Managerial Economics
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Lecture - 2
Introduction to Managerial Economics (Contd…)

So, welcome to the second session of managerial economics. So, we are on the first module of managerial economics which talks about the introduction and fundamentals of managerial economics.

So, in the previous class we introduced the concept of economics. Basically, what is economics? What is managerial economics and how managerial economics is related to other business discipline. Then we discussed about few economic concepts like economic rationality, economic scarcity. Three basic questions what the form addresses and three basic questions, what the economic addresses. And then we discussed about the different type of market processes like capitalism, socialism and mixed economy.

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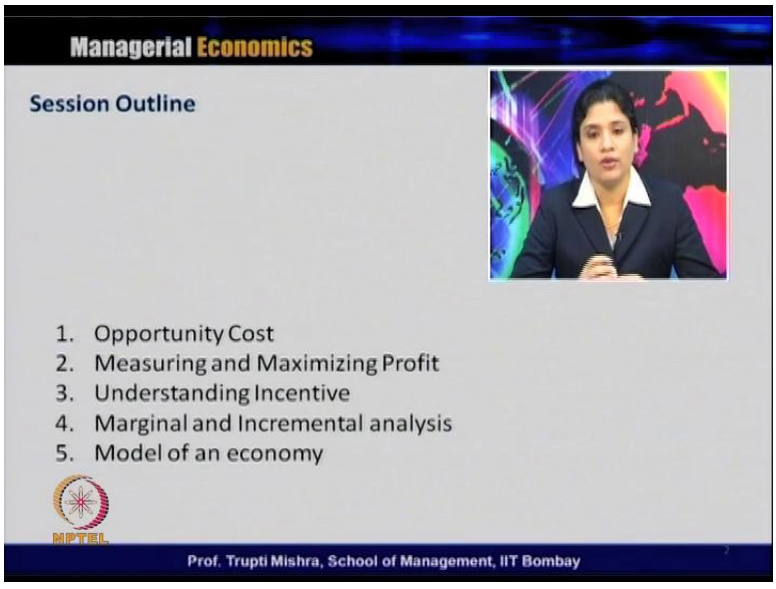

So, in today's class we will introduce few more concepts of economics that what we will be dealing during our course in a different module of managerial economics. So, the first one what we will discuss today is opportunity cost and then we will discuss about the profit. Then understand the incentive and then marginal and incremental analysis and finally, we will discuss how the model of an economy actually works or what are the

different flows into different sectors and practically how the economy works when there are a number of sectors in the economy.

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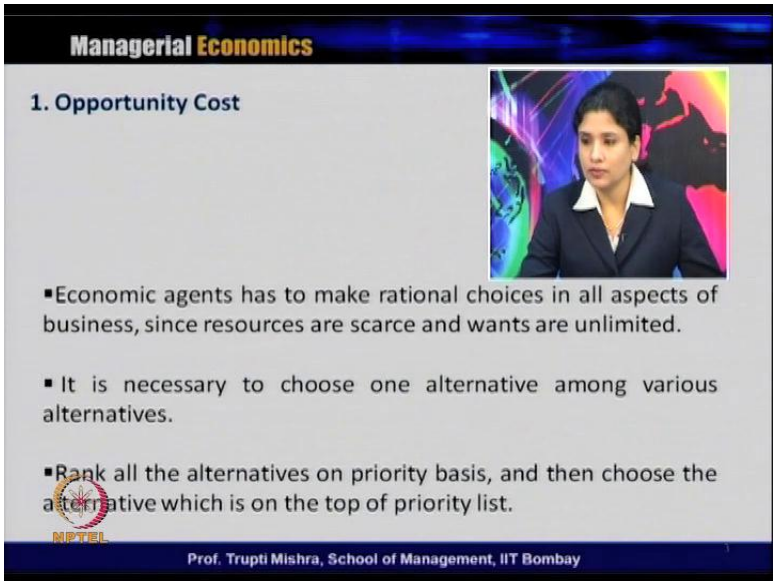

So, let us start with opportunity cost. I think in everyday life when it comes to using or discussing about the different cost, we always talk about a fixed cost or a variable cost. So, opportunity cost is somehow different from this fixed cost and the variable cost. So, if you look at this, many times we never consider this when you talk about the different cost of production associated with the production of goods or with the production of the services.

Now, how this opportunity cost comes into picture. In last class, we were discussing that there is always a gap between the wants and whatever resources available to satisfy these wants. Since there is a gap, all the economic agents, whether it is a consumer or whether it is a producer or whether it is an investor or whether it is an economy as a whole, they have to make a rational choice in all aspects of business simply because resources are scarce and wants are unlimited.

So, since they have to make choices among all these alternatives, it is necessary for them to choose one alternative among various alternatives. So, how they basically do this choice? They rank all the alternatives on a priority basis and then choose the alternatives which are on the top of the priority list.

Resources are scarce wants are unlimited. So, there are different alternatives to use the resources and they can choose only one alternative among various alternatives. How to do that or what is the process to do that. Basically, the economic agent ranks all the alternatives on priority basis and chooses the alternatives which are on the top of the priority list.

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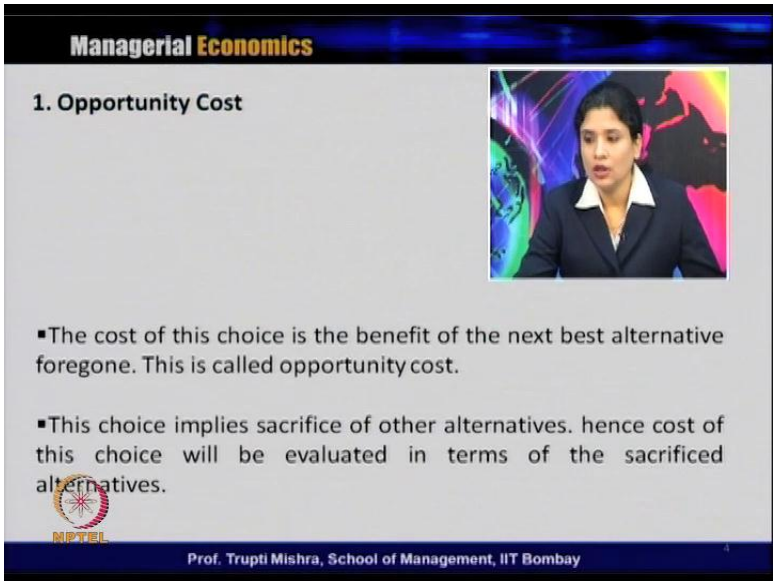

Now, what is the cost associated with this. The cost of this choice is the benefit of the next best alternative foregone and this is opportunity cost. So, when they are making the choice, any economic agent when they are making the choice as the first alternative, whether they are going to use the resources or utilize the resources, now what is the cost associated for the choice of this alternative. The choice of this alternative or the cost of the choice of this alternative, if it is the benefit of the next best alternative foregone and this is basically the cost that is associated with choosing this alternative and that is called opportunity cost.

So, choice of this alternative implies sacrifice of other alternatives. Hence, cost of this choice will be evaluated in terms of the sacrifice alternative or whatever benefit the economic agent would have got from the other alternatives and that is the cost associated with this typical choice of alternative.

So, the basis is resources are scarce and wants are unlimited. So, any economic agent has to make a choice on what they have to utilize the resources and on that basis they have to

choose one alternative where they will utilize the resources. The cost associated for choosing that alternative is basically the opportunity cost, which is generally evaluated in terms of the benefit associated with the other alternatives.

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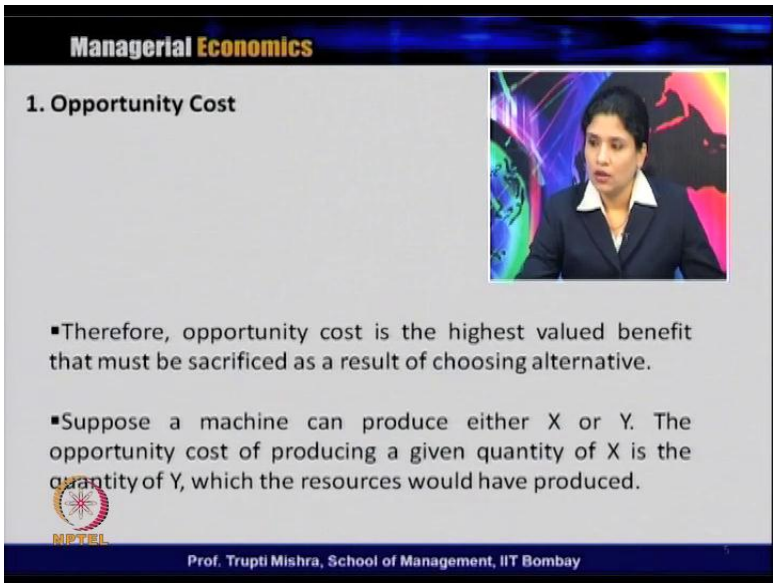

So, the opportunity cost is the highest valued benefit that must be sacrificed as a result of choosing the alternative. Now, we will take an example. Suppose a machine can produce either X or Y. So, whatever the resources are available, with that resources either they can produce X or they can produce Y. Now, the opportunity cost of producing a given quantity of X is the quantity of Y, which the resources would have produced because the resources are fixed. Either they can use that resources to produce X or produce Y.

So, when we calculate or when we evaluate what is the opportunity cost associated with producing one unit of X or one unit of Y, it is always in terms of the other variable. If we are discussing or if we are evaluating the cost associated with X, opportunity cost associated with X, it is in terms of Y and if you are evaluating the opportunity cost associated to Y that is always in terms of X. So, if the machine can produce either X or Y, the opportunity cost of producing any given quantity of X is in terms of Y and the opportunity cost of producing any given quantity of Y is in terms of X.

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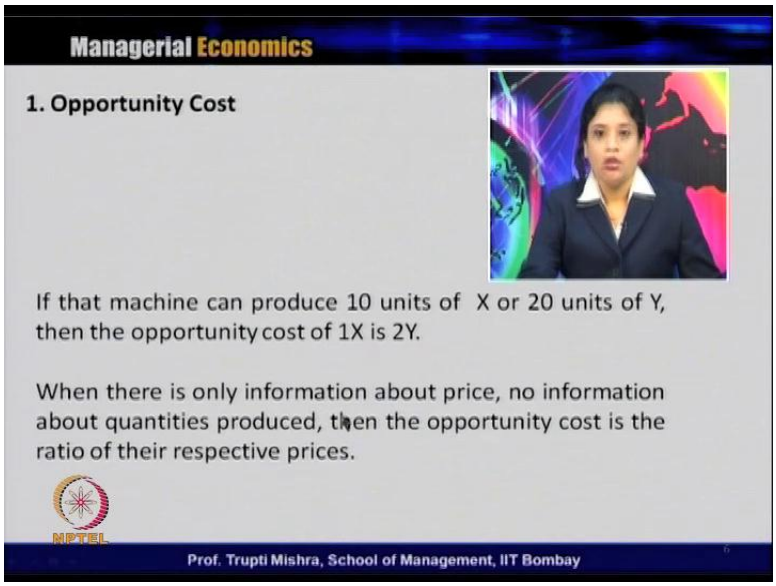

Suppose, we are assuming that the machine can produce either 10 units of X or 20 units of Y with the available resources. So, what is the opportunity cost of 1 X? The opportunity cost of producing 1 unit of X is 2 Y. Similarly, the opportunity cost of producing 1 unit of Y is 0.5 unit of X because with the available resources either the machine can produce 10 units of X or it can produce 20 units of Y.

So, the opportunity cost of producing 1 unit of X is 2 units of Y and the opportunity cost of producing 1 unit of Y is 0.5 per half unit of X. When particularly there is no information about the price or no information about the quantities produced, then in that case the opportunity cost is the ratio of their respective prices.

So, when there is a lack of information about the price or lack of information about the quantities produced, generally the opportunity cost has to be evaluated in terms of the their price associated with the products or price associated with the goods and this is the ratio of their respective prices.

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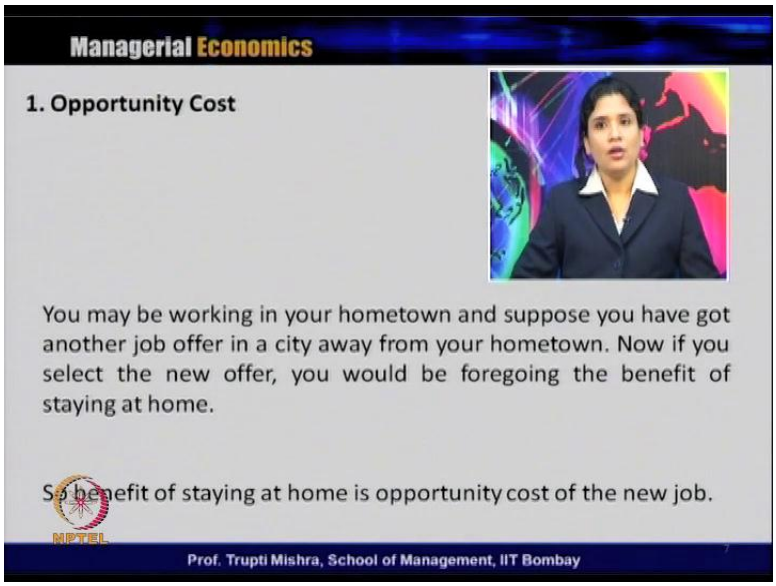

We can take one more example which will explain the opportunity cost. Suppose there is one option that you may be working in your hometown and you have got another job offer, which is not in the hometown but in a city away from your hometown.

Now, what are the choices available over there? The choices available to you is either to continue with the existing job which is there in the hometown or the other offer is to take the job offer in the city away from your hometown.

Now, if you are selecting the new offer which is away from your hometown, you would be forgoing the benefit of staying at home. So, there is sacrifice associated with the new offer. You will be away from home and the benefit what you would have got by staying at home; you are going to sacrifice that.

So, benefit of staying at home is the opportunity cost of selecting the new job. So, this is a scenario where you cannot calculate directly the cost associated with the selection. That is, the cost associated while taking the new offer. Rather, there is an opportunity cost associated with this decision.

So, in this case, the opportunity cost of selecting new job is the benefit of staying at home. So, whenever we choose one alternative over another alternative, in this case, the cost associated with the chosen alternative is always in terms of the benefit with the other or the sacrifice attached with the other alternative. They, the same thing what we have

applied over here is that the opportunity cost of selecting a new job is the benefit of staying at home.

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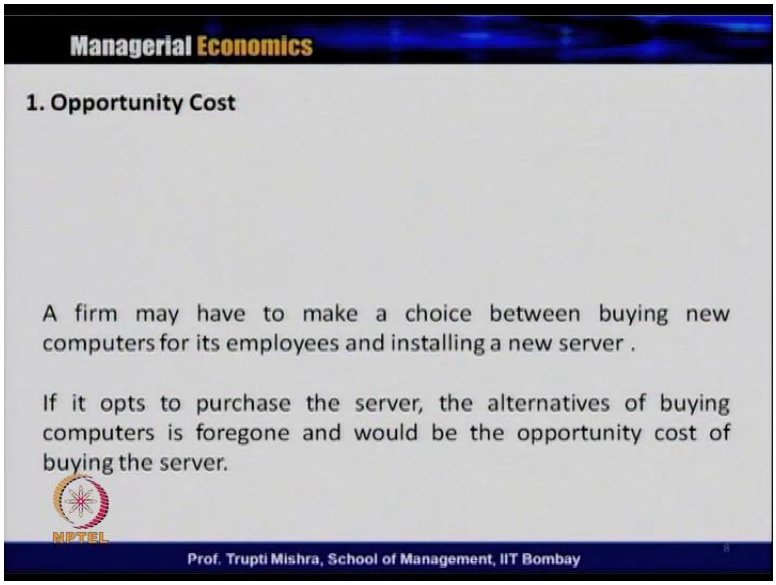

Suppose, we take one more example where the firm has to make a choice between buying new computers for its employees and installing a new server. We are assuming that whatever the funds available for the firm are limited. So, with the limited fund, either the firm can buy new computers for its employee or they can install new server.

So, if the firm opts to purchase the server, the alternatives of buying computer is foregone and would be the opportunity cost of buying the server. So, either they can use this fund to purchase the server or they can use this fund for buying computers. So, if the firm is choosing over buying computers to purchasing the server, then the opportunity cost of buying the server is equal to whatever the alternatives of buying computers.

So, whatever in those previous two examples we have taken, there are two only choices. But when it comes in the reality, we have many choices. When it comes to deciding about the utilization of the resources or utilization of the fund, we always rank them on the basis of priority. We take the first one and the opportunity cost of the first alternative is always whatever is the benefit associated with the other alternatives, and what we have not chosen for utilizing these resources.

So, may be in this case, we can take one more example particularly from the student perspective. See, you have to study may be a number of subjects in a day and may be you assign two hours for each of these subjects. When you spend more than two hours on a typical subject, then basically in that case you are sacrificing whatever the time you would have spent for studying the other subjects.

So now, the opportunity cost of studying a typical subject for more than two hours is whatever the benefit you would have got by spending that time in studying the other subjects. So, opportunity cost is that there are always two choices or a number of choices. The agent has to be rational and they have to identify which one is the rational decision where they can utilize the resources in order to get the optimal output or in order to get the optimal outcome.

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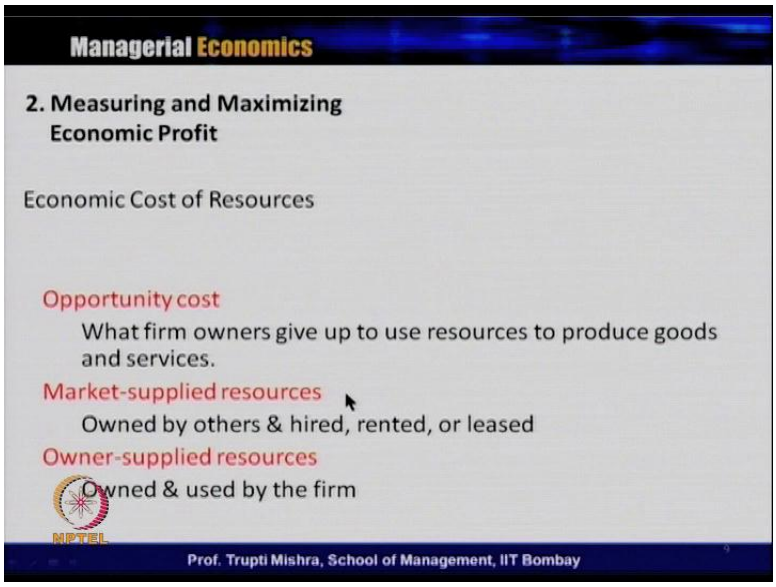

Next, we will discuss about the profit. Because now if you look at, what is the optimization problem for the firm or what is the objective of the firm or what is the goal of a manager, is to maximize the profit from their production. So, whether it is a goal of the manager or whether it is the goal of the firm, it is always maximization of profit is the objective or maximization of profit is their optimization problem.

So, to reach the profit, we will first find out what is the cost associated with the resources. There are three types of cost associated with the resources. One is opportunity

cost about which we have just discussed now and then markets supplied resources and the third category is owner supplied resources.

So, in case of opportunity cost as you have discussed, when you narrow down into the case of a firm, now what is the opportunity cost? It is what the firm owners give up to use resources to produce goods and services. Whatever the resources they are utilizing to produce goods and services, that will have some alternate use or alternate utilization. The benefit of the alternate use or alternate utilization is the opportunity cost to produce the goods and services by the firm.

So, the first category of cost associated with the firm is the opportunity cost that the firm owners give up to use resources to produce goods and services. Because the same resources could have been used to produce some other goods and services or may be the resources could have been used for some other economic activity.

The second type of cost comes here is that cost associated with the markets supplied resources. Now, what are market supply resources? There are two kinds of resources. One is market supplied resources and second is owner supplied resources. In case of market supplied resources, it is owned by others. Basically, these resources are hired, rented or leased and this is being used by the firm. This is not the firms' resources or the owners' resources. These resources are owned by the other economic agents and in order to utilize that, basically the firm hires or rents or they get this in the form of the lease.

The second category of resources is owner supplied resources. This is basically owned and used by the firm. In case of market supplied resources, it is owned by others, but used by the firm. But in case of owner supplied resources, it is also used by the firm and it is also owned by the firm. So, this is basically the firms' resources used by the firm itself.

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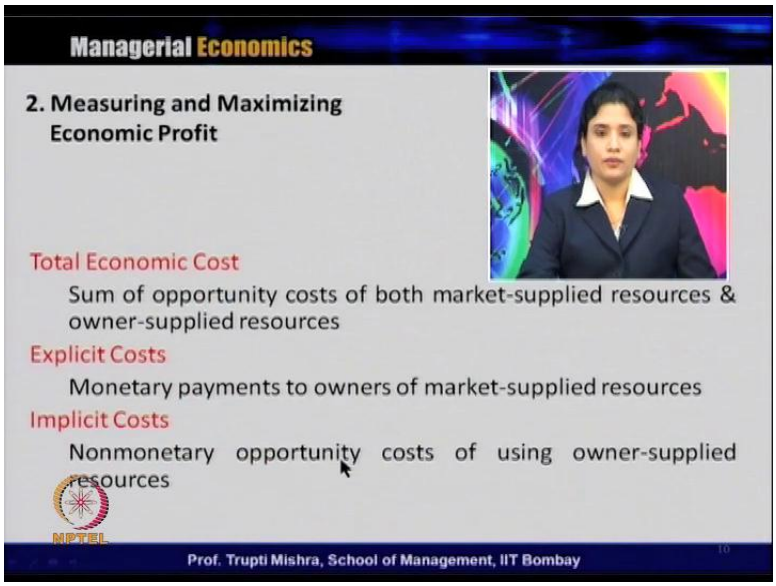

Now, how we will find out the economic cost associated with the resources. Basically, this is the sum of the opportunity cost of both market supplied resources and owner supplied resources. Now, two types of costs again comes here. That is, total economic cost is always the cost of both market supplied resources and owner supplied resources. We are saying it as opportunity cost because in case of owner supplied resources, this is owned by the firm. Sometimes, it may happen that there is no valuation because this is owned by the firm and there is always an opportunity cost, even if there is no direct cost associated with the firm.

Now, there are two categories of cost. One is explicit cost and second one is the implicit cost. Explicit cost is one where there is a direct monetary payment to the owners of the market supplied resources because this is not owned by the firm. This is owned by the some other economic agent. Whenever the firm uses this, they have to make the payment.

If you remember in last class, we discussed about four types of factor of production. All factors of production are one kind of resources. If the land belongs to someone else, then we have to pay the rent which comes under this monetary payment. This comes under the explicit cost. If the capital has been taken from a financial institution, we have to may get the interest rate or we have to pay the interest rate to the financial institution. That comes under the monetary payment, which comes under the explicit cost.

Similarly, if the manager is not the owner, then the owner has to pay the salary and part of its profit because the manager is doing one of the factors of production, if you remember the entrepreneurship. So similarly, whatever the skilled or non skilled manpower required to produce the product, there is monetary payment associated with that. For the non skilled man power, it is always wages and for skilled man power, it is always the salary.

So, monetary payments to owners for market supplied resources come under the explicit cost. When you come to the second category of cost that is implicit cost, it is non monetary opportunity cost of using owners supplied resources. So, many times we do not add this implicit cost when you decide the cost of production for the product or the cost of production for the services. Because in case of implicit cost, there is no direct cost but there is an opportunity cost. So, implicit cost takes care of all the non monetary opportunity cost of using the owner supplied resources.

So, total economic cost is the sum of opportunity cost of both market supplied resources and owner supplied resources. Then we have two types of cost, that is explicit cost and other is implicit cost. Explicit cost is the monetary payment for the owners of the market supply resources and implicit cost is associated with the owner supplied resources. That is the non monetary opportunity cost.

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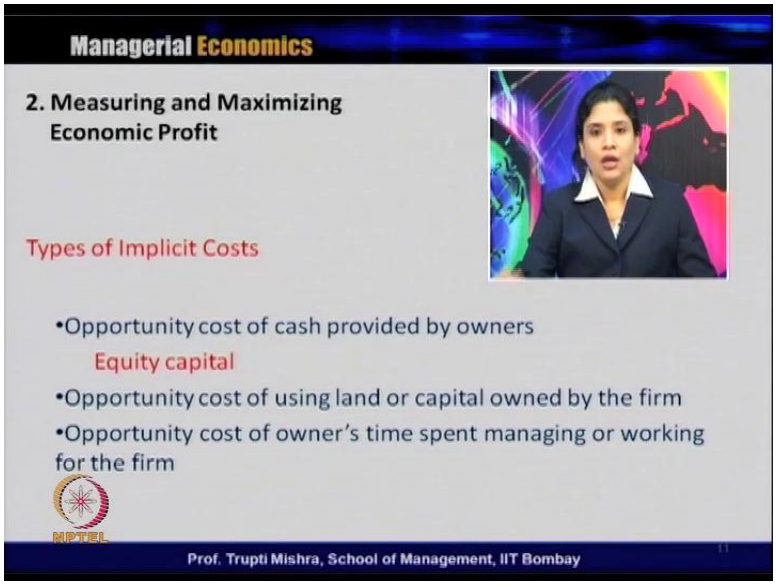

Now, all the activity that comes under the direct payment is always under the explicit cost. Now, what are the different types of implicit costs? We will take few examples. Opportunity cost of cash provided by the owners like the equity capital. If we look at the firms, they own the resources. There is no payment for this. It is owned by the firm and used by the firm. So, opportunity cost of the cash provided by the owner is one kind of implicit cost. If you look at it, there is no direct payment for this.

The second example come here is the opportunity cost of using the land or the capital owned by the firm. Suppose, the product is getting produced in the owners resources. The owner is having a piece of land and that economic activity or production activity is by using that particular piece of land. In this case, there is no payment associated for using the land or using this typical input. So, there is an opportunity cost of using that land. If the land is not being used by the firm itself, there is an alternative value of this. The land may have got some amount of rent, if it is getting used by some other firms or for some other economic activity.

Similarly, opportunity cost of owners' time spent in managing or working of the firm. It comes when the owner is managing or the owner is the manager of the firm. In that case, the owner, whatever the time spent by the owners or on managing and working for the firm, there is no value or the owner is not charging any money or owner is not getting any payment for this. So, there is no direct cost rather, there is an opportunity cost of owners time spent in the managing or working for the firm.

So, these are the types of cost where there is no direct cost but there is opportunity cost. All these come under the implicit cost. Now, we will see after discussing the different types of cost, how we get into the profit. As we know, profit is always revenue minus cost.

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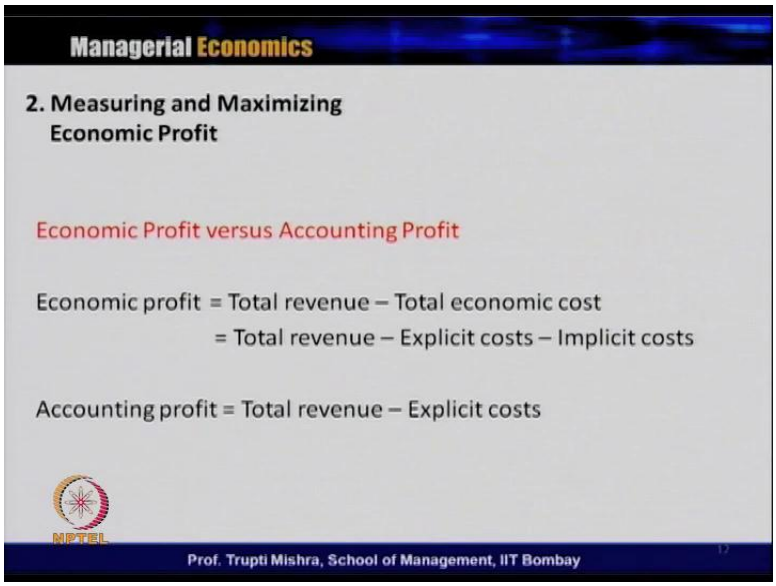

The difference between the revenue and the cost is profit. We will see two types of profit here. One is economic profit and second one is accounting profit. In case of economic profit, it is the difference between the total revenue and the total economic cost.

In case of this total economic cost, again this has two parts. One is explicit cost and other is implicit cost. The second kind of profit that is accounting profit, it is more straight forward and more general. Here, we are not considering the implicit cost. Only we are also considering the explicit cost. So, accounting profit is the total revenue minus the explicit cost.

So, economic profit is total revenue minus total economic cost. Total economic cost includes both the explicit cost and the implicit cost. In case of accounting profit, we are not including the implicit cost. We are including only the explicit cost. So, accounting profit is the difference between the total revenue and the explicit cost of it.

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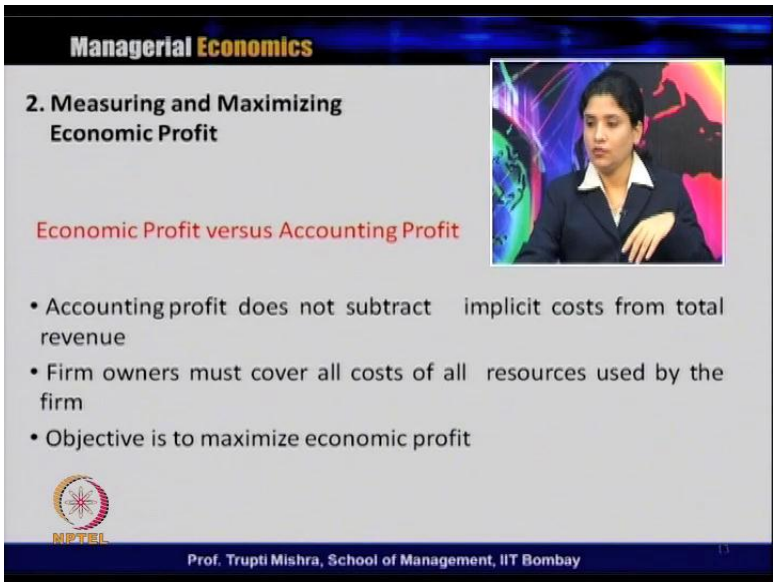

Accounting profit does not subtract the implicit cost from the total revenue. We are discussing just that. Firm owners must cover all cost and all resources used by the firm. But what is the rational way? It is when the firm owners are considering all the types of cost associated for all resources used by the firm.

What is the background for this? The background for this is the objective is to maximize the economic profit and not the accounting profit. What is the goal of the firm? The goal of the firm is profit maximization. Now, what profit maximization? It is economic profit maximization. Economic profit maximization because it considers all these types of cost, that is explicit and implicit. If the maximization is accounting profit, in that case, they are ignoring the implicit cost. They are not considering the implicit cost. So, objective of the firm is to maximize the economic profit. For that, they should cover all cost associated with all resources used by the firm. Let us consider one example for what we take as the implicit cost and what we take as the explicit cost and what is accounting profit and what is economic profit.

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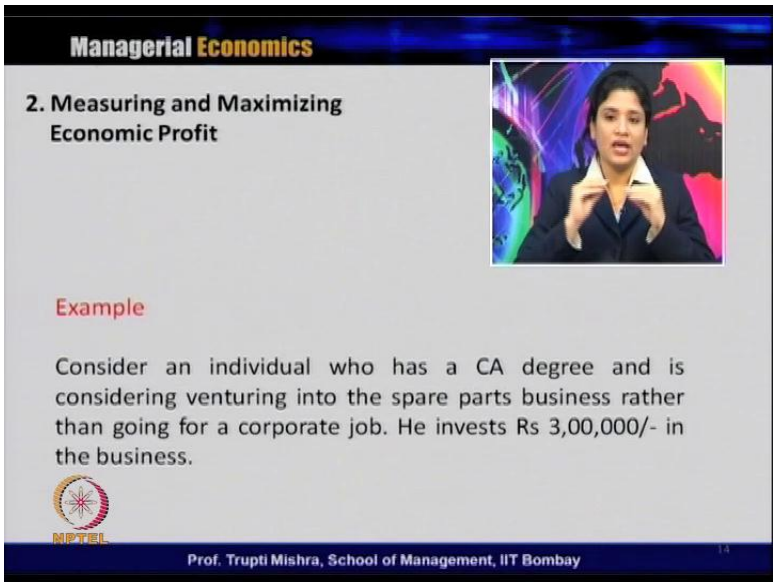

Suppose an individual who has a CA degree and is considering venturing into the spare parts business rather than going for a corporate job. So, a typical individual who is having a qualification of CA degree, always the first choice or the first best choice is that if he is getting a job according to his own qualification. In this case, this typical individual is getting into a business venture of spare parts rather than taking a corporate job. He invests 3 lakhs in the business.

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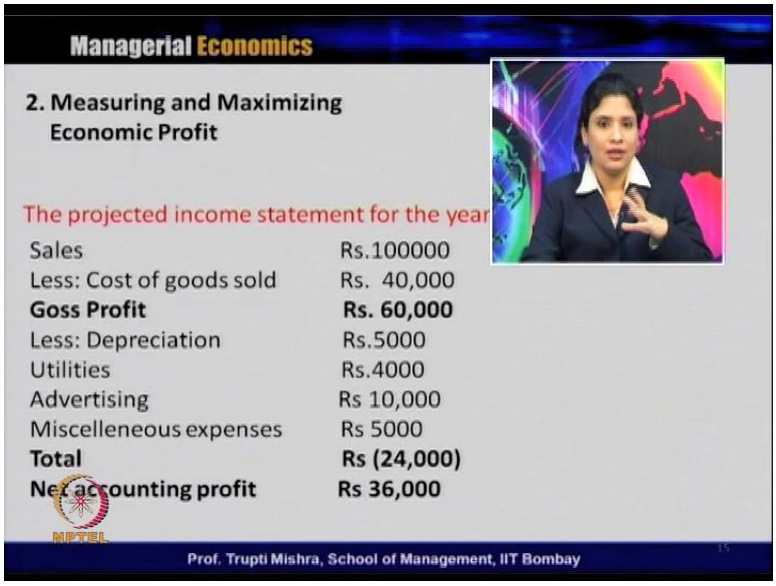

So, initial capital is 3 lakhs in the business. Now, this is the projected income statement for the year. Total sales is 1 lakh and cost of the goods sold is 40000. The cost of the production, gross profit is 60000. So, this is the income statement for the year. The total sales is 1 lakh and the cost of production is 40000. So, revenue minus cost is the gross profit and that is Rupees 60000.

We add few more expenses minus depreciation, which is 5000 and utility expenditure is another 4000. Advertising expenditure is 10000 and miscellaneous expenses is another 5000. This total comes to 24000. So, if you take these expenses and deduct it from the gross profit, then the net account profit is 36000.

So, sales is 1 lakh and the cost of production is 40000. Gross profit is 60000 and few more expenses we deduct from the gross profit in order to reach the accounting profit. Depreciation is 5000 and utility expenditure is 4000, advertising is 10000 and miscellaneous expenses are 5000. So, the total is 24000. So, if you deduct this from 60000, that is the net accounting profit and that is 36000. Now, what the firms should do. Whether it is matching with their maximization of the profit or there is a miss match.

Please note that this is accounting profit. This is not the economic profit. Why this is accounting profit is because in this case, we have taken revenue minus explicit cost. We have not added the implicit cost over here. Now, if you add implicit cost over here, then we will see their economic profit and whether the firm is maximizing the profit or matching with their objective or matching with their goal or not.

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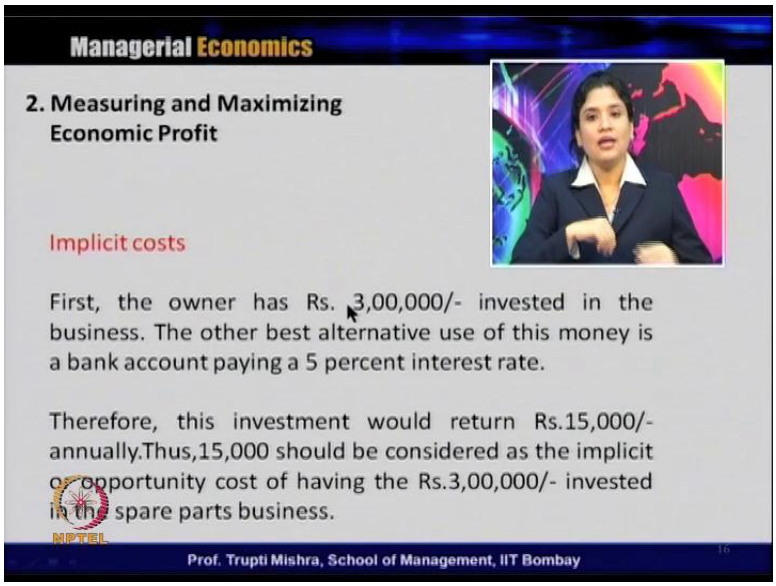

Now, what is the implicit cost in this case? The owner has invested 3 lakhs in this business. What is the alternate use of this typical 3000 rupees? You are putting it in the bank account paying 5 percent interest rate, assuming the rate is 5 percent. If (( )) the owner is not investing this in the business, the other use of this money is to keep it in the bank account and get a 5 percent interest rate.

So, assuming this investment would return 15000 annually. So, this is the opportunity cost associated with the owner supplied resources. This owner supplied resources is the capital what is owned by the firm, which is getting used for the production of goods and services.

So, it is the alternate use and if it is not getting used in the firm, then it can get a return of 15000 annually. So, this is one component of the implicit cost and or may be this is the opportunity cost of having 3 lakhs invested in the spare part business. So, this 15000 is the part of implicit cost in this case.

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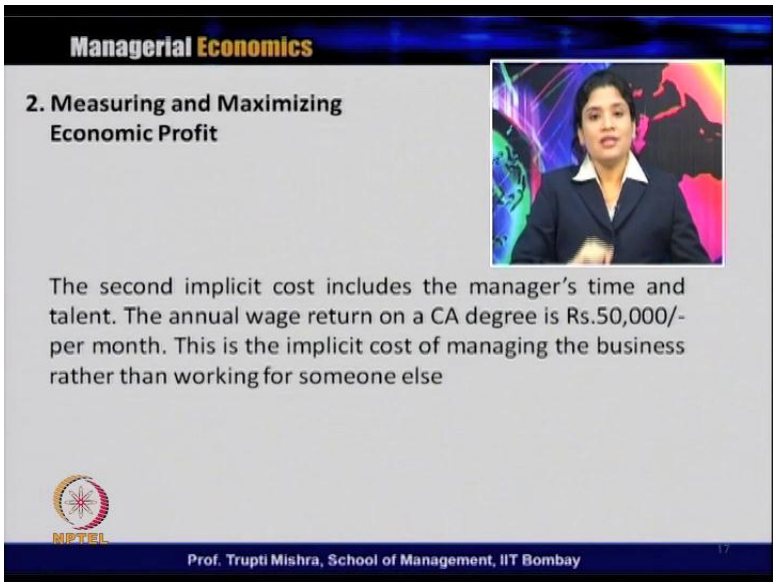

Then, what is the second implicit cost here. The owner is the manager. So, the second implicit cost is the manager. What is the opportunity cost associated with the managers time and talent. Now, the individual is holding a CA degree. If he is not into this spare parts business, he would have been working in a corporate. If he is working in a corporate, then what is the annual wage return on a CA degree. May be, that is 50000 per month.

So, this is the implicit cost of managing the business rather than working on someone else. So, this is the opportunity cost of doing the business rather than a full time job in the corporate. So, the second implicit cost includes manager time and talent and this is the cost of managing the business rather than working for someone else or working for the corporate.

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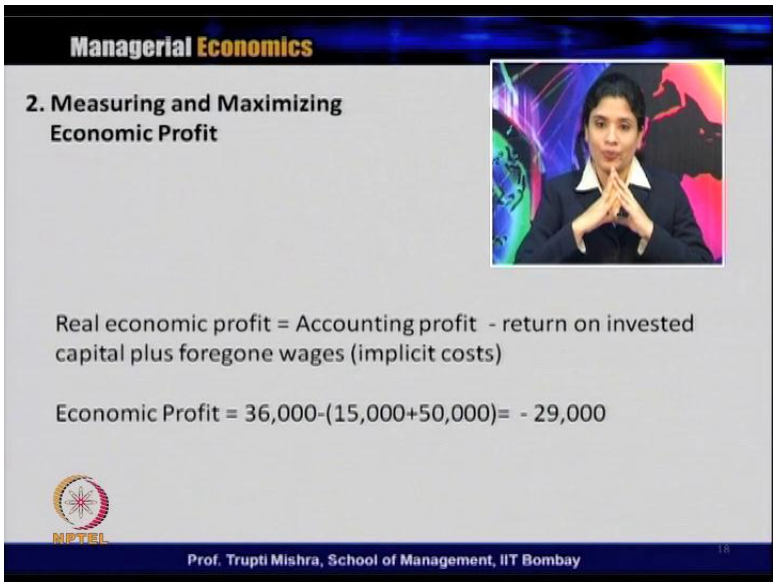

So, if you add these two implicit costs, now what is the real economic profit? That is, accounting profit minus return on invested capital plus the foregone wages. These are the two components of implicit cost in this specific case. So, economic profit is 36000 minus 15000 what would have been the cost or 50000 of salary what the individual would have got by taking a job in the corporate. So, economic profit comes to minus 29000.

So, there is a small correction here. In the last page, we are saying that this is 50000 per month. But this is not 50000 per month, but it is 50000 per year because we are considering all the other figures in an annual basis. So, this 50000 would have been the salary per year and that is why this is a part of the implicit cost.

So now, look at the difference between the accounting profit and the economic profit. When we did not consider the implicit cost, in that case the profit is 36000. But in order to maximize the profit, one has to add all the cost associated with the resources. When we add the implicit cost, the economic profit is coming as minus 29000, which is not a profit but it is a loss for the firm. So, doing this venture, the individual is not generating profit. Rather, it is incurring loss in the spare parts business. So, this is the difference between the accounting profit and the economic profit. Firm has to always focus on the maximization of economic profit rather than the accounting profit.

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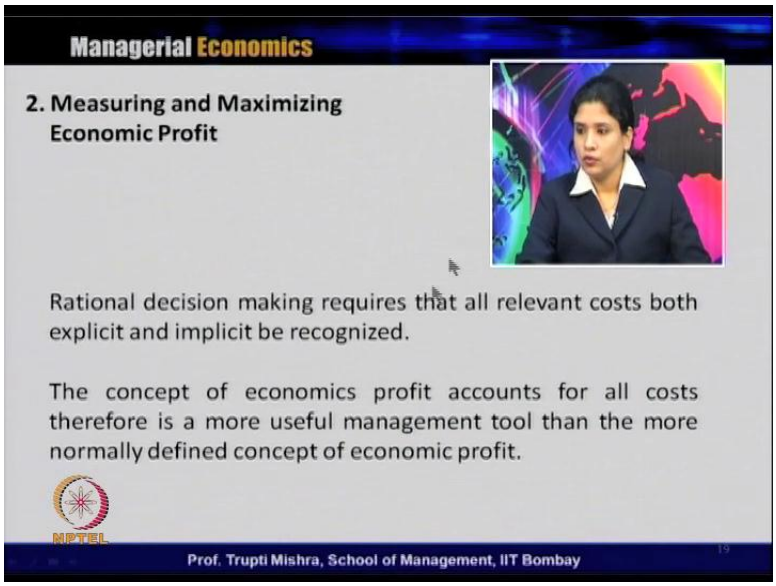

Rational decision making requires that all relevant cost for both explicit and implicit be recognized because if you remember all the economic theory, the basis is rationality. Rational decision is that all costs have to be included. So, the concept of economic profit accounts for all costs. Therefore, it is a useful management tool rather than more normally defined concept of economic profit. So basically, if you look at the general understanding profit is revenue minus cost.

May be, in many cases, the implicit cost is not added in the part of the cost. That is the reason, when the implicit cost is added; the concept of economic profit is very useful management tool when it comes to the optimization problem of the firm or the matching of the goal and profit matching the goal and objective of the firm.

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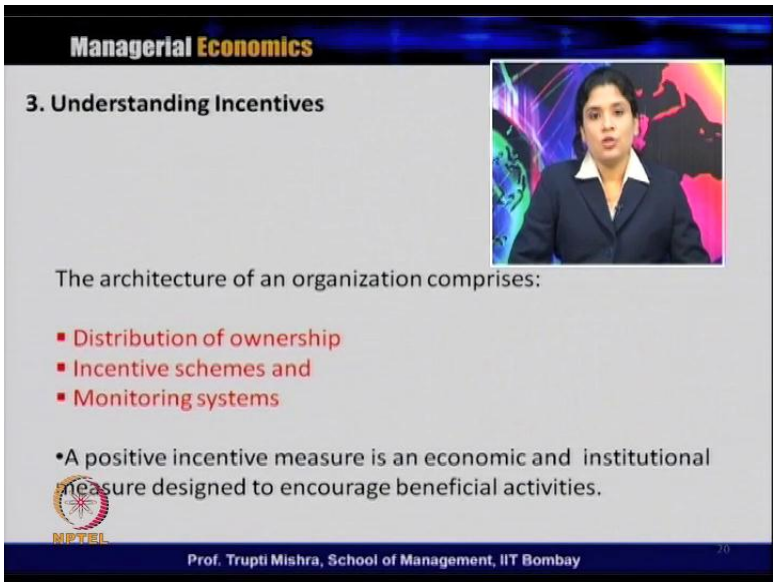

Then, we will discuss about one more concept associated with managerial economics and that is the understanding of the incentives. Basically, how incentive works and what is the role of incentive in the economy. The architecture of an organization comprises the following three pillars. One is distribution of ownership, second one is incentive scheme and third one is the monitoring system.

Our focus is on the incentive scheme. A positive incentive measure is an economical and institutional measure designed to encourage beneficial activities. Always the incentive works in a positive way. If there is incentive, may be the economic agent puts more efforts in order to reach the goal or reach the objective.

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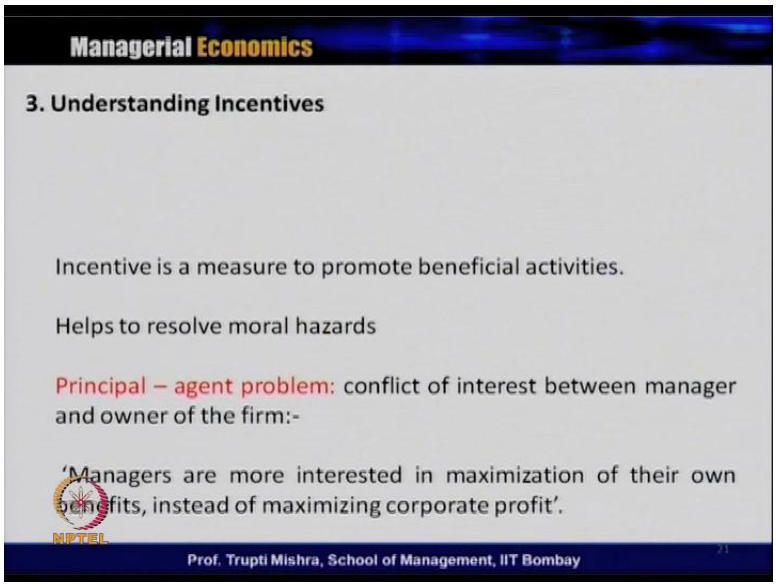

The main reason why we are discussing incentive over here is that, even though it is promoting the beneficial activity, it also helps to resolve the moral hazards. Now, the moral hazards come from principal agent problem. Now, what is this principal agent problem? This comes from a managerial theory, which talks about conflict of interest between manager and owner of the firm. When the owner is not the manager, there is always a conflict of interest between the manager and owner of the firm. This is because managers are more interested in maximization of their own benefit rather than the maximization of the corporate profit or the firms benefit.

So, their activity goes in that direction. They maximize their own benefit or maximize their own profit rather than maximizing the firms profit and that leads to conflict of interest between the manager and owner of the firm. Owners focus is always on maximization of corporate profit rather than the individual profit or the individual benefit.

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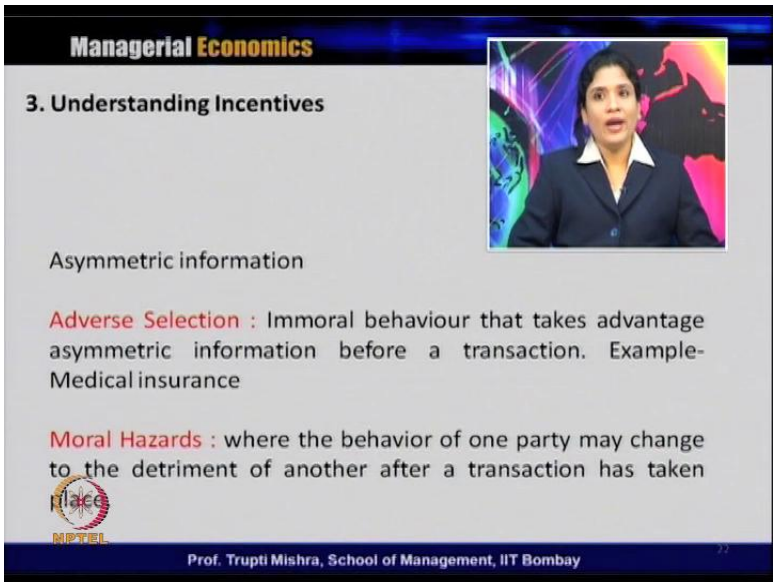

Now, why this conflict comes? Because of asymmetric information. Now, what is asymmetric information? We take the example suppose what we generally face in the day to day life. When you are going out for a vacation, basically you always assign the task of ticket booking or hotel booking and other amenities to a tour operator.

Why a tour operator or why a travel agency because we feel that they have more information about the different facilities available and they have more information about that place and they have more information about the amenities in that place. So, they can give a better facility and a better service rather than doing it on their own.

So, in this typical case, if you look at, if you are travelling and all these ticketing and hotel bookings and bookings for other amenities are done by a travel operator, in this case you are the principal and the travel operator is the agent. In this case, the agent will try to maximize his own benefit when they are doing the action for you or when they are doing the activity for you. Why there is a conflict of interest? The principal do not have much of information that they can do this activity on their own. The agent has the information and since they have the information, they want to maximize some profit or some benefit from their information available to them as compared to the principal.

So, if you look at it, the major reason for the principal agent problem or the conflict of interest between the manager and the owner in a specific firm case is because of asymmetric information. Because of principal agent problem or because of asymmetric

information, it leads to two problems. One is adverse selection and second one is the moral hazards.

What is adverse selection? Adverse selection is the immoral behavior that takes advantage of asymmetric information before a transaction. The typical example is medical insurance. If you look at the person who has already been affected of one kind of illness, they are more serious about taking a medical insurance rather than a healthy person. In this case, the person who has already faced the illness once, they show immoral behavior and take advantage of the asymmetric information.

The second category or the second type of problem comes in principle agent or the asymmetric information problem is moral hazards. That is, when the behavior of one party may change the detriment of another after a transaction takes place. The typical example is that when the person knows that there is a health insurance associated with a job and then they join the job because they know that they are going to get the medical facility after it.

So, the difference between the adverse selection and the moral hazard is that in both the cases there is immoral behavior. But in case of adverse selection, immoral behavior is before a transaction and in case of moral hazards, immoral behavior is after the transaction. So, in this medical insurance example, we can take in both these cases, one case where the affected person is more serious about the medical insurance than the healthy person. The second, the moral hazard, the typical who has got the job or the person who has the offer for the job, they join the job knowing that there is a health insurance and they will get a medical benefit once they join the job.

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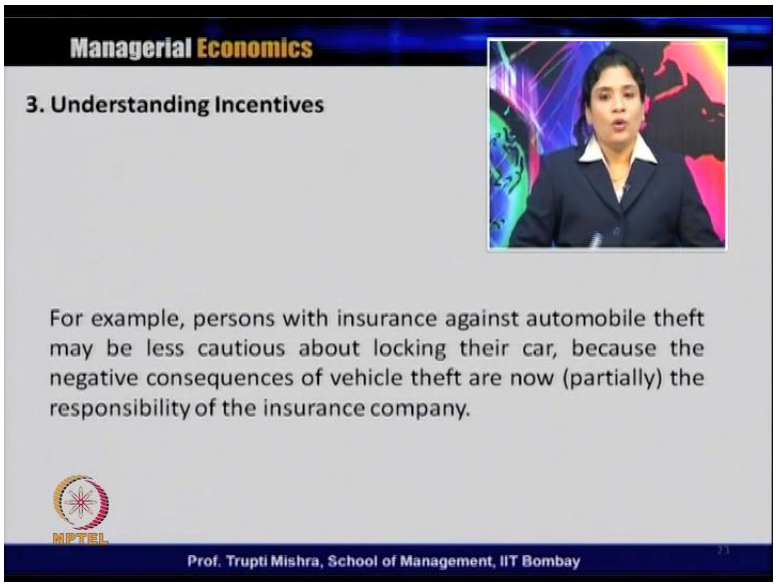

You can take one more example under moral hazards, which may be general in nature. For example, the person with insurance against the automobile theft may be less conscious about locking their car, because the negative consequence of vehicle theft are at least partially the responsibility of the insurance company.

Your vehicle is insured, so you are less careful or you are less conscious about locking the car, because you know if something goes wrong with your car, may be sometimes the insurance company pays the entire amount and sometimes its partial amount. So, the risk gets shared between another party and that is the reason you are showing immoral behavior. If there is no insurance, may be the person will be more careful for the security of their vehicle or security of their car. But since there is insurance and there is a third party paying for it, they are less careful and they are showing immoral behavior. This is a typical example of moral hazards that generally comes from the principal agent problem or that generally comes from the asymmetric information.

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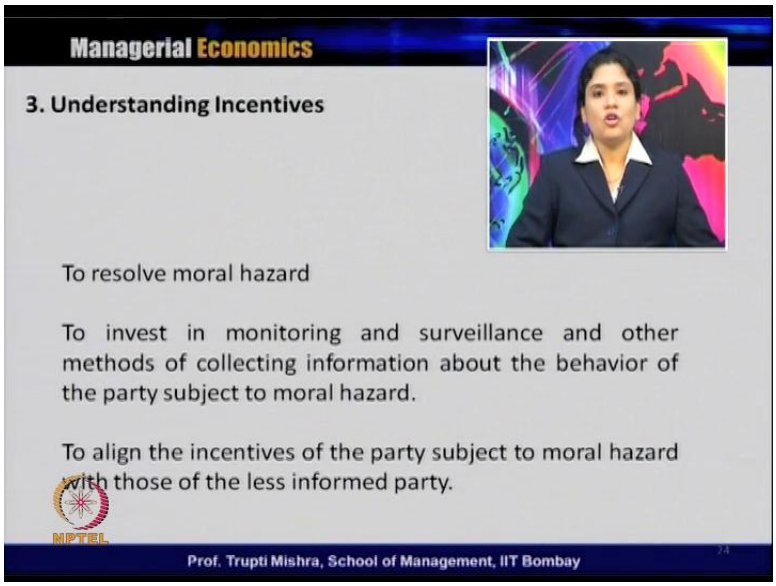

Now, to resolve the moral hazards, incentives comes into picture. Now, what are the two ways for solving these moral hazards? The two general approaches or the two general solutions are, one is to invest in monitoring and surveillance and other method is collecting information about the behavior of the party subject to moral hazards.

First is monitoring those economic agents who show immoral behavior or information about the behavior of the party and second is to align the incentive of the parties subject to moral hazard with those of the less informed party. So, if there is an incentive associated with that, may be the immoral behavior is less. So, the first one is monitoring the immoral behavior and second one is that there is an incentive or to align the incentive of the parties subject to moral hazard with those of the less informed party.

So, if you are showing less immoral behavior, there is an incentive associated with this. So, one is monitoring and second one is the benefit of the incentive with not showing the moral behavior.

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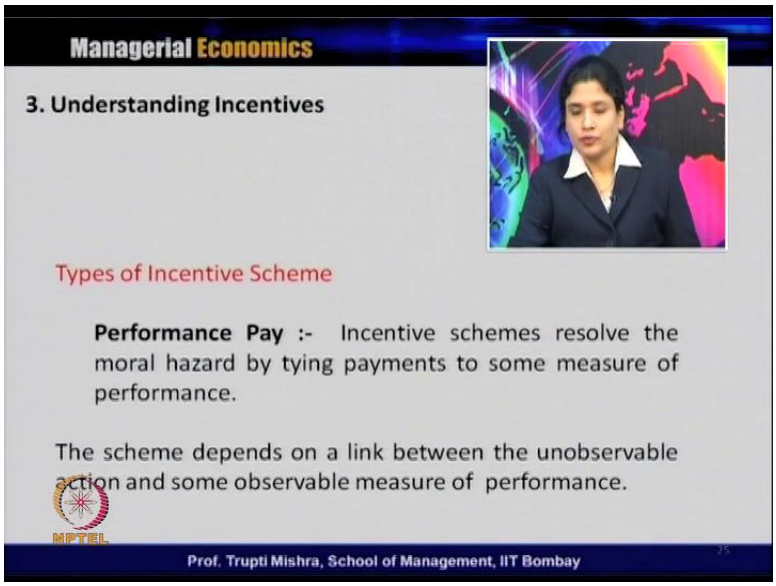

For this, there are types of incentive schemes. One is performance pay. In case of performance pay, the incentive schemes resolve the moral hazards by tying payments to some measure of performance. If you look at the insurance charges for your vehicle, every year it differs. If you have met with an accident, or if you have met with a theft, generally the insurance premium increases. If no eventuality happens in the last one year, generally the insurance premiums are less.

So, this is one way for the incentive scheme to resolve the moral hazards by tying payments to some measure of performance. So, this is the incentive because there is no immoral behavior in the last one year, and hence you are paying less insurance premium in this typical one year. So, this scheme depends on a link between the unobservable action and some observable measure of performance. Your action is not observable, but if you are not showing immoral behavior, there is always an incentive link to that. There is always a benefit link to them.

The second one is performance quota. There is a minimum standard of performance, below which a worker is subject to penalty. The penalty could include deferral of promotion, reduction in pay or even dismissal.

Let us take an example of the salesman. In the previous case, in case of performance pay, if you are taking the example of a salesman, how it works. You can talk about two scenarios over here. You are giving 50 rupees to a salesman for the day. The salesman

knows that if he is selling 1 unit, 10 units, 15 units, 20 units, or 100 units, he is going to get 50 rupees and not more than that. It is a fixed pay associated with that and there is no incentive for him to show a moral behavior and put more effort, so that the sales will increase and even his own personal benefit will increase.

So, there is no performance pay and that is a fixed pay. The second scenario is that the salesman gets 2 rupees for each unit what he is selling. Now, in this case, how it works is that, the more he sells the more benefit he is getting. So, this is the way there is time payments to some measure of performance. This is a typical example of performance pay, where the economic agent has to put more effort in order to get more benefit.

So, in one way this works out well for the firm and also for the salesman. They sell more and they get more benefit and they get more incentive. If they sell less, they are getting less profit and less incentive. For the firms, how it works is that, if they are paying more for each unit they sell, the salesman would always try to sell more, which will also increase the sales revenue of the firm.

So, this second scenario is the example of the performance pay, where performance is associated with each unit of the activity. There is a monetary payment for each unit of the activity and this works well for the economic agent, whether the economic agent as a salesmen or whether the economic agent as the firm.

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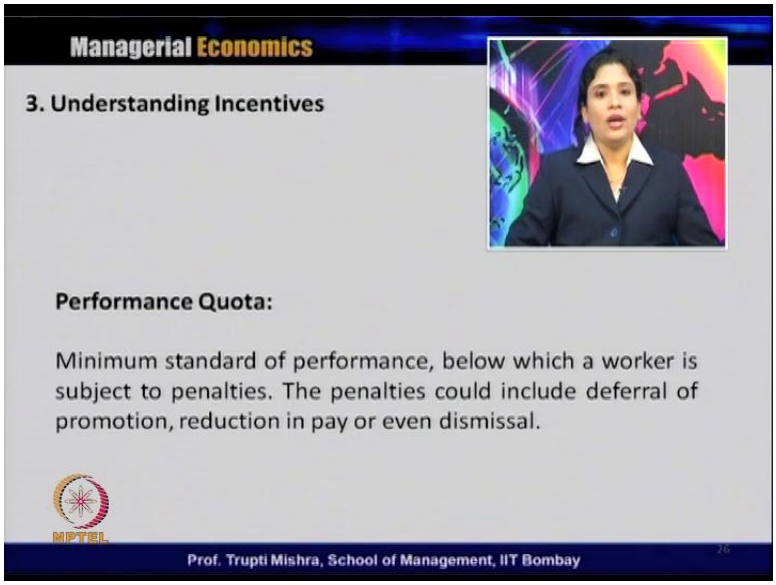

Then, we will talk about the performance quota. Suppose there is a firm, which is having 10 salesmen. What is performance quota? There is a quota identified by the firm. Suppose everyday they have to at least sell 10 units of the goods. Now, what is the incentive for the salesman? By any means, at least they have to sell 10 units of the goods. If they are not doing that, there is a penalty associated with that.

Now, what is the penalty? May be, it will come as a deferral of promotion, because they are not meeting the deadlines and they are not meeting the targets. If they are not reaching the quota for a longer period of time, sometimes the reduction in pay or even dismissal may come as a penalty because they are not able to perform their job properly.

Now, how it will work as an incentive? If the quota is 10 units, and if they are selling anything above that, there is an incentive associated with that. This will work positively for both the firm and the salesman. How it works positively for the salesman? After meeting the quota, they will try to sell more because with each unit, they are getting more and more benefit. So, quota is the minimum standard of performance, above which they are getting the incentive and below which, they will be subject to penalty.

So, in this case, the incentive is to sell more than the quota and get the incentive. This will also lead to the reduction of the immoral behavior by the salesman, where they will feel that after reaching the quota there is nothing. But if there is an incentive after reaching the quota, they will work for selling more which works positively for the firm because it also increase the sales revenue of the firm.

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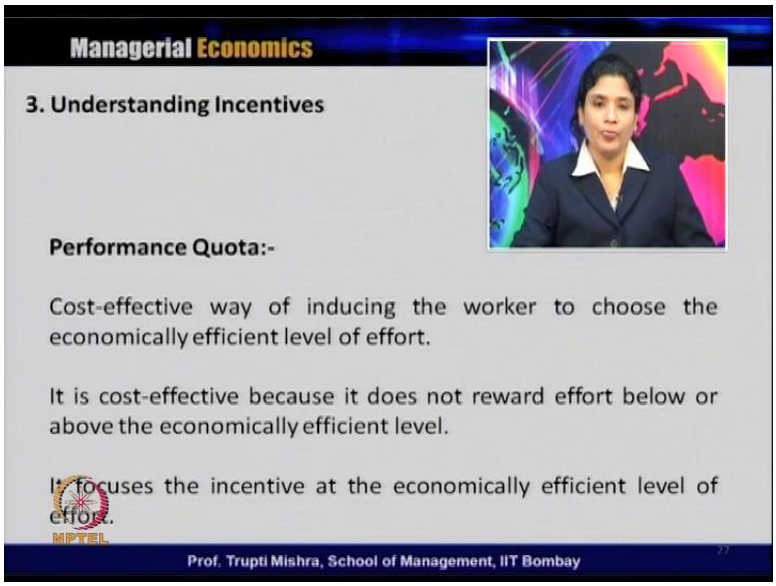

This is a cost effective way of inducing the workers to choose the economically efficient level of effort. It is cost effective, because it does not reward effort below or above the economically efficient level. It focuses the incentive at the economically efficient level of effort.

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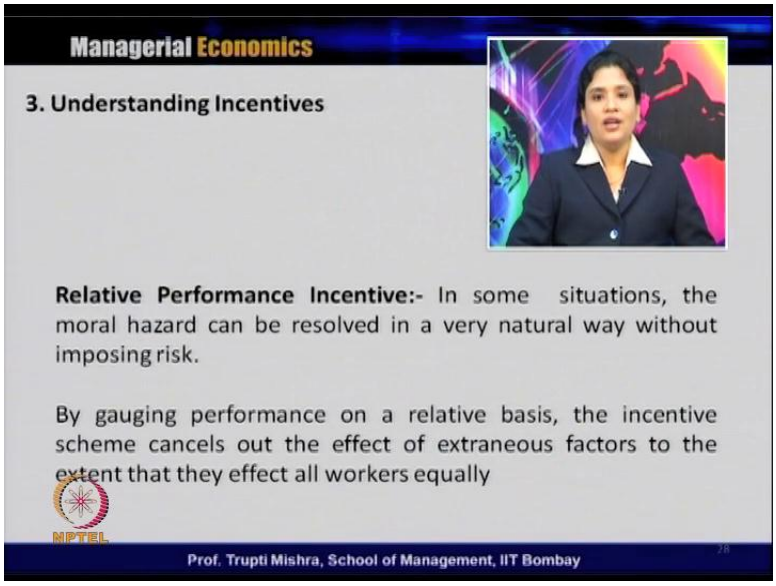

The third one is relative performance incentive. In some situations, the moral hazard can be resolved in a very natural way without imposing risk. By gauging the performance on

a relative basis, the incentive scheme cancels out the effect of extraneous factors to the extent that they affect all workers equally.

So, in this case if you look at, average performance will be decided by the firm. Now, what is the average performance? They will take the performance of all the salesmen in a typical time period and they will find out the average performance. If any workers are doing more than the average performance, then they are getting incentive. If they are not doing more than that, they are just getting whatever is the regular payment associated with their job.

In this case, there is some extraneous factor which may affect the worker that goes out because we are taking the average performance of all the salesmen. This works well because in this case, it is not an absolute performance rather it is a relative performance of all the economic agents or in a specific case, all the salesmen working for the firm.

So in incentive, there are three types of incentives. One is performance pay that is per unit incentive for the pay. Second one is performance quota. They have to meet the quota. If they are meeting the above the quota, then they are getting an incentive. If they are not meeting the quota, then they are getting a penalty. Third one is the relative performance incentive. That is, if the performance of all the economic agents is taken in an average level and no extraneous factor is influencing the economic agents or the salesman.

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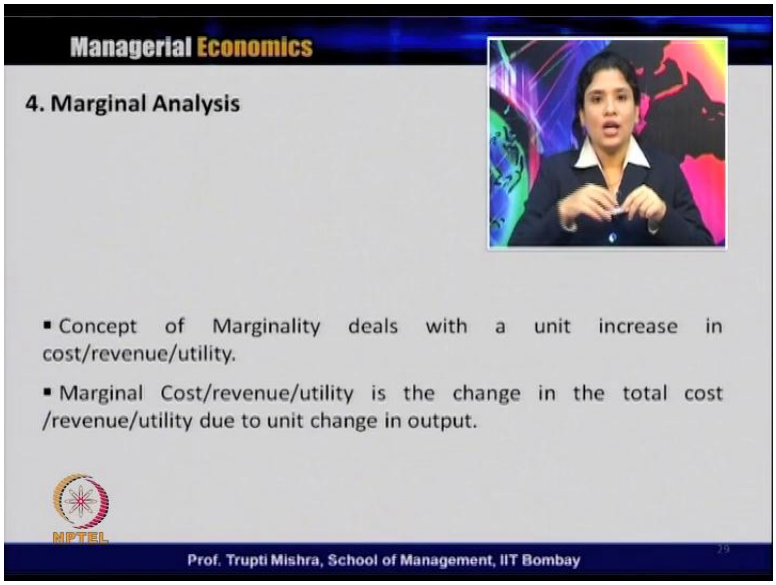

Then, we will come to an economic concept called marginal analysis. This is more crucial because if you look in managerial economics theory, this marginal analysis comes for each type of analysis or each type of application. Now, what is marginal analysis? It deals with a unit increase in the cost, revenue or utility. Suppose the variable is cost or suppose the variable is revenue or suppose the variable is utility. The concept of marginality deals with a unit increase in the cost, revenue or utility.

Now, what is marginal? Marginal cost or marginal revenue or marginal utility is the change in the total cost revenue utility due to unit change in the output. So basically, the concept of marginality is the unit increase or unit change in any variable that is cost, revenue or utility.

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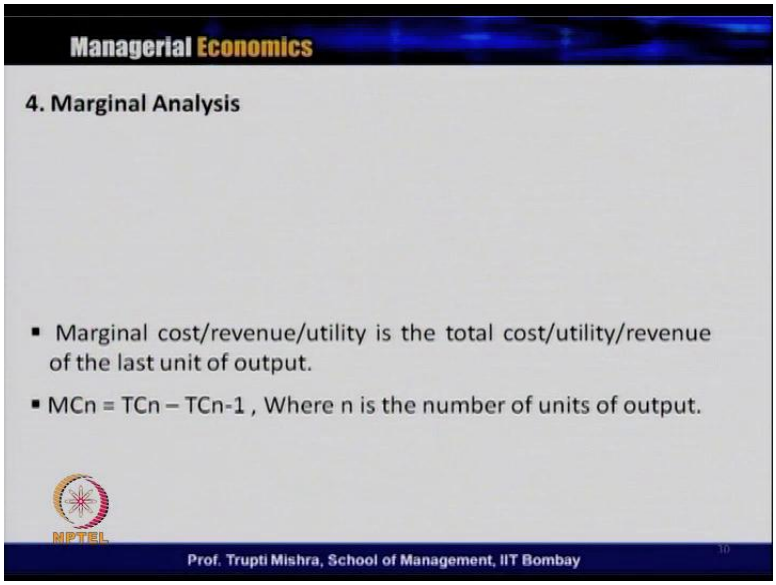

So, marginal cost, revenue, utility is the total cost, utility, revenue of the last unit of output. So, if you are taking a typical case of marginal cost, that is marginal cost of what is the n unit, it is the total cost of n unit that is total cost of n minus 1 unit, where n is the number of units of output. So, marginal cost is nothing but the cost associated or the difference in the cost between n unit and the n minus 1 unit. That is the marginal cost. So, the marginal cost is the cost as total cost of the last unit of output, and that is the marginal cost of the present unit.

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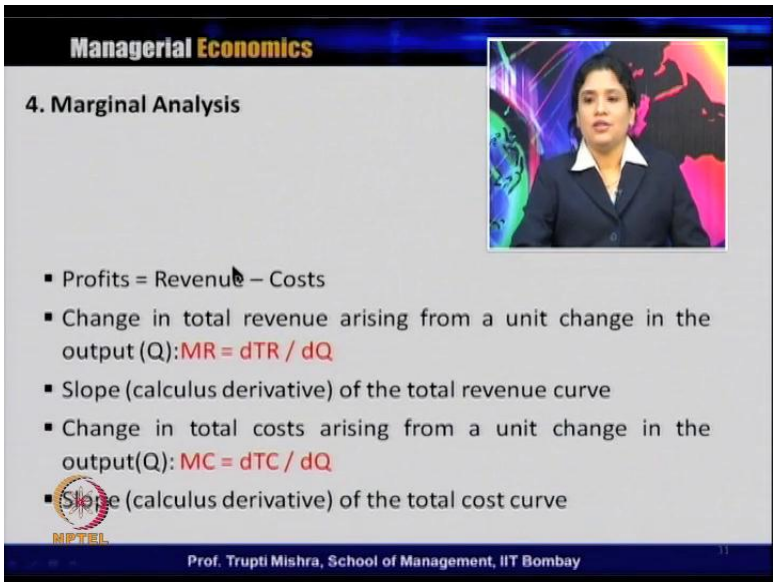

As we know, profit is revenue minus cost. So, change in the total revenue arising from a unit change in the output that is marginal revenue. If you are discussing in terms of calculus, in terms of the derivative, then this is the first order derivative of the total revenue function with respect to the output.

So, profit is revenue minus cost. Now, any change in the total revenue arising from a unit change in the output is marginal revenue and marginal revenue is the derivative. That is, the first order derivative of total revenue with respect to total output. So, the slope or the calculus derivative of the total revenue curve gives us the marginal revenue curve. So geometrically, the slope of the total revenue curve gives us the marginal revenue curve.

Similarly, what is the change in the total cost? Whatever is the change in the total cost arising from a unit change in the output, that is the marginal cost. So, one unit change in the output, whatever the cost incurs that becomes the marginal cost. Geometrically, if you are trying to find out the marginal cost, this is the slope of the total cost curve.

So, there are three ways to represent this marginal. One, where this is just the per unit change in the output or the last, whatever the revenue cost associated with the last unit of output. Second, mathematically how we can find out the cost difference in the total cost between the last unit and the present unit and geometrically, how we can get this marginal cost and marginal revenue. The slope of the total revenue curves gives us the

marginal revenue curve and the slope of the total cost curve gives us the marginal cost curve.

So, in the next class, we will discuss more about the marginal analysis and incremental analysis. This is the reference for whatever is being followed for this typical session.

Thank you.