Managerial Economics
Prof. Trupti Mishra
S. J. M. School of Management
Indian Institute of Technology, Bombay

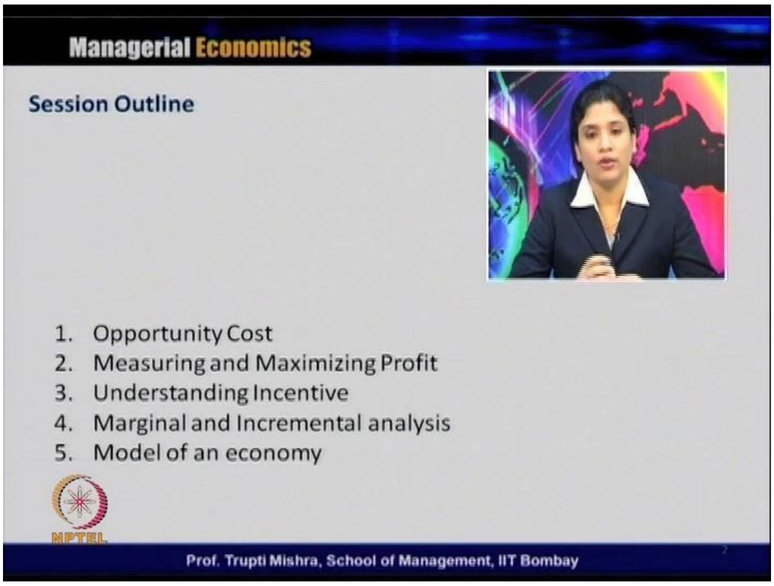
Lecture – 3

Introduction to Managerial Economics (Contd…) - I

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.

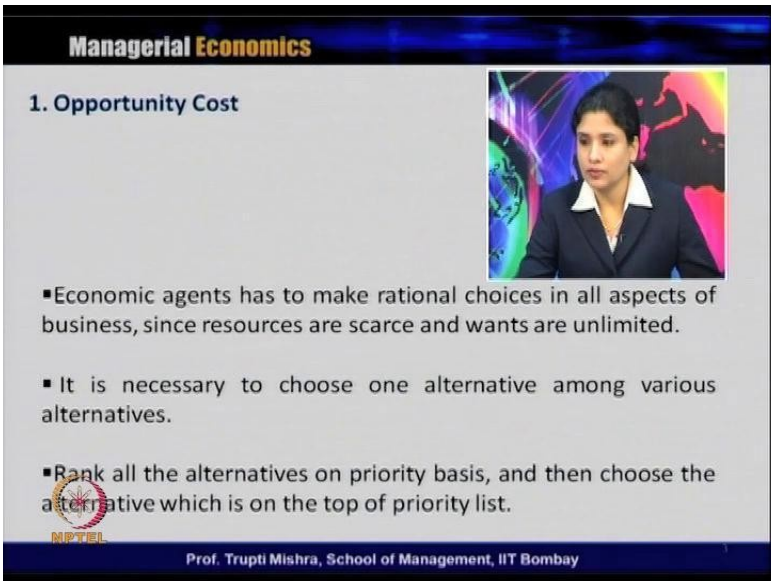
So, in the previous class we introduced the concept of economics. Basically, what is economics? What is managerial economics and how managerial economics is related to other business discipline. Then we discussed about few economic concepts like economic rationality, economic scarcity. Three basic questions 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.

(Refer Slide Time: 01:06)



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.

(Refer Slide Time: 01:39)



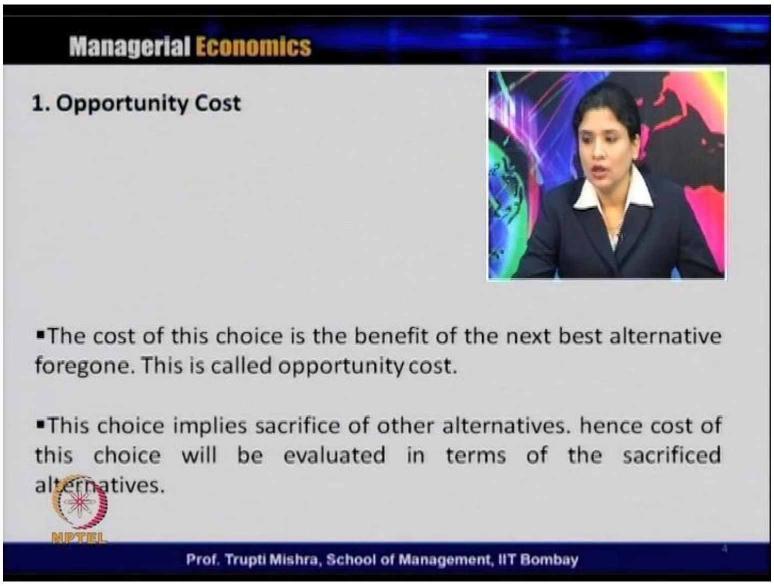
So, starting with opportunity cost. I think in everyday life when it comes to using or discussing about the different cost, we always talk about a fixed cost or a variable cost. So, opportunity cost is somehow different from this fixed cost and the variable cost. So, if you look at this, many times we 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.

(Refer Slide Time: 03:27)

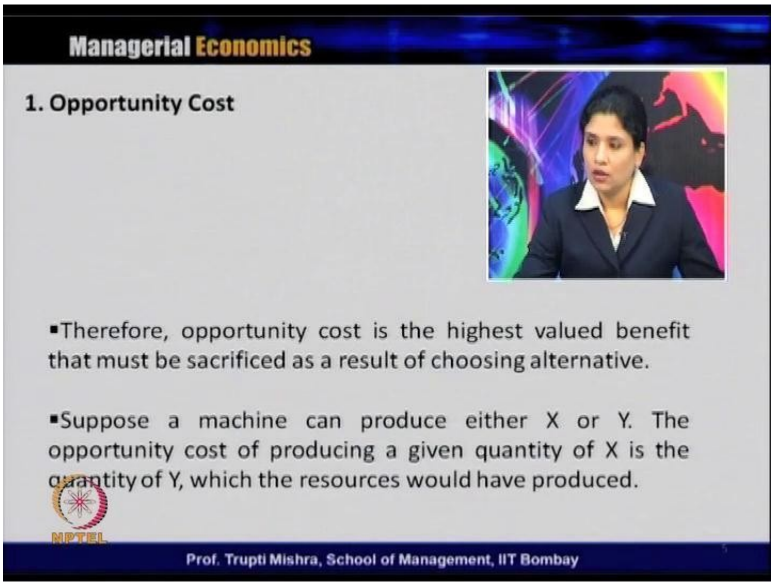


Now, what is the cost associated with this. The cost of this choice is the benefit of the next best alternative foregone and this is opportunity cost. So, when they are making the choice, any economic agent when they are making the choice as the first alternative, whether they are going to use the resources 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 they have to make a choice on what they have to utilize the resources and on that basis they 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.

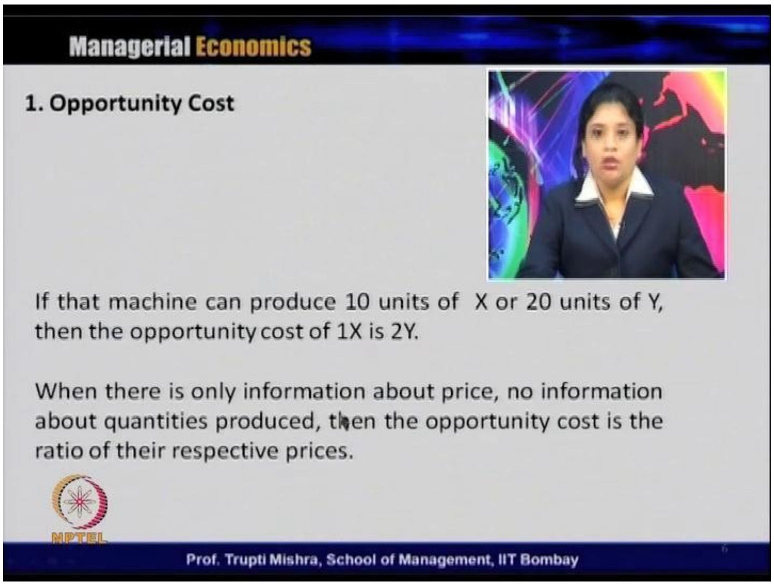
(Refer Slide Time: 04:59)



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 it can produce either X or Y. So, whatever the resources 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.

(Refer Slide Time: 06:19)

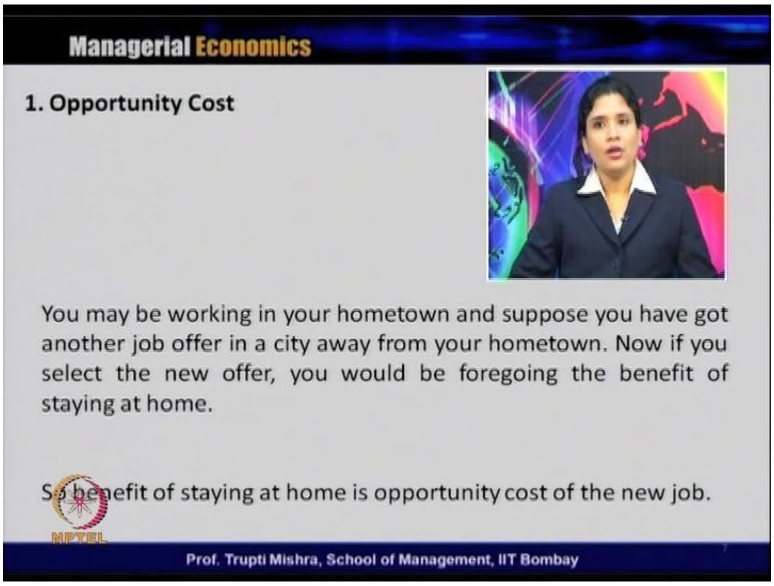


Suppose, we are assuming that the machine can produce either 10 units of X or 20 units of Y with the available resources. So, what is the opportunity cost of 1 X? The opportunity cost of producing 1 unit of X is 2 Y. Similarly, the opportunity cost of producing 1 unit of Y is 0.5 unit of X because with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

So, 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.

(Refer Slide Time: 07:35)



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 in a city away from your hometown.

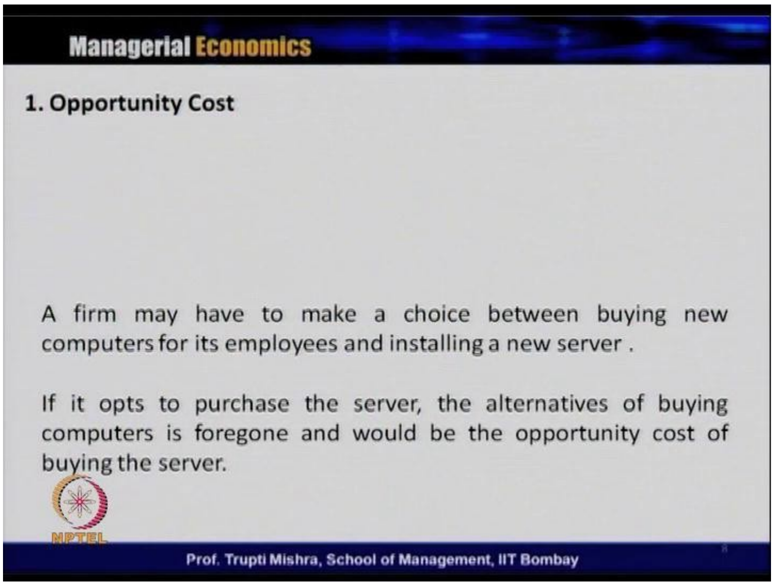
Now, what are the choices available over there? The choices available to you is either to continue with the existing job which is there in the hometown or the other offer is to take the job offer in the city away from your hometown.

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.

(Refer Slide Time: 09:21)



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 that is limited. So, with the limited fund, either the firm can buy new computers for its employee or they can install new server.

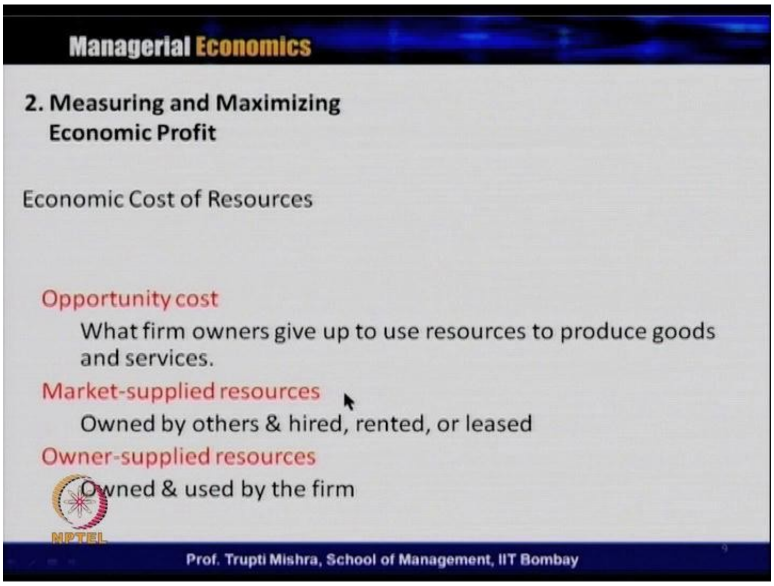
So, if the firm opts to purchase the server, the alternatives of buying computer is foregone and would be the opportunity cost of buying the server. So, either they can use this fund to purchase the server or they can use this fund for buying the computers. So, if the firm is choosing over buying computers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

(Refer Slide Time: 11:53)



Next, we will discuss about the profit. Because if you look at, now 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.

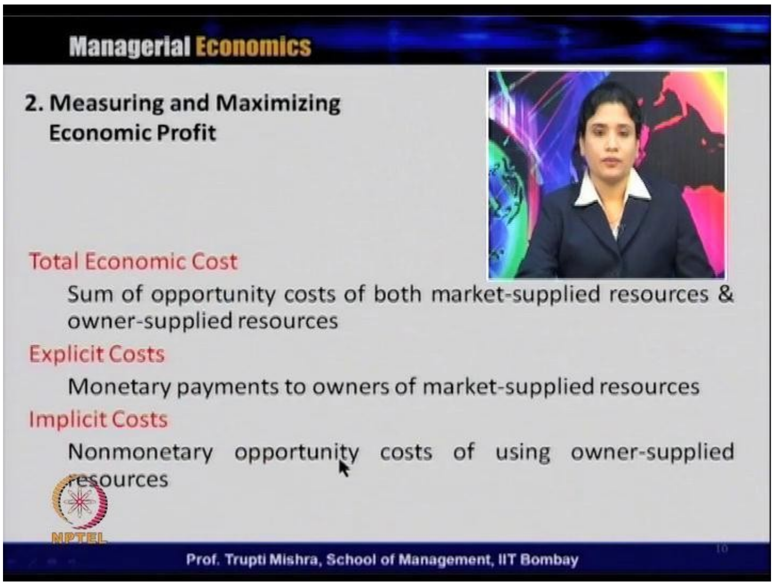
So, in case of opportunity cost as you have discussed, when you narrow down into the case of a firm, now what is the opportunity cost? what the firm owners give up to use resources to produce goods and services. Whatever the resources they are utilizing to produce goods and services, that has some alternate 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 what 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 this is not the owners' resources. This resources owned by the other economic agents and in order to use that 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.

(Refer Slide Time: 14:54)



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. 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, 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.

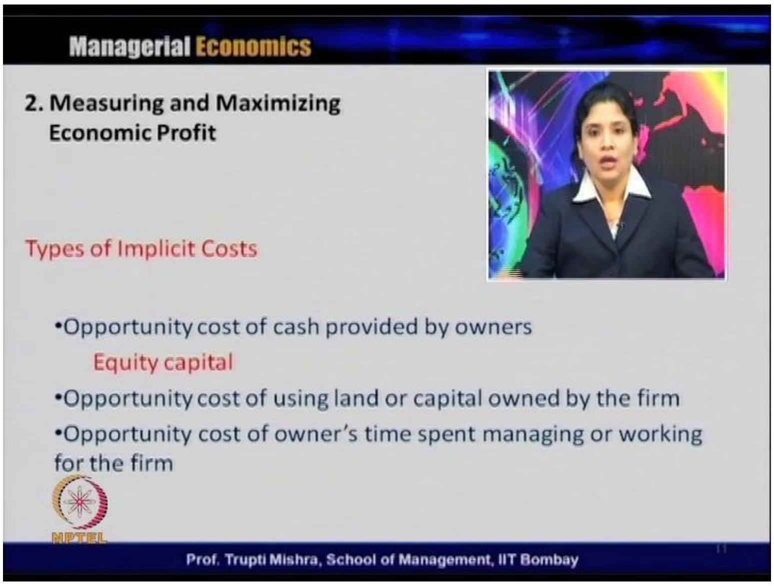
If you remember in last class, we discussed about four types of factor of production. All factors of production is one kind of resources. If the land belongs to someone else, then we have to pay the rent which comes under this monetary payment. This comes under the explicit cost. If the capital has been 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's comes under the monetary payment, which comes under the explicit cost.

Similarly, if you look at if the manager is not the owner, then the manager has to be, 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 labour, 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, non-monetary opportunity cost of using owners supplied resources. So, if you look at 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 get 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.

(Refer Slide Time: 18:22)



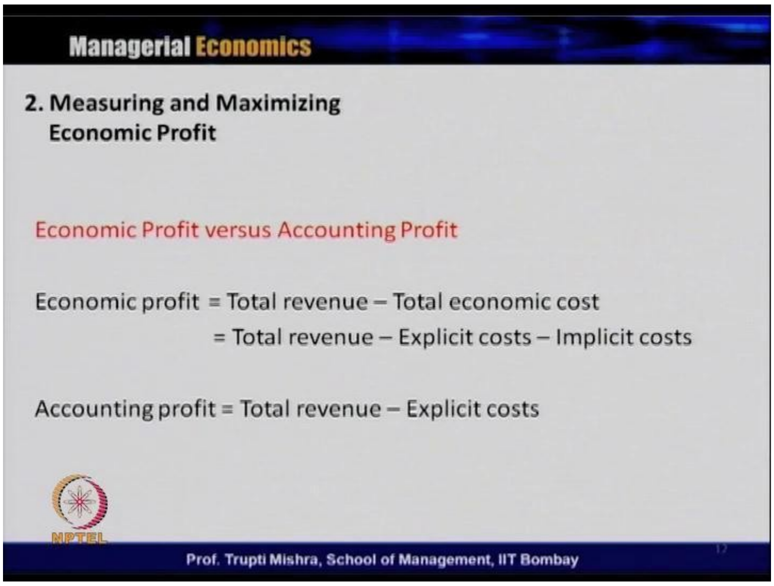
Now, all the activity that comes under the direct payment is always under the explicit cost. Now, what are the different types of implicit costs? We will take few examples. Opportunity cost of cash provided by the owners like the equity capital. If we look at it is firms own resources. There is no payment 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 there is opportunity cost. And these are all comes 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.

(Refer Slide Time: 20:46)

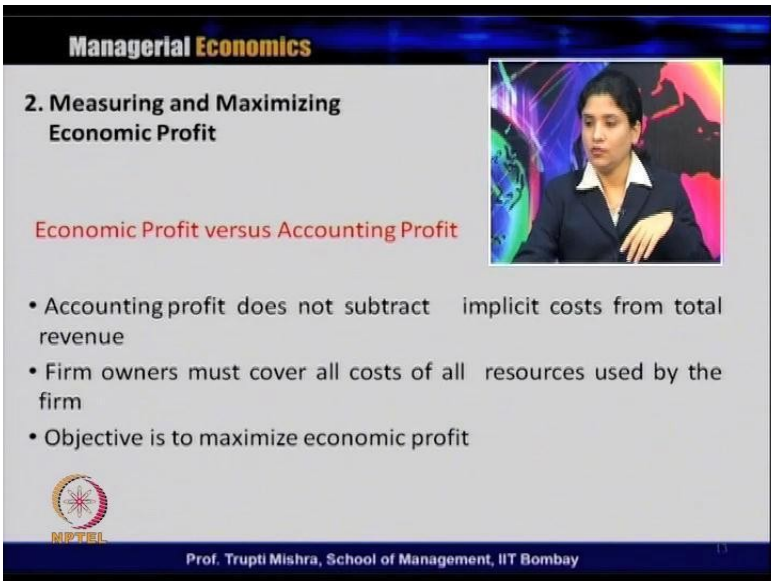


The difference between the revenue and the cost is profit. We will see two types of profit here. One is economic profit and second one is accounting profit. In case of economic profit, it is the difference between the total revenue and the total economic cost.

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.

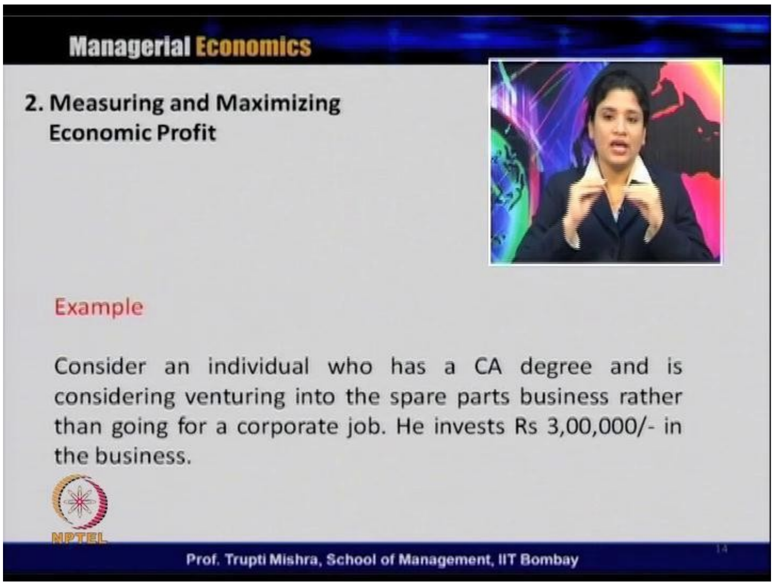
(Refer Slide Time: 21:55)



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 a rational way? With the rational way is when the firm owners they are considering all the types of cost associated for all resources used by the firm.

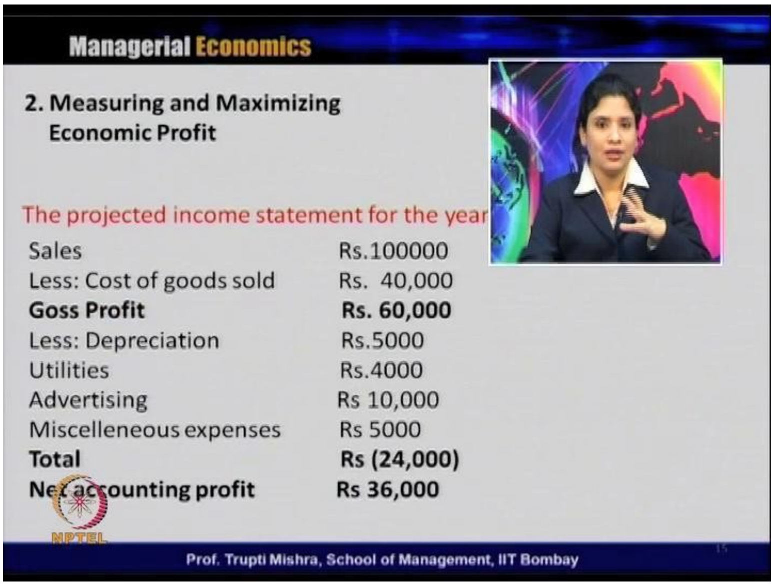
What is the background for this? The background for this is the objective is to maximize the economic profit and not the accounting profit. What is the goal of the firm? The goal of the firm is profit maximization. Now, what profit maximization? economic profit maximization. Economic profit maximization because it considers all these types of cost, 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 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.

(Refer Slide Time: 23:11)



Consider a simple example 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, the 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.

(Refer Slide Time: 24:03)



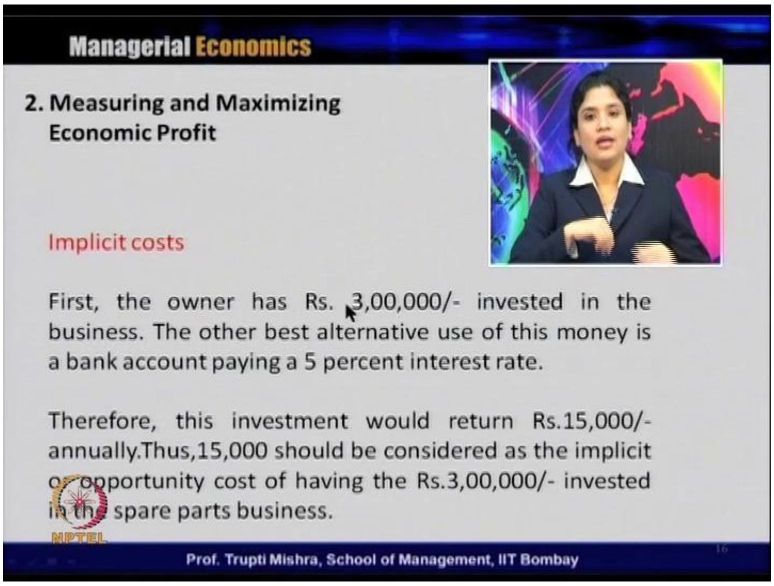
So, initial capital is 3 lakhs in the business. Now, this is the projected income statement for the year. Total sales is 1 lakh and cost of the goods sold is 40000. The cost of the production, gross profit is 60000. So, this is the income statement for the year. The total sales is 1 lakh and the cost 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, utility expenditure is another 4000. Advertising expenditure 10000 and miscellaneous expenses is another 5000. This total comes to 24000. So, if you take these expenses deducted 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, few more expenses what we deduct from the gross profit in order to reach the accounting profit. Depreciation 5000 and utility expenditure 4000, advertising 10000 and miscellaneous expenses is 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 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 what is economic profit and whether the firm is maximizing the profit or whether it's in the matching with their objective or matching with their goal or not.

(Refer Slide Time: 26:16)

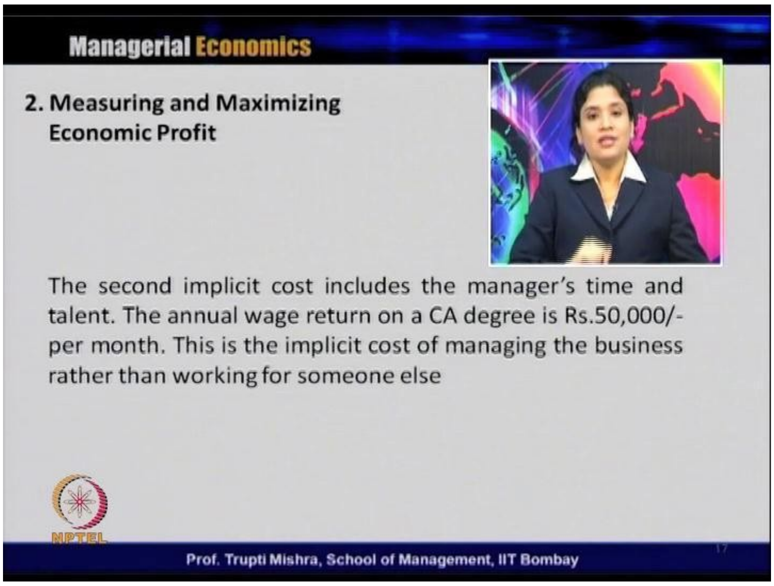


Now, what is the implicit cost in this case? The owner has invested 3 lakhs in this business. What is the alternate use of this typical 3000 rupees? If You are putting it in the bank account paying 5 percent interest rate, assuming the rate is 5 percent. If you are not, if the owner is not investing 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.

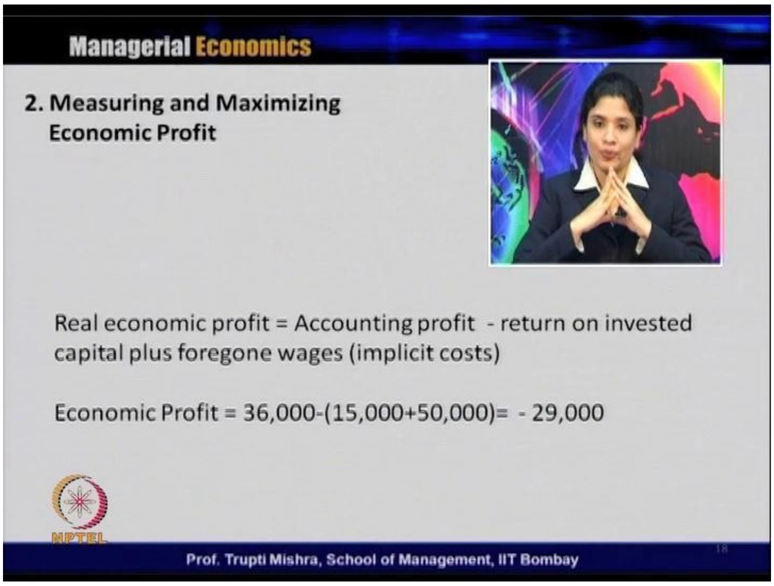
(Refer Slide Time: 27:42)



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 times 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.

(Refer Slide Time: 28:45)

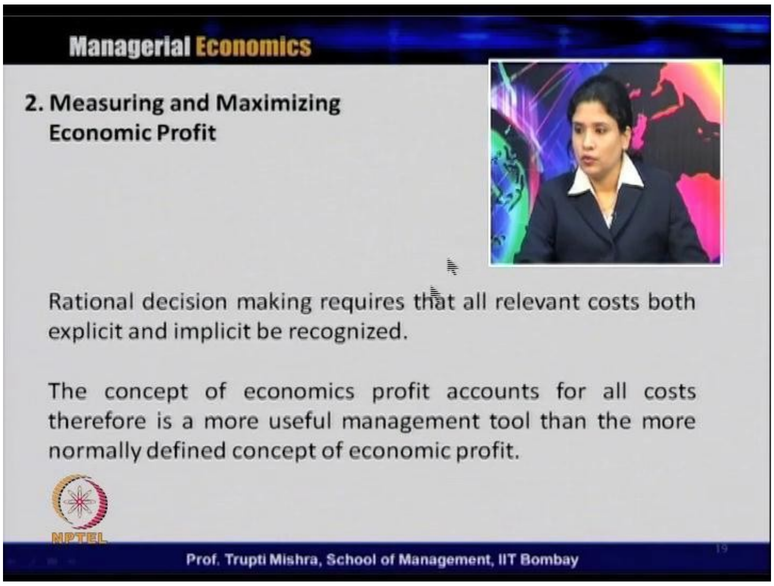


So, if you add these two implicit costs, now what is the real economic profit? accounting profit minus return on invested capital plus the foregone wages. These are the two components of implicit cost in this specific case. So, economic cost is, economic profit is 36000 minus 15000 what would have been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

(Refer Slide Time: 30:51)



Because 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. And 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.