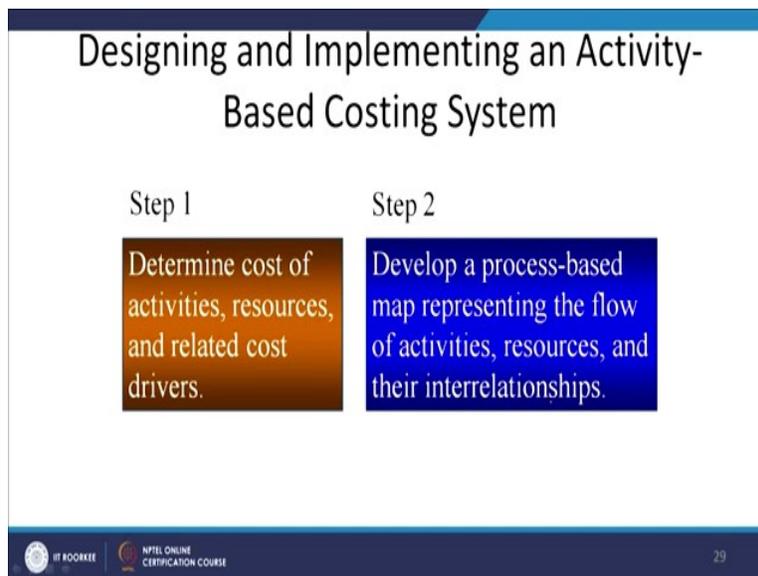


Management of Accounting
Professor Anil K. Sharma
Department of Management Studies
Indian Institute of Technology Roorkee
Lecture 54:
Designing of ABC System

Welcome students. So let us continue with the process of ABC understanding the concept some Concepts about ABC. I talk to you something in the previous class about the activities different type of type of activities and different type of drivers. I able to talk to you about the designing of an Activity-Based Costing system, when you talk about the designing of the activity based costing system, we have some steps to perform and these steps are 4 to 5?

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So how these steps to be required to be performed and what these steps are designing and implementing and Activity-Based Costing system step number one determine cost of activities resources and related cost drivers.

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The image shows a whiteboard with handwritten text in black ink. The text is arranged as follows:

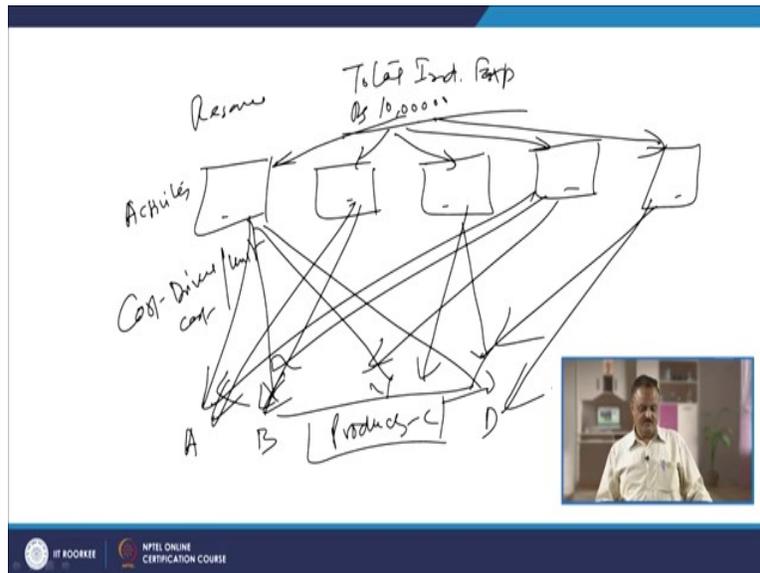
- Top line: h.c. - Time
- Second line: Charge of set up
- A horizontal line separates the top two lines from the bottom text.
- Below the line: 10,00,000 (1)
- Below that: 1-50
- Bottom line: Trans
- Bottom line: Durat

In the bottom right corner of the whiteboard area, there is a small video inset showing a man in a white shirt speaking. At the bottom of the whiteboard, there are logos for IIT ROORKEE and NPTEL ONLINE CERTIFICATION COURSE.

How much is the total indirect cost or the fixed cost? Right, you can say that my fixed cost is, how much? Is say 10 Lac Rupees. This is one, how many activities 1 to 50, and how many drivers, normally the transaction and duration. So these are the two major drivers which we have to identify.

Third one is required but not in all the products, right? So this is the first step. Second step is develop a process based map, representing the flow of activities, resources and their interrelationship. Develop a map. So we develop a kind of a map.

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We show here different type of the map remains is that we put here the total indirect expense, total indirect expense report on the top, right and then we put here as the that amount maybe that is rupees 10 lacs.

This is the on the top and then we say that, what are the different type of the activities we have to perform? We find out those activities, we put those activities here, and these may be the five activities and how how this cost has to be allocated? Whether this cost is applicable to all? Yes we put it like this, that is this a cost is applicable to all the activities. Then now this is the resources, this is activities and then is the drivers, cost drivers activities and that total allocable cost here we put here the cost also we put the activity name and the cost and then the cost driver.

For calculating the per unit, for calculating the per-unit. For calculating the per unit cost and then we have here the products. We have here the products maybe A, B then it is C and then it is D. So then we allocate this cost whether this total activities performed for this also, for this also, for this also and for this also. This activity may be being performed for these two only this and this only so we show the map like this, this activity we are performing again for the product C and the product D right and here this activity you are again performing for all the four products.

So, it means you will be showing it towards the all the four products and this again is we are doing only for the one product C and the one product D. So this way you have to create the map in which relationship and interrelationship between the products, activities, resources and the total indirect cost has to be shown. So if this map is ready, this map is prepared so what happens this map helps to guide everybody who is connected with the system in the firm in the organization. If this map is not there for example and today there is one cost officer or the costing officer in the company who under whose guidance and entire ABC system has been developed.

He knows that what are the different indirect cost amounts, then what is the total you can call it as the total activities total resources, total cause total activities, total drivers, total products. So he knows it, that how we have to allocate the cost. But for example, the tomorrow that person leaves the organization or if he transfer to some other division or some other place then the new person has to take over and again understanding the entire costing system will take some time for him.

But if the map is available in that firm that map, ABC map is available, he can find out. Okay, this is our average Indirect Cost is 10 lac Rupees. These are the different activities we are performing in the firm. These are the different products. We are Manufacturing in the firm and this way these activities are to be allocated to the different products these are the different drivers which we have normally duration drivers or transaction drivers and how this way this cost has to be allocated.

So, this map is so useful that if you do not develop the map then you are not going to do anything and ultimately it is going to be very very difficult system. So first step is that to determine the cost of activities, resources and related cost drivers. Second is develop a process based map representing the flow of activities, resources and their interrelationship, right which I discuss with you preparing the map.

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Designing and Implementing an Activity-Based Costing System

Step 3

Collect relevant data concerning costs and the physical flow of the cost-driver units among resources and activities.

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Then we talked about the third step third step is collect relevant data concerning cost and the physical flow of the cost driver, driver units among resources in activities. Collect relevant data concerning cost and the physical flow of the cost drivers, cost driver units among the resources and the activities. So it means, total information all we have to collect. We know that how many activities are there. We know what is their relationship and interrelationship.

Now, we know that how different type of the drivers are there? We have to collect the data and how their physical flow takes place which activities affecting which product which activity is not affecting the other product and what are the different drivers we have to find out those drivers.

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The slide features a title at the top: "Designing and Implementing an Activity-Based Costing System". Below the title, it indicates "Step 4" and provides the instruction: "Calculate and interpret the new activity-based information." A blue box at the bottom of the slide contains the text: "Using an activity-based costing system to improve the operations of an organization is *activity-based management (ABM)*". The footer includes logos for "IIT ROORKEE" and "NPTEL ONLINE CERTIFICATION COURSE" along with the number "31".

And the fourth step is calculate and interpret the new activity based information. Once you have calculated the Total Resource cost indirect cost you have identified all activities, you have identified the cost per activity have identify the drivers and then you have say now, you know that how to allocate the cost to the different products.

So, you calculate that per unit cost multiplied by the number of activities or the drivers and then you add up to the products so that the right amount of the fixed cost is added to the right product and the right cost is calculated so you have to perform this four step system .First one is identification of activities, drivers and resources. Second is creation of the map, third one is then calculating their values and finally then putting them and fourth means adding them to the different products, that is the another means the fourth activity we have to do or we have to perform.

Using an activity-based costing system to improve the operations of an organization is activity-based management, is activity-based management means ultimate purpose is what we want to improve the operations of an organization and when the operations are improved the cost allocation is improved.

So, it means overall performance of the organization increases because overall performance of the organization increases means when we are able to achieve that total sales target, we are able to achieve that profit target, we are able to achieve that the number of units manufactured and selling them in the market Target when we are able to do all those things, when we are able to do all those things, so it means here you have to now create a system and the purpose of that system which we call it as ABC Activity-Based Costing system is to improve the operations of an organization and this all is called as the Activity-Based Management.

Because, if you are able to rightly cost the product you are able to rightly price the product and you are able to rightly have the right market share from the market. So it means designing and implementing Activity-Based Costing system has four steps. And then finally if you are able to do that, implement the system, run the firm on the basis of ABC then that system is called as ABM Activity-Based Management. Now, what is the activity-based management? Again, let us understand it furthermore clear further more clearly.

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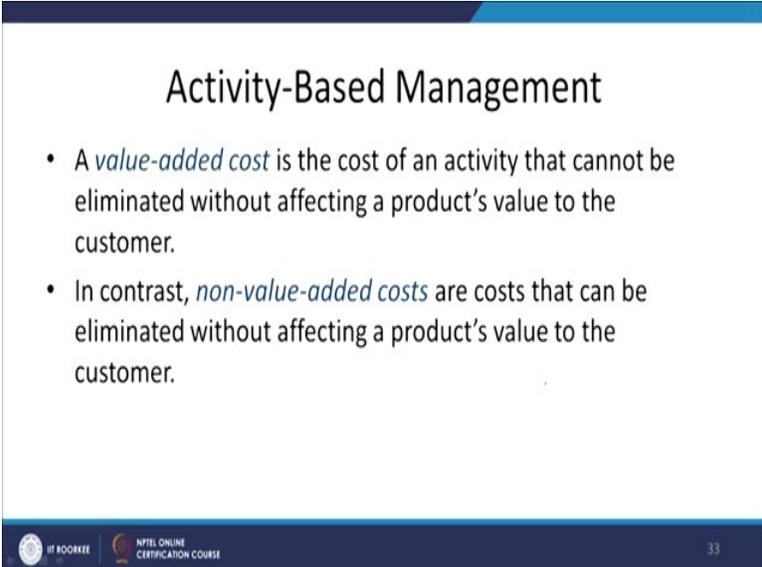
Activity-Based Management aims to improve the value received by the customers and to improve profits by identifying opportunities for improvements in strategy and operations. Value received by the customers because you are charging the right price from the right customers. If I am buying product, for example, if I am buying this pen and this pen cost me 10 rupees otherwise means I am paying 10 Rupees for this pen I am happy.

But, if this pen is means the manufactured in a way where the cost is miscalculated and the the company has calculated the cost of this product as 18 rupees, adding 2 Rupees is the margin if they are selling it to me for 20 rupees somehow, I have to buy the product because there is no alternative, but ultimately I am not receiving the value for my money. I am not receiving the value for my money. This pen is not worth 20 rupees, this pen is 10 Rupees. So I should be charged means 10 Rupees for this product.

Another person, another customer could be, who is requiring the product which is based upon the product sustaining activities, whose cost will be allocated on the basis of the intensity of the product then certainly you charge the higher price from him. You do not charge the same price from him which you charge the higher price higher price because he is asking for the better services he is asking for the improved product, he is asking for the different product.

So, it means activity-based management facilitates the value to be given to the customers, and once you keep your customers satisfied, once you keep your customers means fulfilling all their demands and happy all the times they always support the company, they continue to be the permanent customers of the companies and they always means support the company and their operations so sustenance of such companies in the market for the long durations long terms is very very much possible. It becomes feasible.

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Activity-Based Management

- A *value-added cost* is the cost of an activity that cannot be eliminated without affecting a product's value to the customer.
- In contrast, *non-value-added costs* are costs that can be eliminated without affecting a product's value to the customer.

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Now, further more about the ABM activity-based management, a value added cost is the cost of an activity that cannot be eliminated without affecting our products value to the customers. A value adding cost a value added cost is the cost of an activity that cannot be eliminated without affecting our products value to the customer. You are performing some special function to create a product which is ordered by the customer himself. I do not have to buy the black pen. I want to buy the red pen and manufacturing the red pen has a different cost as compared to manufacturing the blue and black pens. So why should I not charge my customers for the additional value I added to his product.

Then in contrast, non-value-added cost are cost that, can be eliminated without affecting our products value to the customers. We are manufacturing the black pen. You are manufacturing the blue pen and largely the total overheads consumed by these products are much less because the volume of the production is very high. So why not to eliminate that extra cost which because of the red pen you are incurring and adding to the black pen. We have not to do that, add the total cost of red pen to red pen, total cost of the purple pen to purple pen black pens cost to black pen, blue pens cost to blue pen.

Ultimately, I think we will be solving the problem of over costing and under costing and people will be ending up paying the optimum price for the product and firm will also be happy, customers will also be happy all then trust groups will be very very happy.

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Using ABC Information

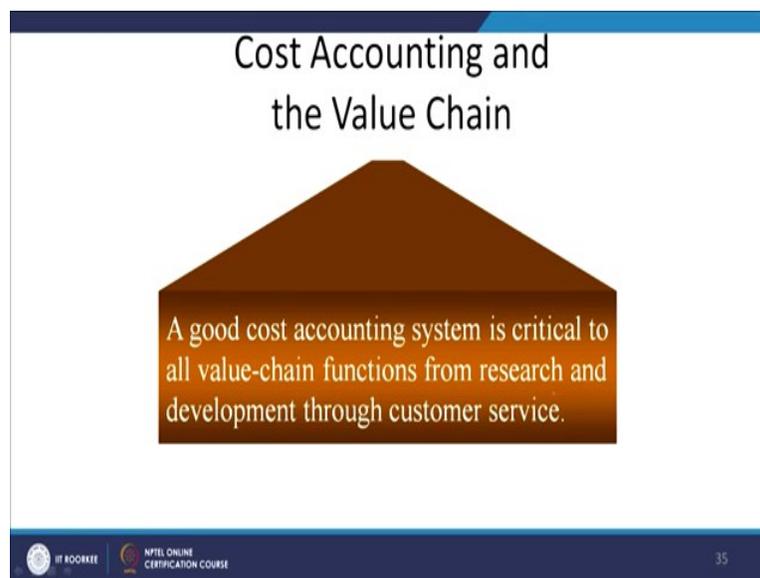
- Activity-based management...
- provides costs of value-added and non-value-added activities.
- improves managers' understanding of operations.

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Now, we talk about using ABC information, that how we can say we we improve the activity-based costing system. We have the three important points to be borne in mind. Activity-Based Management, provides cost of value added and non-value-added activities. This is what we do and the ABC. We are able to find out in one product which activities used which activity is not used.

So, why to add the cost of both activities to the product which is not using any particular activity improves managers understanding of operations. ABC Activity-Based Management provides cost of value added and non-value added activities, improves managers understanding of operations. You understand how to manufacture different products. What is the cost associated to those products? And how to allocate that costs? and ultimately if we are able to do that overall operations of the firm improve.

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So, cost accounting and the value chain now we talk about. A good cost accounting system is critical to all value chain functions from research and development through customer service, you perform different. It is a chain of the functions we perform. Total and every level we keep on adding the value to the product, every time we keep on adding the value to the product, every time we keep on adding the value of the product and in this case when you talk about the total whole system, you can understand that what are the different activities we are performing, how value we are adding and how other things are taking place.

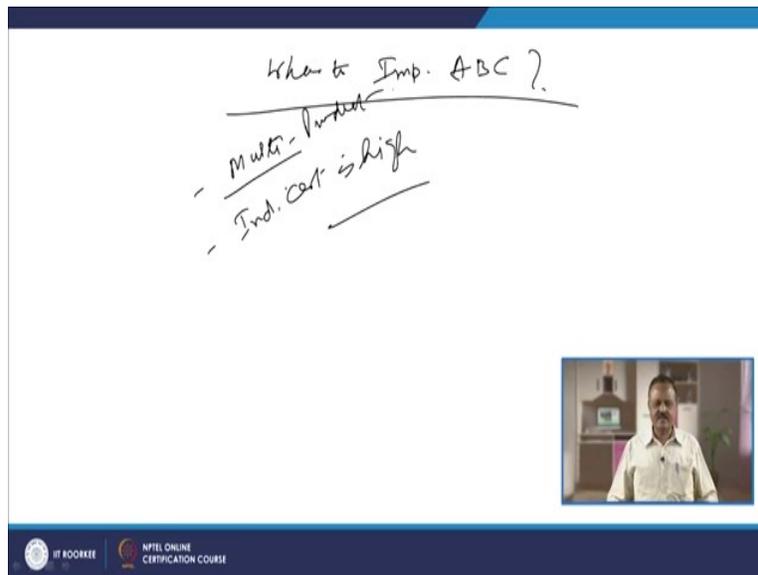
So, it means when you talk about the cost accounting the purpose of the cost accounting is identifying the cost causing activities properly identifying them how to allocate or distribute to different products and then following a process of calculating the real cost of production, actual cost of production and that too not only in the one product or the categories of the product but right from the R&D to the customer service.

Finally, means where you start the product manufacturing from, not from giving the shape. This pen has not started manufacturing when we really manufacture this pen. This pen has started which is causing the cost to us when somebody thought of an idea that conceived an idea that I should manufacture a pen which is of the having a black ink, blue ink, red ink, purple ink, right? So those means right from there you start thinking and your cost start incurring. So research and development then go for the test manufacturing and then go for the further processes till you manufacture the product sell the product in the market and then you perform the after-sales services, you provide the service to the customers.

So in this case, when the whole process when you talk about the entire thing we have to take in mind we have to bear in mind is that, all the activities all the things all the functions have to be performed properly. So finally the objective of finding out here is that activity-based management provides cost of the value added and the non-value-adding activities and improves the managers understanding of the operations.

So till now what we talked about is that when you want to talk about this system, first of all understand the organization first, you understand the firm as a whole and once you understand the firm as a whole so it means you always keep in mind where you can implement the where to implement ABC.

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Right, where to implement ABC. Is it possible to be implemented in all kind of the firms, no firms manufacturing multiple products. Multiple products and second is the say a fixed cost is or indirect cost is indirect cost is high. Indirect cost is high while we learn about the multiple products.

So, when we talk about the say ABC system one, very famous Professor of Harvard Business School had given a very good logic that there is one rule which is applicable in the organizations where ABC is possible to be implemented and that rule is Willy Sweeten rule. You can search on the net Willy Sweeten Rule and what the Willy Sweeten rule is, that for example, that rule says or that rule means the purpose behind that rule is there was one person called as Willy Sweeten in U.S. He was say robbing the banks, he was looting the banks and he was making money through that process.

One day, he was caught by the police and was questioned, interrogated. Why are you looting the banks? Why are you involved into this activity? He says I am looting the banks because I want to make the money and I am only looting the banks because money is there. If I go to some person how much money I can get from him. If I go to a shop how much money I can get? I am going to the bank because money is there. I want to loot the bank, grab a lot of money.

So my efforts have a very very high cost if I am caught I will be punished. So my efforts are very very expensive, very very risky having high amount of the cost. So I should be performing those activities only when the amount of that amount or the amount of that benefit I am going to get out of it is very high. So when he is going to the bank, he knows that if I get from the bank say for example two crores, so it is worth that even I am caught also and if I do not get caught, so what will happen if I get caught no problem, but if I do not get caught then I will be getting two crore rupees.

So, same is the case with that where you can implement the ABC where the fixed cost or the indirect cost is very high. Where, the fixed cost is very high indirect cost is very high, there we have to think of say implementing the ABC. So number one is multiple products you are manufacturing, not one or two. At least if you are manufacturing three to four or more products. Then you think that first condition is met, second condition is that the amount of fixed cost is very high and it is not easily allocatable to all the four products, so that is another important thing.

So make sure that is why I told you that when we think of these two rules we think of these two rules the reason behind it implementing the ABC system is very very expensive process and once implemented you cannot say that it will remain same forever. It will change over a period of time and when it will change over a period of time then in that case means again, you have to incur the cost.

So because when you implement the ABC system, we do the preliminary work a preliminary work at our level in the firm level. And then we hire some Consultants who are really means the people who understand. What is ABC? So I told you different type of drivers we follow different type of activities we follow.

So, you can call it as the drivers that is the duration driver it is not means a transaction driver you can say first. Transaction driver finding out the transaction driver is not a problem but the duration driver is a problem. Means calculating the cost of that duration is very very difficult. I told you earlier also in the previous classes that for example now there is other ten people. There are 10 people who are working in the administrative department.

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The image shows a whiteboard with handwritten notes in black ink. At the top, it says "How to Imp. ABC?". Below this, there are several lines of text: "Multi-Product", "Ind. cost is high", "2 cr", "3-4 or more", "fixed cost", "10 people", "Act. Dept.", "Transac", "Dur", and "100000". There are also some numbers and symbols like "400000", "4-4M", and "100000". A small video inset in the bottom right corner shows a man in a white shirt speaking. At the bottom of the whiteboard, there are logos for "IIT ROORKEE" and "NPTEL ONLINE CERTIFICATION COURSE".

10 people who are working in the administrative department and they are dealing with all the 4 products. Means they are doing communication. They are maintaining the ledger accounts. They are maintaining the stock account. They are maintaining all other kind of accounts and their total time is distributed towards the 4 products ABC and D right. Now. if you are saying the total salary of these ten people's is say for example, 4 lac rupees.

And you have to distribute that to the four products. So you can say that we are manufacturing how many 1 lac units of these four products. So per unit cost for the one product is say how much, four rupees. But actually I told you many times, these 10 people are only giving 10 percent of their time to product A 20 percent time to product B 30 percent time to the product C and remaining time to the product D. So how this ten people's salary of the 4 lac rupees can equally be apportioned to all the 4 products that is Injustice with the products and it is cost and it is costing system.

How it can be done? That is not possible to be done and it should not be done. So it means we have to deal with the situation where your fixed cost is the problem. So what happens now? You have to allocate this so even if you go to this 10 people, we ask them as a means. For example, I am the person who is responsible in my component implement the ABC I want to identify that duration driver.

So, I go to these 10 people and I asked them that you see you are managing all the 4 products. You are the 10 people you are means proportionally giving your time to all the four products. So, can you tell me that how much time in a day you are performing the activities with regard to product A, product B, product C or product D. Can you tell me? Even that person who is performing that job, he will not be able to tell the person who is asking this question. He can say that okay out of this total day of 8 hours I spent in the company or in the office for one hour I work for product A, 3 hours I work for the product B and then 2 or the 3 hours each I work for the product C and D.

But he may not be correct. Because he himself does not know, he has not recorded his time and it is not possible also. So what happens the consultant goes and sits in that office or the team of the consultants go and they sit in that office and they observe the people doing the the work, they know it. They keep the proper record of and they keep an eye upon all the ten people, that how much time normally proportionately they are giving to perform that different activities with regard to these different products and they keep on recording it.

Then they compare it, what himself the employee was saying how much time he is giving to the four products, what he as a consultant observer has observed. What is the difference and then they come out to a common conclusion that normally product A consumes this much of the time product B consumes this much of time product C consume this much of time product D consumes this much of time. So it means when you talk about all those things we have to be very clear that how to say distribute that cost fixed cost salaries of the employees.

Similarly, you talk about the say the rent of the administrative buildings, rent of power bills of the administrative buildings. You can easily find out that what is generally the volume of the production and how much time it is taking so that way the total cost maybe the duration cost or maybe the total your say the intensity of the product or maybe depending upon the say unit level. If it is unit level product, then it can say that we are manufacturing those say products pair every activity has to be performed for that kind of the product or that product is requiring that activity all the products because they are unit level activities.

So you can easily find out and apportion the cost and you can easily go ahead with that. So two conditions first one is that company must be manufacturing the multiple products and second thing is that there must be the high amount of the indirect or the fixed cost these are the two first prerequisites then means the problem comes off distribution of the fixed costs. So you have to make sure that we are not manufacturing one or two products.

We are manufacturing the large number of products and the fixed cost is very high. For example, you talk about the now the this chemicals Industries you talk about the say paint industry you talk about that as a pharmaceutical industry for manufacturing one drug different type of the materials are required, different type of the activities are required. Partly they are variable, partly they are fixed. So variable is very easy to apportion and to allocate but what about the fixed activities? What about the fixed cost? That causes a problem that creates the problem that gives the challenge and we have to think about it and we have to be careful about that.

So, and if you for example has a very standard product I say normal product you are manufacture. Then I think the complexity is less. So your fixed cost is also less and if the number of products are also one or are also less, one or two, then I think we should not means think about implementing the system because major challenge of implementing ABC is creating this system sustaining the system reviewing it with the passage of time over the time and finally means keeping the system updated. It's very very expensive.

So, once you incur some expense, you must be able to justify that expense as in the management accounting I told you when we started talking this all about this subject, I would tell you that cost and benefit is the basis of any decision making. How much cost we are going to incur, how much benefit we are expecting and then we can make the comparison and if you want to make a comparison if you want to make the comparison of the cost and benefit then in that case benefits must always outweigh the cost.

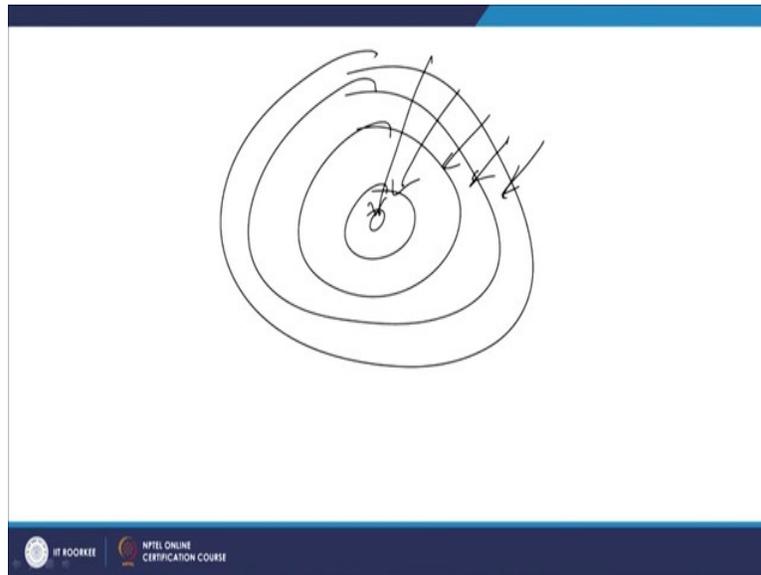
Then only to implement the decision if the benefits are less than the cost then there is no possibility. There is no reason to implement that particular initiative, that particular system. So we have to means be careful and we means thinking about that how much cost we are going to incur, how much benefits are going to construe to us and what all is means whether it is possible to implement the ABC system in the organization or not.

Largely in bigger companies in the say company large sized organizations, or maybe the multinational companies they implement this kind of the system. It is not the job of the small companies, small organizations. In India very few companies have implemented this system, not large companies even large companies they are not able to implement the system because of its complexities very high amount of expenditure required and keeping the system updated and performing the best kind of operations.

So, largely we are able to do that in the manufacturing organizations, but in the service industries also in the retailing organizations also we are able to do all those activities and to perform all those activities. So, in this whole case, in this whole system, we are going to means say learn about how to implement the ABC what are the prerequisites of ABC how to implement this system first to predict assets are this that product diversity and second is the your high amount of the fixed cost.

This is one, then second is identifying the different activities and then third one is identifying the different drivers and then calculating the per driver cost and implementing that cost. So, all those things have to be borne in mind and once you create that system you are able to means create that system.

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I told you that you can create this way. This is the outer ABC. This is the next level. This is the next level and finally this is the last level or maybe this is the ultimate level. So if you do not want to go up to the details, you can implement this system up to this layer or you can go up to this layer.

Ultimately, we have to start from here and we have to reach here. So if you are able to reach here you are hitting the bulls eye this is the real implementation of the ABC and the purpose of this ABC is finding out the true alternative to the say your total costing system, absorption costing system where the allocation of the fixed cost to the different products is defective, its faulty and we have to remove that and the say ultimate objective is calculating the correct cost of the product.

So, if you are able to calculate the correct cost of the product in that case you are be able to the correct cost of the product you are able to price it rightly. And if you are pricing a rightly you're charging the right price from the right customer and ultimately all the customers are very happy, companies operations are also improved and it is a win-win situation for all.

So this all is basically the conceptual part of the activity based costing that what the ABC is how to Superior to say the total costing system and what important things we can do, how we can implement the system how we can create the system in an organization. But again, bear it in mind, this is the alternative to the total costing system. This is not alternative to the standard costing, marginal costing or the budgets.

Because ultimately, we have to recover the total cost of production both your variable cost and the fixed cost. So in this case when you are talking about this total fixed cost and variable cost, we are recovering it in the total costing system also, we are recovering in the ABC also, but in the standard costing system, standard costing system is only a predetermined standard. It is only a guide to go for the real production it is not the actual cost of the product, it is only a budgeted cost of the products.

When you budget, prepare the budgets that gives you the broad idea about the organization as a whole and that creates the roadmap. When you go for the marginal costing, marginal costing is only based upon the variable costing system. So it is not taking into consideration the total cost. It means largely we are initially ignoring the fixed cost, taking care of the variable cost, calculating the contribution and after that if it is possible to recover the fixed costs from the contribution, then we will go for it and calculate the profit otherwise not.

So marginal costing is only temporary costing technique which can be used once in a while in the different market situations in the wake of competition, in the wake of say in the attempt of entering a new market or in the attempt of say introducing a new product in the market. Otherwise, it is not the replacement of the total costing system.

So, replacement of the total costing system is basically the ABC but the ABC is how it is useful, how it adds to the improvement of the overall costing system, this all we have learned till now in detail in the conceptual part here and try to understand the whole thing how it works and actually how it can be implemented, how it works, how it helps in creating the say the best cost structures.

I will discuss with you that in the next class by will be discussing some problems, some small case or some problems and will be means practically learning about that how to implement the activity based costing system in any organization and what difference comes in the cost when you calculate the cost per unit of the product under the absorption costing system and under ABC.

What is the difference in the cost? And accordingly how you can a price a different products and how can you calculate the say the profitability of the different products that major change you will be able to find out, you will be able to see. So this all practical part of the ABC, I will be discussing with you in the next class. Thank you very much.