Managerial Economics
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Lecture - 39
Theory of Cost - I

We will start discussion on the second part of this module that is theory of cost now onwards. So in the previous part, we discussed about the theory of production in the case of long run short run, then how the input output relationship.

And focus from now onwards is on the second part of the module which talks about theory of the cost. Here again we do the analysis from the short run and long run perspective. Before that we will see that how, what is the motivation for studying this cost of production. How it is generally getting used in the business decision and how it leads to profit or may be how it is used as the optimization problem in case of the minimization of the cost.

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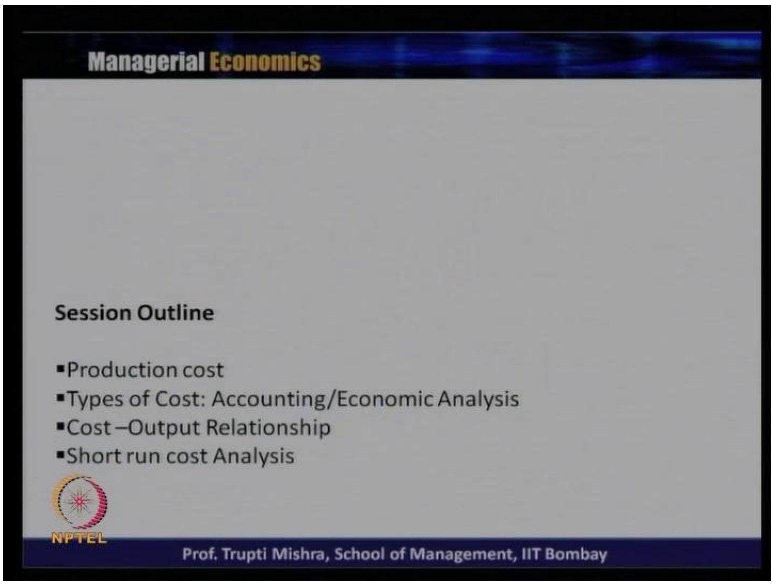

So, to start with the session, we will talk about the production cost, then types of cost mainly in the accounting sense and in the case of the economic analysis.Then we will talk about the cost and output relationship and finally, we will talk about the short run cost analysis essentially the relationship between the average cost that is the average variable cost, average fixed cost, marginal cost and then we will see that how from the total cost we derive the different kind of the average cost. So, to start with that we will see that what is the need or what is the motivation to study this; production cost.

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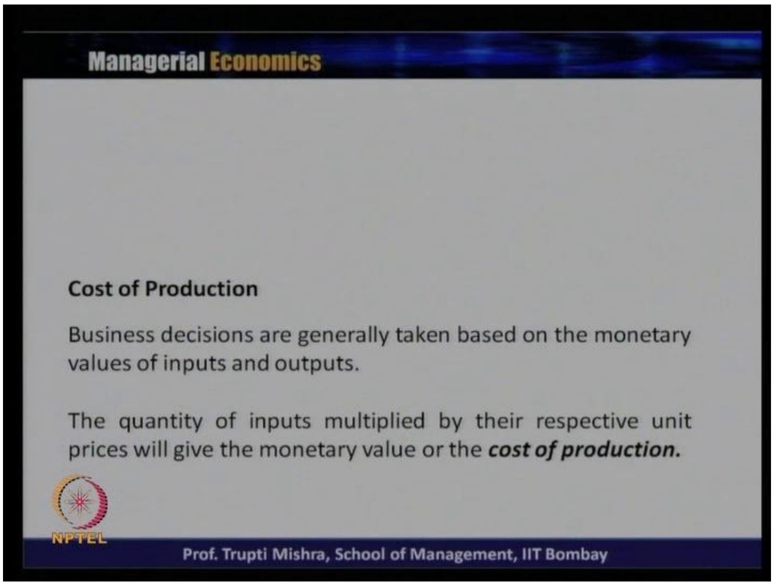

So, business decision, if you look at they are generally taken based on the monetary values of input and output. So, if you remember in the very first module when we discussed about the need of business or may be the business problems all the activity which gives some monetary or non-monetary value we call them as the economic activity and when it comes to business the sole motive is profit.

Then, they are decisions are generally taken based on the monetary values of input and output. The quantity of input multiplied by their respective unit price will give the unit monetary value of the cost of production. So, the quantity of inputs may be labour, the quantity of inputs may be capital, the quantity of inputs may be raw material, maybe it is technology, maybe it is time. In all these cases, when it gets multiplied; the quantity gets multiplied with the respective price or respective unit price that gives the monetary value or the cost of the production.

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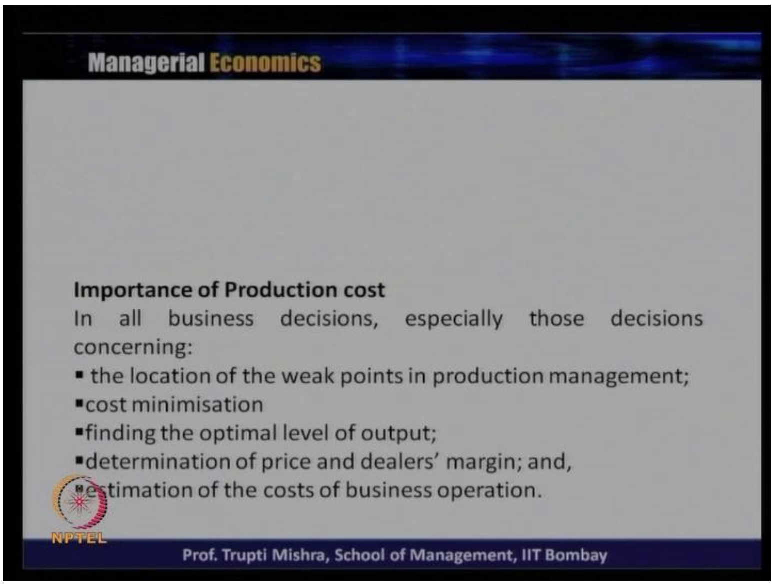

So, what is this importance of production cost in all business decision? Especially in case if you look at specifically related to the profitability or especially those decisions which concern the location of weak points in the production management. Cost minimization, finding the optimal level of output, determination of price and dealers margin and estimation of cost in the business operation. These are certain may be the these are certain coordinates or these are certain points where there is importance to analyse or importance to calculate the production cost. So, in generic sense production cost, the need for production cost comes to take any kind of businesses bust specially those decision which talks about the location of weak points in production management, cost minimization, finding the optimal level of output.

And what is the optimal level of output where the maximum output can be produced at the minimum cost determination of price? So, if you know market in case of market price, cost of production is one of the important components or may be, that is the base of the market price. Dealers margin, that is, generally the profit comes to the when it changes and from the producer to dealer the market price changes and what should be the dealer of dealers margins that based on the cost of production and estimation of cost in the business operation. So, these are the specific decisions. In that case again, the cost of production is, may be, the analysis of cost of production is required.

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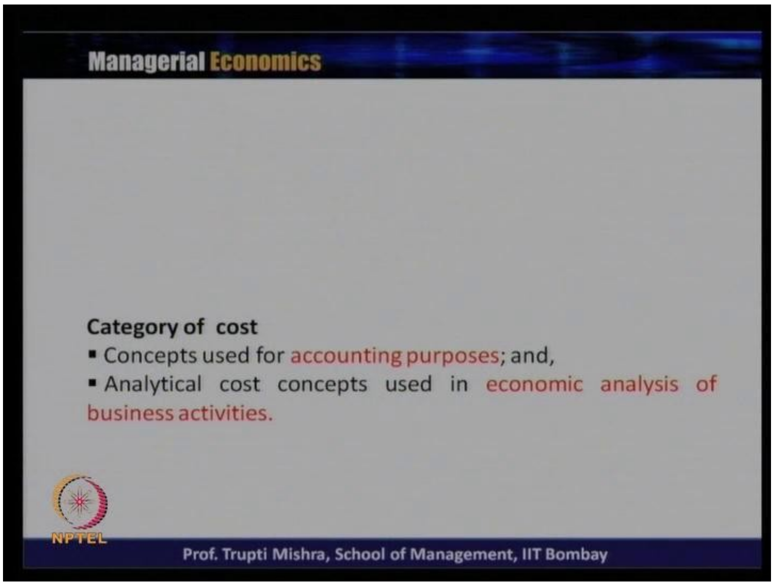

Then, we will see we will categorize the cost in to two two category category; one where the concept is for accounting purpose or in the accounting perspective and some analytical cost concept that is used in the economic analysis of business activity. So, category of cost strictly one for the accounting sense and second when generally we use a different kind of cost for economic analysis, may be, there is overlapping when you take the categorization in both these cases.

In case of accounting sense and in case of economic analysis sense, there may be overlapping but, still there is some categorization, some different kind of cost that has been analysed taking the accounting purpose and taking the economic analysis purpose. To start with, we will talk about that the whatever the categorization or whatever the different kind of cost comes under the accounting cost concept or may be accounting domain.

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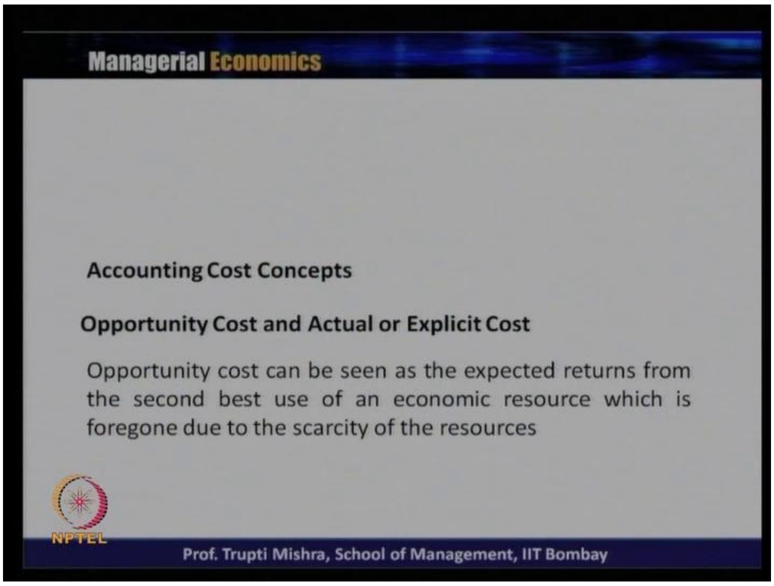

So, the first is the first type comes here, is the opportunity cost and actual or explicit cost. So, one is opportunity cost and second one is the actual or explicit cost. So, if you remember, when we discussed this, may be, the different concept that is getting used in managerial economics. Then, we spent a couple of minutes in opportunity cost. Opportunity cost is nothing but, the cost benefit associated with the next best alternative. So, opportunity cost can be seen as the expected returns from the second best uses and economic resources which is foregone due to scarcity of resources.

So, let us go back to the initial decision of initial discussion on opportunity cost. How opportunity cost comes into picture is, resources are scarce and that is the reason the resources cannot be used for all this activity. Generally, the producer makes a priority least and where to spent the or where to use the resources and generally, they use the resources on a specific activity. Now, the concept of opportunity comes opportunity cost comes here with a fact that, if the same resources could have been used for the other activity.

What would have been the benefit that is, strictly the opportunity cost for this present activity? So, the benefit what would have been received from the other activity by using the same kind of resources, that is, the opportunity cost of using this resources. So, opportunity cost can be seen as the expected return from the alternate use or the expected return from the next best alternatives and that is the opportunity cost of the present activity.

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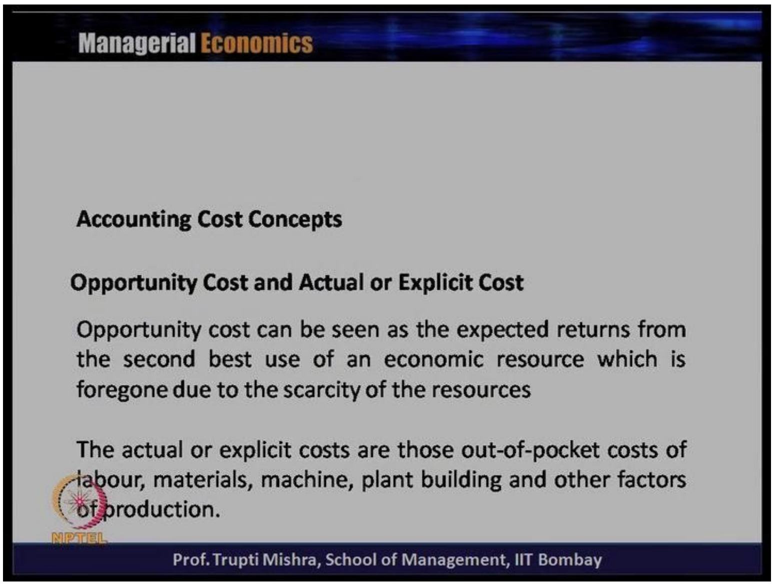

Then, the second one is the actual and explicit cost actual or explicit cost or those out of pocket cost for the labour materials machines, plant buildings and other factor of production. So, one is opportunity cost which generally derived from the benefit from the next best alternative and explicit alternative or the out of pocket cost is labour materials like whatever the firms or whatever the producer they are spending on labour or whatever they are spending on materials, the building cost plant, building other factor of production or strictly whatever the cost incurs for the different inputs getting used in the production that is, the actual or the explicit cost. So, the first category of cost comes under the accounting purpose is, opportunity cost and the actual or explicit cost. Then, we will come to the second category which is business and business cost and the full cost all the expenses incur to carry out the business are refer as the business cost.

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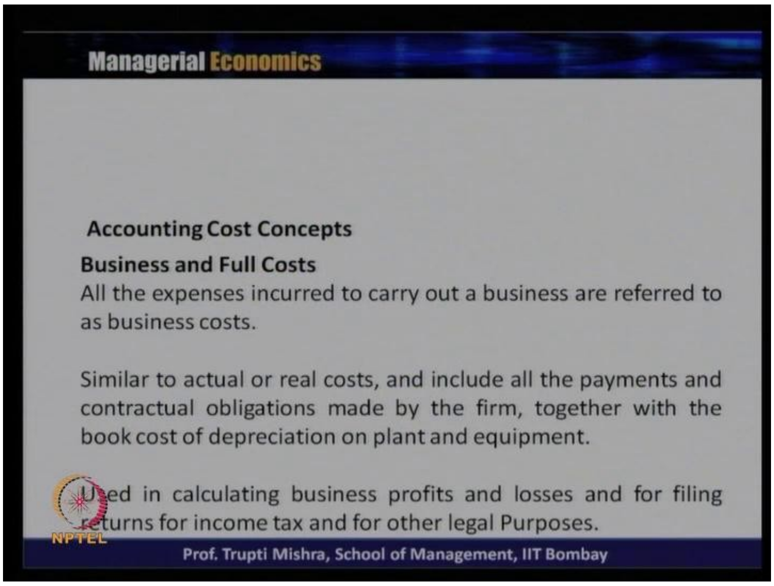

So, typically if you look at this is nothing but, the explicit cost or the actual cost. So, this is similar to the actual cost or the real cost and include all the payments and the contractual obligations made by the firm together with the book cost of the depreciation of the plant and equipment. So, business cost is nothing but the actual cost. It is similar to the real cost also and include all the payments and the contractual obligation made by the firm together with the book cost of depreciation on plant and equipment..

So, part one is actual cost, the obligation that is made by the firm and part two is the book cost that includes the depreciation of the plants and the depreciation of the machinery. So, may be, what on the basis of the lifetime of the plant lifetime of machinery, the depreciation is being calculated and that is also a part of the, may be, the business cost.

Now, what is what is the need of this business cost? This business cost is used in calculating the business profit and losses and filling return for income tax and other legal purpose. So, typically this is book cost, business cost used in calculating the business profit and losses and for filling returns for income tax and other legal purposes. So, if you look at this is the official kind of cost, which add the actual real cost depreciation of plant and equipment and generally used for the income tax and other legal purpose.

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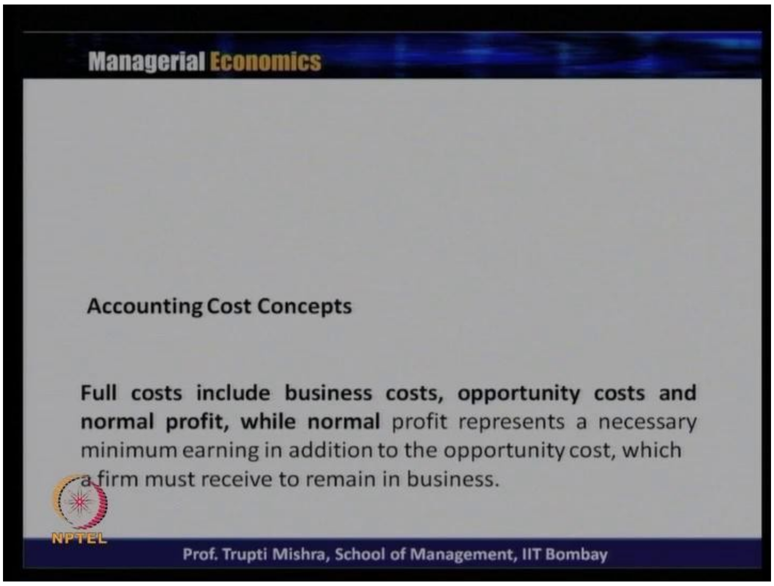

And what is full cost business? Cost is one what is kind of a formal cost, which includes the book cost and the depreciation and in compare to that we have full cost, which includes the business cost, opportunity cost, normal profit. While normal profit represent a necessary earning addition to the opportunity cost, which is a firm must remain in business. So, full cost includes generally, in a somehow, we can call it as a market price which includes the business cost plus the opportunity cost.

What is the next best alternative? Use of this resources, what have been used for producing this plus the normal profit because, normal profit is required for the producer to remain in the business. If there is setting away the market prices which, is just equal to the business cost then, there is no profit and for them it is difficult to stay in the market.

And, that is the reason full cost includes the business cost plus the opportunity cost and normal profit because normal profit is required for the producer to stay in the business. So, business cost is one which is a kind of a formal or official cost which talks about the actual or real or the explicit cost plus the depreciation of plant and equipment. In comparison to that we have full cost, which includes the business cost, opportunity cost and also the normal profit. And normal profit is necessary because this is the minimum earning to the producer to remain in the business.

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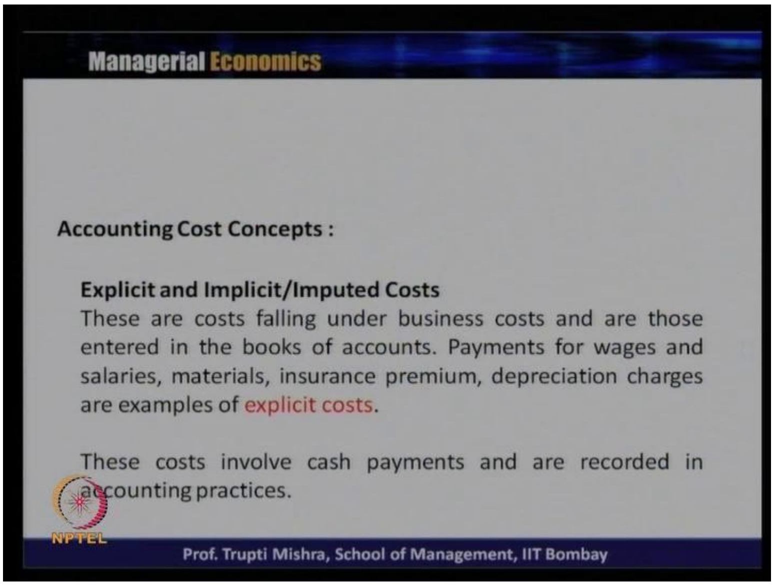

Then, we will take the third category of cost which calls the explicit or implicit or we can call it also imputed cost. So, explicit and implicit cost and this cost are falling under business cost and are those enter in the books of account. So, explicit cost is one which falls under the business cost and those entering the book of account payment for wages, salaries, materials, insurance premium, depreciation charges are the example of explicit cost.

So, whatever the cost incur for paying the wages and salaries, materials cost, insurance premium, depreciation charges are the example of the explicit cost. This cost involves a cash payment are recorded in the accounting practices. All these cost infers a cash payment are recorded in the accounting practice.

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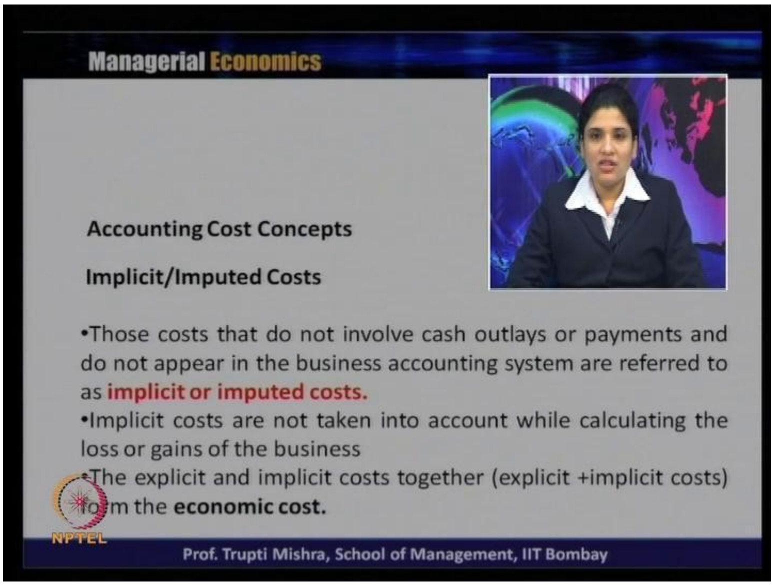

And in compare to that we have implicit cost. So, explicit cost is basically the input cost and the payment is the cash and that is a part of the accounting book. And implicit or the imputed cost is one those cost that do not involve the cash outlay or the payment or do not appear in the business accounting system are referred to the implicit or imputed cost.

Cost do not involve cash outlay or cash payments do not appear in the business accounting system. It is not in the credit debit and since it is not involve any cash outlay, business accounting or it is not part of business accounting system this is, generally, known as the implicit or the imputed cost.

So, if it is not a part of business accounting system if it is does not involve the cash payment then, this is not a formalized kind of cost and that is the reason this is the implicit cost. This is also not taken. Implicit cost are also not taken into account during calculation of the loss and profit. That is quite obvious if it is not a part of the business accounting system then, obviously this is not a part of the loss or the profit and this explicit and implicit cost together form the economic cost, then, what is implicit cost over here?

We can take a example of, suppose the owner is the producer. So, or the owner is the manager. So, if the owner is working as a manager then generally, the resources is getting used freely. There is no cost associated with it but, there is a cost associated with this because, owner is has some market value and if he is working in some other places, may be, he has getting incur some cost of firm. The producer has to incur some cost for it and that is the reason this is part of the implicit cost for this is present activity, and explicit and implicit cost together they form the economic cost.

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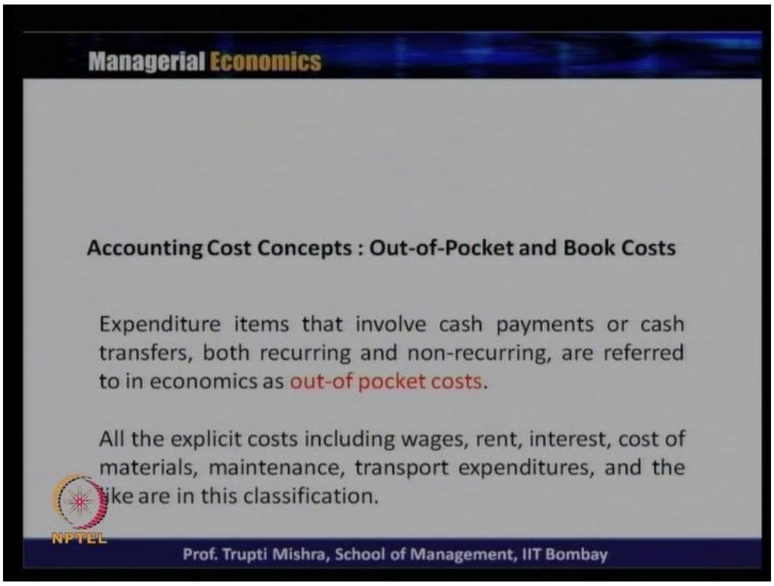

Then, we will take a fourth category of cost in the accounting purpose that is, out of pocket and book cost expenditure item that involve cash payment, cash transfer. Both recurring and non-recurring are referred to an economic is the out of pocket cost. So, all the expenditure; what the firm incurs, all the expenditure what the producer incur, that involve cash payment or the cash transfer, both recurring and non-recurring are referred in economic as the out of pocket cost. All the explicit cost including wages, rent, interest cost of material, maintenance, transport expenditure and the like are in the classification.

So, if you look at this out of pocket include us include wages, which is recurring and also its its recurring. Actually, it is recurring. It's on a continuous basis till the production is on. The labour is going to get used by the producer and the wages are going to be paid rent. Till the time the production operation is there you need to pay the rent for using the lent interest. Till the time production operation is worn, you need money to invest on it and you need to pay the interest for it cost of material till the time, production operation is on.

You need to use material for the production process and and that also incurs on a payment basis, maintenance, transport expenditure. So, if the production operation is on all these inputs are all these inputs are on a recurring basis and the producer has to continuously spend on it. These are all part of out of pocket cost.

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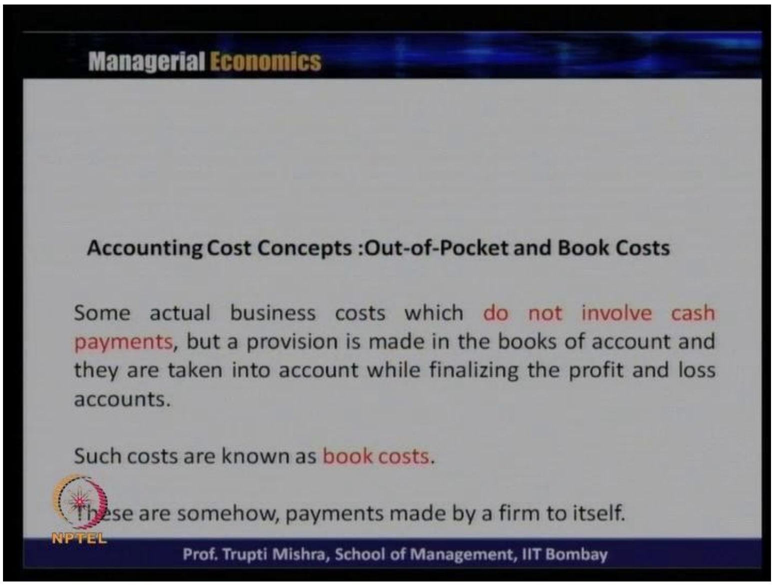

Now, we will see what is book cost. So, out of pocket cost is all explicit cost which occurs, re occurs on a continuous basis that is, the out of pocket cost. Then what is book cost? Some actual business cost which do not involve the cash payment but, a provision is made in books of account and they are taken into account while they are finalizing the profit and loss account. Such cost are known as the book cost. So, book cost; how it is different from the implicit cost? If you look at implicit cost, they do not appear in the business accounting system. They are not being calculated in case of loss and profit and in this similar line what is book cost.

There are some actual business cost. So, this is explicit and this is how it is different from the implicit cost. Some actual business cost which do not involve cash payment but, that provision is made in the books of account that, they are taken into accounting when finalizing the loss and profit and such cost are known as the book cost.. And these are some payment made by the firm to itself. Like suppose, the manager is the owner manager is taking a salary. Obviously, the salary is part of business accounting system calculated as the part of loss and profit and that is why this is known as the book cost.

So, any cost which is a part of business accounting system, which is considered in calculating loss and profit that is a part of book cost and also this is a actual business cost may not involve a direct cash payment. May be, the form of remuneration is non cash or it is in kind but, still it appear in the accounting system, when it is being taken during loss and profit calculation. That is the reason it is known as the book cost and here it makes the difference between the implicit cost and the book cost.

That implicit cost never appears in the business accounting system and they are not being taken into account when the calculation of loss and profit. Then, we will come to the second part of the category and the second part of the category of cost is on the basis of the economic analysis of business activity.

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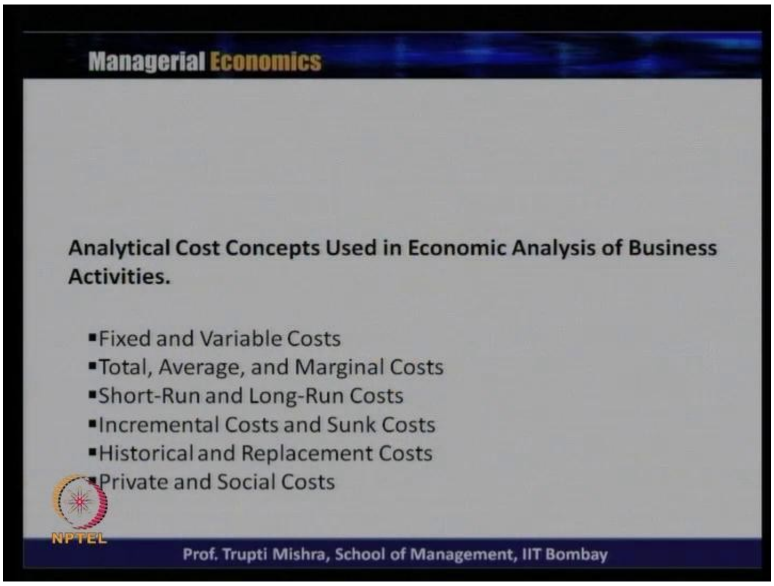

So, till now all the categorization, whatever we did that is on the basis of accounting purpose. Strictly keeping the business accounting system in the mind but, the this categorization what we are going to discuss now, this is specifically the analytically the cost concept that is used in the economic analysis of business activity. So, the first one is fixed variable cost. Then, we will discuss about the total average and marginal cost. Then, the short run and long run cost incremental and sunk cost historical and replacement cost and finally, we will discuss about the private and the social cost.

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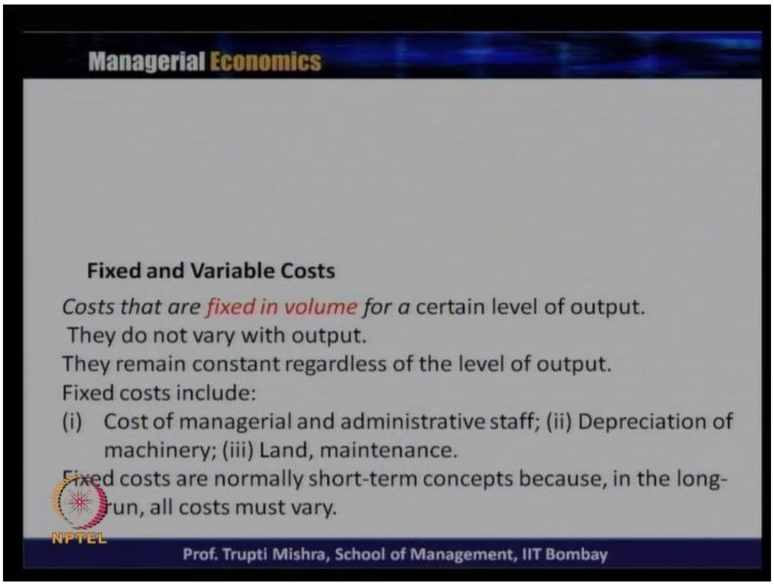

So, to start with we will discuss about the fixed cost and the variable cost. So, there are two types of factors; one is fixed factor and other is the variable factor. So, cost that are fixed in volume that are certain level of output that is generally known as the fixed cost. So, suppose to produce hundred units of output, the k is fixed. So, the k is suppose, the machine the capital is the machine and to produce hundred units of output there is only requirement of one machinery so in this case the cost also remains same up to hundred units of output. And that is why this is the part of the fixed cost because, the cost that are fixed in volume for certain level of output. That is, as the fixed cost, they do not vary with the output. They remain constant regardless of the level of output.

So whatever may be the output change in the output whether if it is 60 units, if it is eighty units, if it is hundred units still, it is the same level of output. The fixed cost is remain constant. It includes the cost of managerial and administrative staff, depreciation of machinery, land and maintenance. These are the part of the fixed cost. Like administrative staff or the managerial staff, whether you produce hundred units, whether you produce 120 units, whether you produce 200 units, it is the same. There is no difference in the level of fixed cost because you are going to produce all these unit of output with the same fixed unit of the input.

So Input are not getting changed obviously the cost will not change. So, suppose the administrative staff irrespective of it whether it is a producer is producing hundred, eighty, sixty, the administrative staff has to come for eight hours. There is no change in the salary not increase not decrease. So, the cost incur through the salary, that remain constant and that is the reason, we consider the cost associated with the administrative expenses as the fixed cost of production. It's normally a short term concept because in the long run all cost must vary. If you remember in case of production analysis, we discuss that in the long run all the variables has to be all the inputs, has to be variable in order to increase the output and that is the reason fixed cost are, generally, a short term concept.

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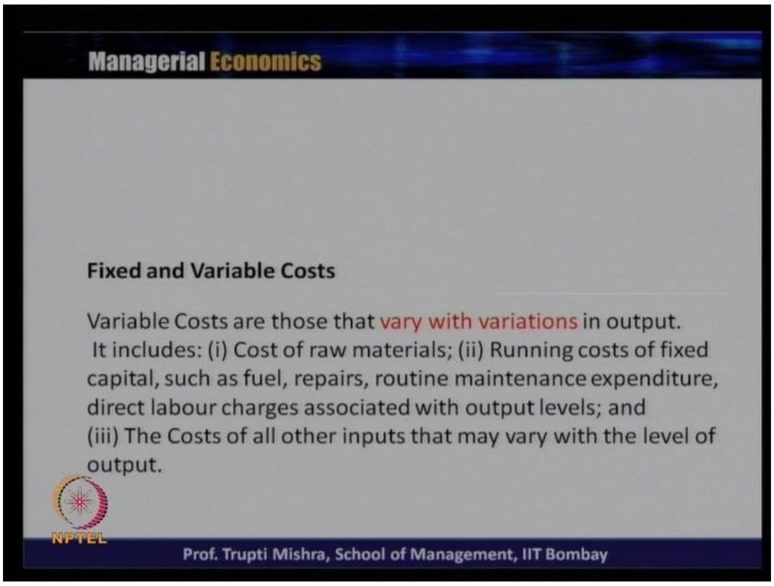

Then, we will discuss about the variable cost. Variable cost are those that vary with the variation in output. And whenever there is a variation in the output that leads to variation in the input and if there is variation in the input, that leads to the variable cost. It includes cost of raw materials, running cost of fixed capital such as fuel, repairs, routine maintenance, expenditure, direct labour charges associated with the output level and the cost of all other input that may vary with the level of output.

So, variable cost are those that very with the variation in output. Includes cost of raw material, running cost of fixed capital such as fuel, routine maintenance, expenditure, direct labour charges associated with the output level and the cost of all other input that may vary with the level of output.

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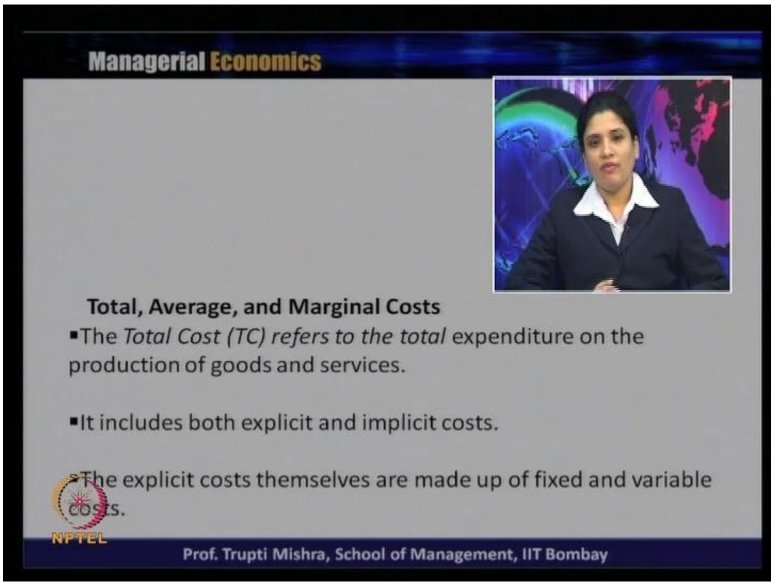

So, if you look at in the long run, all the cost of variable because all the factors of the inputs are variable, total average and marginal cost. The total cost refers to the total expenditure on the production of goods and services it includes both explicit and implicit cost. The explicit cost themselves made up of fixed and variable cost. So, total cost is the total expenditure on the production of goods and services it includes both explicit and implicit cost. The explicit cost themselves are made up of fixed and variable cost.

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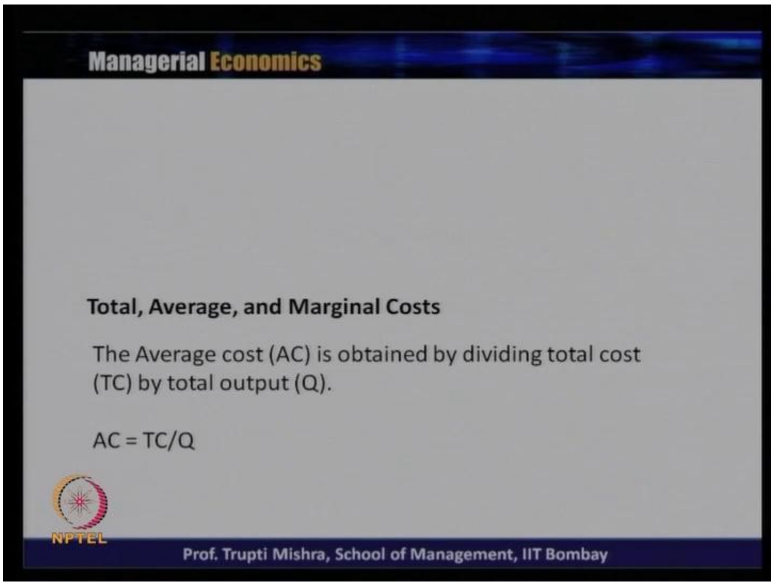

Total average and marginal cost, so, in that context we will talk about the average cost. Average cost is obtained by dividing the total cost by total output. So, average cost is nothing but, the cost per unit of output. So, average cost is total cost divided by the Q. Q is the number of unit of output and Q C is the total cost. So, average cost is the per unit cost of the output. Total cost is the sum total of expenditure made on the production of goods and services and what is marginal cost?

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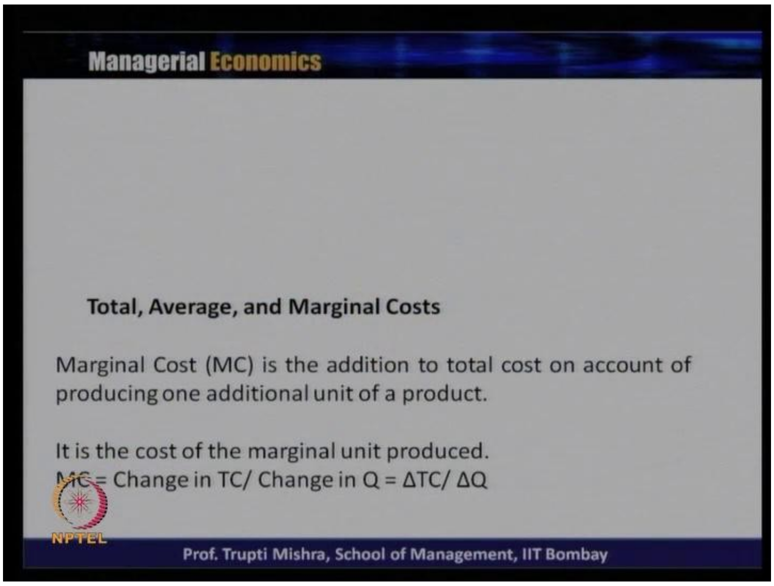

Whenever the concept of marginal comes, it is the addition to the total cost when you are producing one more additional unit of output. So, marginal cost is the difference between the total cost in the previous unit of production and the current unit of production. So, the marginal cost is the addition to the total cost on account of producing one additional unit of a product. It is the cost of marginal unit produce. Marginal cost is the change in the total cost with respect to change in the Q and it is del T C by del Q where, T C is the total cost and Q is the unit of output. So, m c is the marginal cost. Marginal cost is the change in the total change in the quantity and that leads to del that is, the change in the T C with respect to del Q that is, change in the output.

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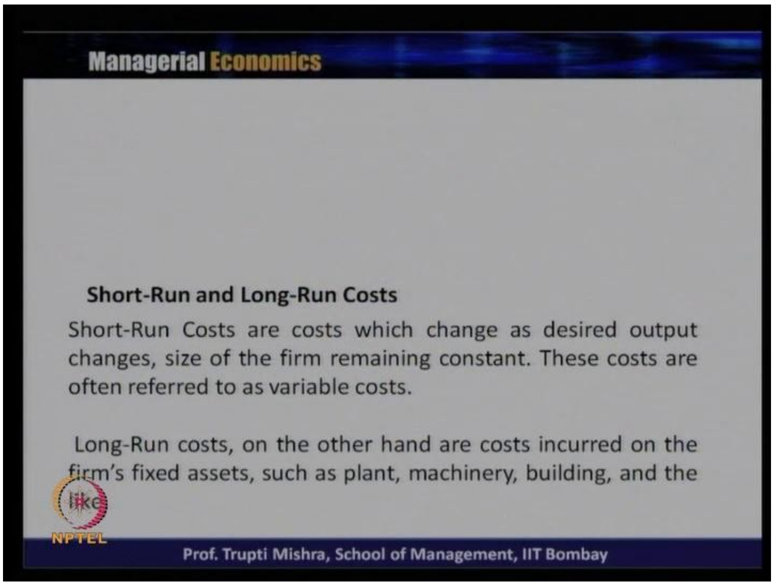

Then, we will discuss about the short run and long run cost. So, short run cost are which change as desired Output changes size of the firm remaining constant. This cost are often refer as the variable cost and the long run cost, on the other hand are cost incur on firm fixed asset such as plant machinery building and like. So, in case of whatever the cost gets changes with respect to the operational part. This is the variable cost and this is consider as the short run cost. Long run cost on the other hand are cost incur on the firms fixed assets such as plant, machinery, building and the similar kind of expenses. Then, we will talk about the incremental cost and the sunk cost.

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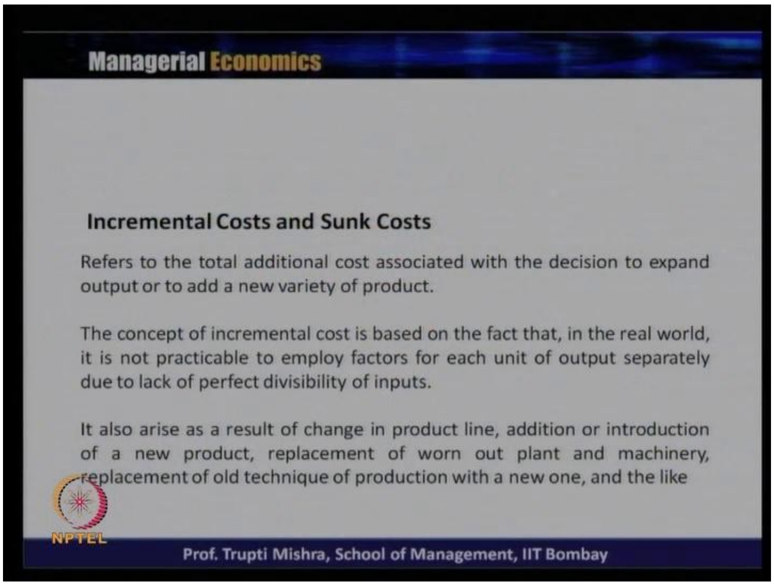

Now, if you remember in some when we are introducing different kind of managerial concept, we discussed about the marginal analysis and incremental analysis. Incremental analysis is require where the per unit change is not possible. And per unit changes is always capture through the marginal change. But when the per unit change is not possible, where there is a change which has to be in the chunk or change has to be more than one unit. The increment analysis comes into picture corresponding to that actually we get the incremental cost..

When the change in the input is in a chunk, it is not per unit then, it is a case of the incremental analysis. So, incremental incremental cost refers to the total additional cost associated with the decision to expand the output or to add a new variety of product. And the concept of incremental cost based on the fact that, in the real world it is not practicable to employ factors for each unit of output separately due to lack of perfect divisibility of the inputs. It also arises as a result of the change in the product line addition introduction of a new product replacement of the worn-out plant and machinery.

Replacement of old technique of production with new one and the similar kind of expenses. So now, when this incremental cost comes into picture, one when the decision is or when the change is in a chunk.. So, if you look at suppose a machine as a capability to produce hundred units and if the producer requires to produce only 50 units, it is not that a machine may be divide into 50 units or machine can be divided into two parts which produce only 50 units. The producer has to run the machine and in this case whatever the additional in order to cost incurring to run the machine ,even if the capacity to produce is 100 they are producing 50 units this is these are the incremental cost..

So, incremental cost generally, if you look at it comes into picture because all the inputs they are not perfectly divisible and whenever there is a new initiative may be launching a new product or launching a new product line. Some replacement activity has to be done and that has to be done in a chunk. In that case, generally, the incremental cost in incur and the expenses related to all those activity is part of the incremental cost.

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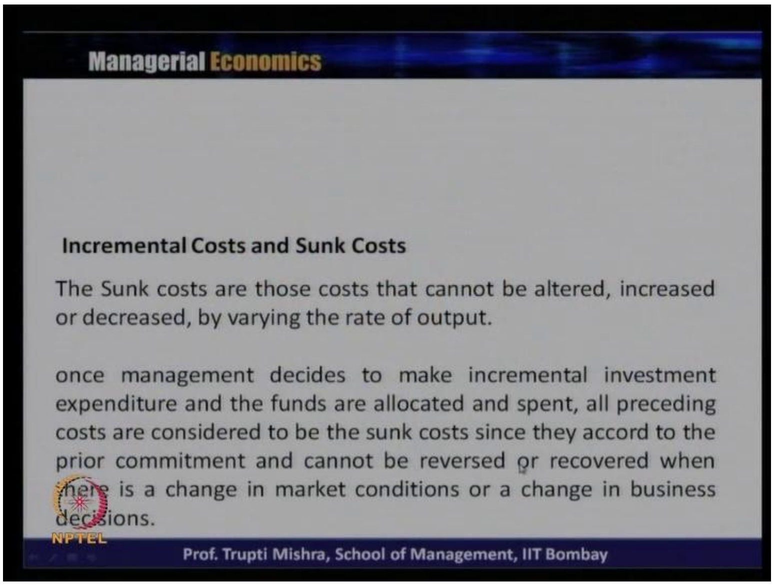

Next, see the second part of this category that is sunk cost the sunk cost are those cost that cannot be altered or increase or decrease by varying the rate of output. So, sunk cost are those cost that cannot be altered, increase or decrease by varying the rate of output. Once management decides to make incremental investment expenditure and fund are allocated are spent all proceeding cost are considered to be the sunk cost since, they accord to the prior commitment and cannot be reversed.

Recover when there is a change in the market condition or change in the business decision. It’s like, once the firm or the management decide to make incremental expenditure on a new product may be a new product line replacing a existing line replacing a existing product. Once the expenses or once the funds are being spent, then whatever the cost proceeding that that has to be that is considered as the sunk cost. Because, since they accord to the prior commitment and cannot be reversed recovered when there is a change in the market condition or the change in the business decision.

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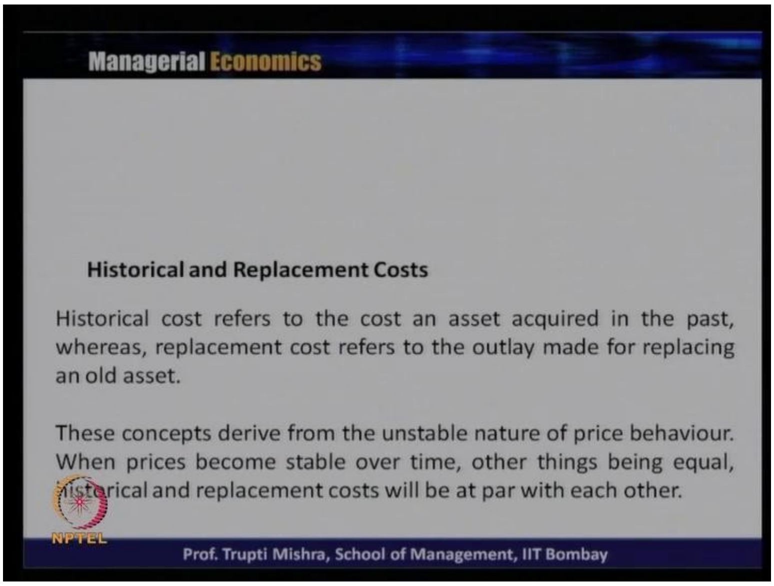

Then, we will come to a category of historical an replacement cost. Historical cost refer to the cost and an asset require in the past where as replacement cost refer to the outlay made for the replacing an old asset. So, historical cost refer to the cost an asset acquire in the past. The cost associated with that where as replacement cost refers to the outlay made by replacing an old asset.

This concept derived from unstable nature of price behaviour; when price becomes stable about time other things be equal historical and replacement cost will be at par with each other. So, there is unstable nature of price behaviour. That is the reason there is difference between the historical cost and replacement cost. When price becomes stable over time other things being equal. Then, there is there will be no difference in the historical cost and the replacement cost. The difference comes because of the instability nature of the price.