for each cost driver. Same rates are now used here, to charge the costs. So, you get the cost like this. So, you can see, total 3400 has been now, charged to the products. So, model 1; now the total cost is 1158, model 2 is 1059 and model 3 is 983. You can see how it compares with the traditional system. This was under the traditional system; this is under a b c.


Once again I think it will be clear to you that now; it is slightly, improved cost charging, because we are looking at each cost separately, and charging it as per the activity, which absorbs those of resources. Now, the a b c system also, has more advantages, because it helps us to implement what is known as activity based management. Now, let us look at that. So, activity based costing leads us not only better cost allocation and absorption; it also takes us to a new system of management, which is known as activity based management. Now, have a look at what it is. An activity based management involves use of a b c information to support some managerial decisions, like organization strategy, or for improving the operations, or for cost control and so on. The a b c based costing, you already know; it establishes relationship between overhead costs and activities. So, that overhead cost can be better allocated.

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Activity Based Management

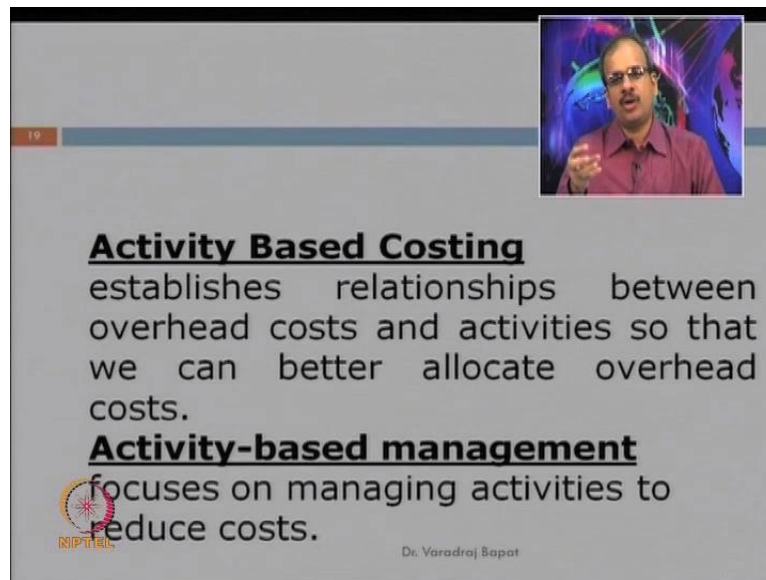
Activity based management involves any use of ABC information to support the organization's strategy, improve operations, or manage activities and their resulting costs.

 NIPTELL

Dr. Varadraj Bapat

The slide features a video inset in the top right corner showing a man with glasses and a mustache, wearing a maroon shirt, speaking. The background of the slide is a light gray gradient with a blue horizontal bar behind the title.


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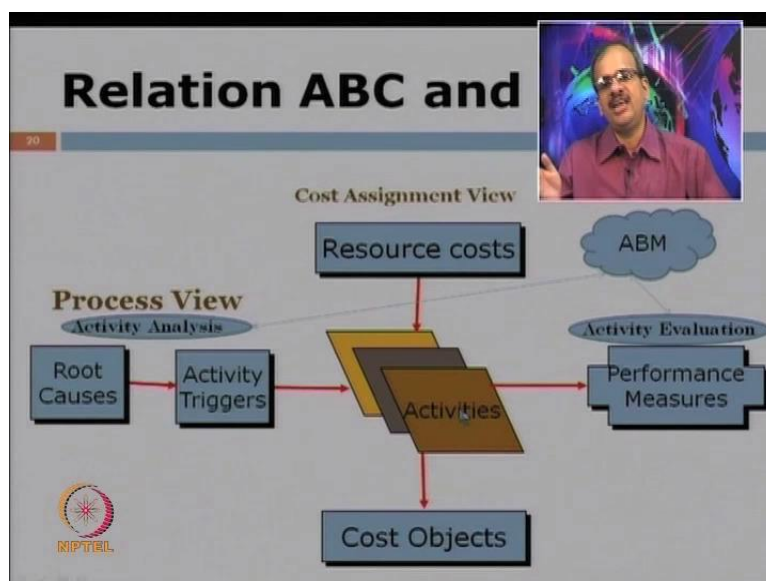
Activity Based Costing
establishes relationships between overhead costs and activities so that we can better allocate overhead costs.

Activity-based management
focuses on managing activities to reduce costs.

 Dr. Varadraj Bapat

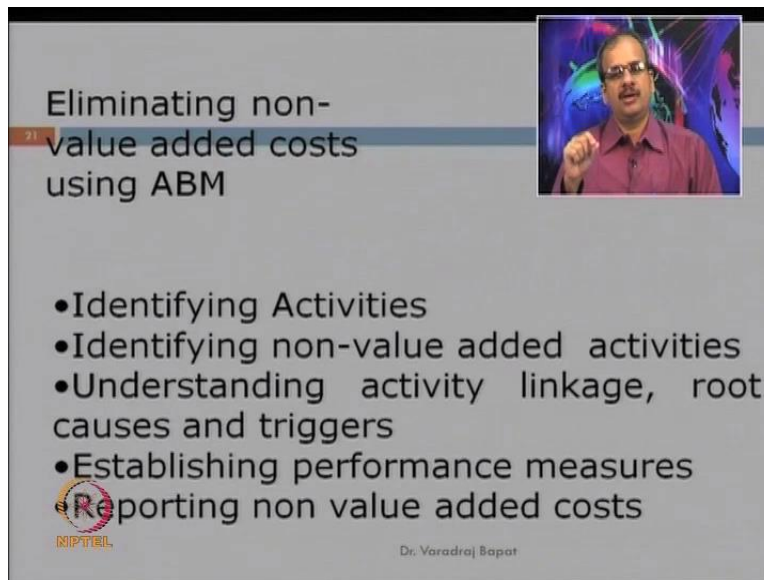


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In activity based management, we focus at managing the activities. Earlier, we just identified the costs. Here, we try to managing the activities, so that, the cost can be controlled or reduced. This is how the flow happens. So, we look at the root cause. Root cause lead to activity triggers. So, this is the activity analysis. Then, we look at cost assignment view. So, we look at the resource costs and we also looked at the cost objects. So, resource costs are for certain activities from which we get the cost objects, and then we go to activity evaluation where, we look at performance measures. So, now, under a b m, we are looking, more concentrating on performance measures.

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Eliminating non-value added costs using ABM

- Identifying Activities
- Identifying non-value added activities
- Understanding activity linkage, root causes and triggers
- Establishing performance measures
- Reporting non value added costs

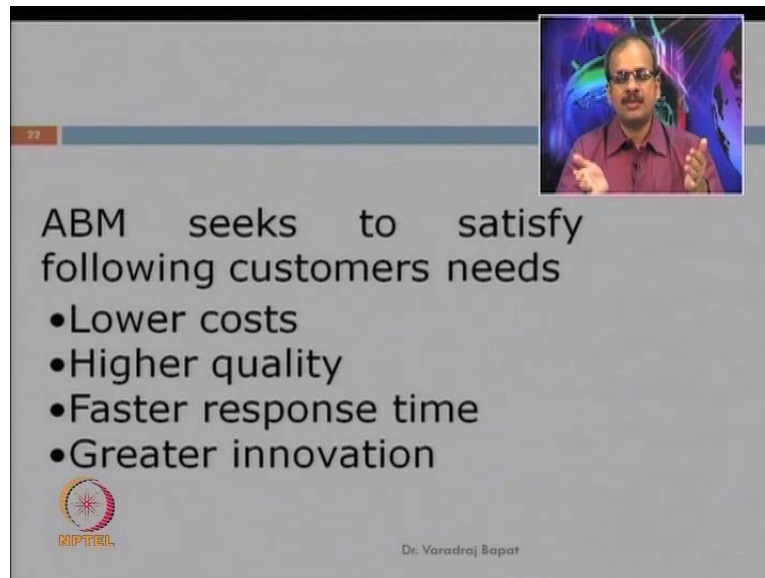
MPTEL

Dr. Varadraj Bapat

The slide features a small video inset in the top right corner showing a man in a maroon shirt pointing. The slide content is on a grey background with a blue horizontal bar behind the title.

In activity based cost management, what is tried out is non value based cost are intended to be avoided. So, indentifying such activities, because there may be some costs or some resources, which are used for doing some activity, which really, does not add value. So, they can be eliminated; they can be avoided, so that, the total cost can be reduced. So, first step is to identify such activities, which are not actually, adding any value. So, of the total activities, we identify as to which activities are non value adding, then understand the linkage root cause and the trigger, because we cannot simply, eliminate some activity; we have to look at its effect. Then, we establish the performance report, and then report the non adding, non value added activities.


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ABM seeks to satisfy following customers needs

- Lower costs
- Higher quality
- Faster response time
- Greater innovation

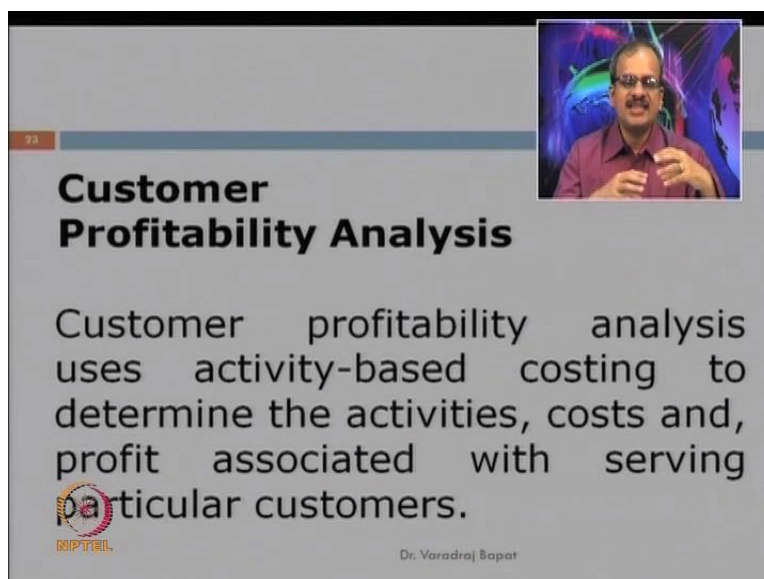
 MPTTEL

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So, a b c tries to satisfy the following needs. It looks at first of all, lowering the cost without effecting quality. So, high quality is maintained by lowering the cost. Response time is improved, because some of the unwanted activities are nullified so; that much time is saved and customer queries can be responded fast, or in production setup, the production time may reduce. So, you can produce faster and it also, leads to more innovation, because sometimes, alternate method maybe found; sometimes, alternate raw material may be found. So, such advantages happen because of a b c.


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Customer Profitability Analysis

Customer profitability analysis uses activity-based costing to determine the activities, costs and, profit associated with serving particular customers.

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Now, consumer profitability analysis is also done. So, consumer profitability analysis uses activity based costing to determine the activities, cost and profits, associated with serving a particular customer. So, in traditional system, profitability of a product is seen or profitability of a department is seen. In activity based management, apart from first two; we also look at profitability per consumer or per customer. So, it is seen as to dealing with which customer is more profitable, because by using less resources, we are able to satisfy the needs of such customer.

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The slide is titled "Customer Profitability Analysis" and features a video inset of a man speaking. The main content is a list of five characteristics of a costly customer, each in a blue circle:

- Orders small quantities
- Often changes orders
- Requires special packaging
- Demands faster service
- Orders frequently

The slide also includes the MPTEL logo in the bottom left and the name "Dr. Varadraj Bapat" in the bottom right.

So, an effort is done to identify who are the costly customers; otherwise, we feel that profitability only, is there for product, but here we look at those customers, which are costly. So, you can look at the features of costly customers. So, they order in small quantity. They often, change the order. So, because of small quantity orders, the number of setups increase. The cost of billing and admin cost increase. Sometimes, they change orders. So, that lead to some requirement of some changes; those which, who require special packing; those who demand faster service, because for that, we have to sometime, change our schedule, and those who order too frequently, and particularly, smaller orders. So, in customer profitability analysis, an effort is made to identify such customers, so that, they can be charged more and we can serve better more profitable customers.

So, we have seen now, some features of activity based costing. In our next lecture, we will look at very interesting tool for decision making. Before that a quick review of what we have

done today; in the earlier session, we had seen the basics of activity based costing. Today, we have done three cases on activity based costing. We have seen how the cost drivers are identified; cost per each cost driver is calculated, and then that data is used to calculate the cost of each product. So, we get, under a b c, a better cost calculation per product. In traditional system, we had plant wise rates, which give overall rate for the whole plant, and improvement was to have a department wise or cost center wise rate, but much more improvement, if we know the cost per cost driver.

So, that the product cost as are calculated, are much better. Then, we move to discussion on activity based management. So, the data from activity based costing can now be used for better managing. So, an attempt is made to eliminate non value added activities, concentrate on important activities, reduce the service time and so on, and towards the end, we have seen consumer profitability analysis. Under these, we try to see who are the costly customers and which customers are more profitable. So, that we can serve profitable customers more, concentrate on them, our marketing efforts on them, so that, we get more profitable customers In next session, we will look more in detail on the analysis of cost into fixed cost and variable costs, which is also known as Break Even point analysis or cost volume profit analysis. The analysis is extremely, useful particularly, for taking a variety of decisions.

Thank you so much.