

# FOUNDATION COURSE IN MANAGERIAL ECONOMICS

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Lecture 15: Costs of Production

# Concepts that we learn and use here

- Economic Profit and Accounting Profit
- Production function and marginal product
- Various types of costs and how they are related to each other
- Does cost decision of firm change over time? How are costs different in short and long run?
- Economies of scale

# Revenue, Cost and Profit

- Profit = Total Revenue – Total Cost

*Assumption: Firms' objective is to maximize profits*

- Costs : Explicit and Implicit Costs
- **Explicit costs**: Direct costs incurred by the producer which he has to pay for in money terms, also known as Accounting costs
- **Implicit Costs**: Value foregone of resources used, which could have been used in other alternatives, also known as Opportunity costs

**Economic cost = Explicit cost + Implicit cost**

# Economic Profit

- Economic Profit = Total revenue – Explicit cost – Implicit Cost
- Zero Economic Profit is a Normal Accounting Profit

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Lecture 16: Production Function and Marginal Product

# Production Function

- **Production function** shows the relationship between the quantity of inputs required to produce a quantity of output.
- **Marginal Product** of any input is the increase in output resulting from an additional unit of that input, keeping all other inputs constant
- Marginal Productivity of Labour:

$$MPL = \frac{\Delta Q}{\Delta L}$$

# Marginal Product

- MP of any input diminishes as more and more units of the input are added, keeping other inputs constant.
- **Diminishing marginal product:**  
the marginal product of an input declines as the quantity of the input increases (other things equal)
- MP is important to the producer in deciding if he should add an additional input for production
- If he hires an additional labour, his cost rises by the wage he pays to the labour and his output rises by MPL

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Lecture 17: Cost curves



# Different type of costs

- Fixed costs – Fixed costs do not vary with quantity of output produced
- Variable costs – Variable costs vary with quantity of output produced
- Total Cost = Fixed costs + Variable costs

# Cost curves

- Total costs= Fixed costs(FC) + Variable costs(VC)
- Average variable costs=VC/Q
- Average Fixed costs=FC/Q
- Average total costs = TC/Q
- $MC = \frac{\Delta TC}{\Delta Q}$

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Lecture 18: Cost curves in the Long run and Short run

# Difference between Long Run and Short Run

- Short run: Some inputs require some time to increase or decrease in amount. The amount of time for which they are *fixed* is known as the short run.
  - Example: Plant size, land, large machineries
- Long run: The amount of time required to increase or decrease the amount of all inputs is called the long run. In the long run all inputs are *flexible*.
  - Example: It is possible to set up more factories or buy or sell land, machineries etc. in the long run
- In the long run, to produce any level of output, a firm will choose that mix of inputs for which its average total cost is minimum, i.e. the firm will choose the most efficient mix of inputs for any level of output

# Economies of Scale

- The long run average total cost curve is u shaped because of economies of scale
- At low levels of output, with increase in output, average cost falls because of *economies of scale*
  - Example: There is more learning by doing, increased specialization and efficiency improvement as production increases
- Constant returns to scale happens when average cost stays the same even as output increases
- At very high levels of production, with increase in output, average cost may actually rise because of *diseconomies of scale*
  - Example: Coordination problems, increase in complexities and managerial inefficiencies in larger size firms with high levels of output.