Dr.SNS RAJALAKSHMI COLLEGE OF ARTS AND SCIENCE
(Autonomous)

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DEPARTMENT OF MATHEMATICS

21UCR304: BUSINESS CALCULUS AND FINANCIAL COMPUTATION

Price Elasticity of Demand

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Price Elasticity of Demand

What Is Price Elasticity of Demand?

Price elasticity of demand measures how a change in price affects a product's demand. If a price change creates a large change in demand, it is considered elastic. If a price change creates a small or no change in demand, it is inelastic.

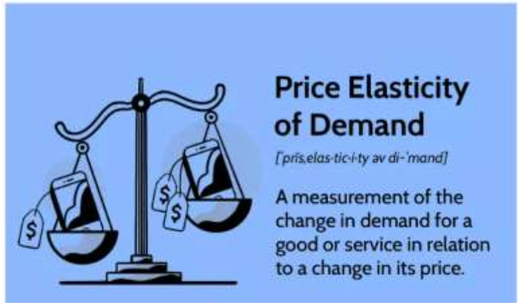
DEFINITION:

Price elasticity of demand is a concept in economics that describes the relationship between a product's change in quantity demanded and a price increase, expressed as a ratio.

Price Elasticity of Demand

Understanding Elasticity

Elasticity is an important economic measure, particularly for the sellers of goods or services, because it indicates how much of a good or service buyers consume when the price changes.



When a product is elastic, a change in price quickly results in a change in the quantity demanded. When a good is inelastic, there is little change in the quantity of demand even with the change of the good's price. The change that is observed for an elastic good is an increase in demand when the price decreases and a decrease in demand when the price increases.

Real-World Examples of Elastic Goods

Typically, goods that are elastic are either unnecessary goods or services or those for which competitors offer readily available substitute goods and services. The airline industry is elastic because it is a competitive industry. If one airline decides to increase the price of its fares, consumers can use another airline, and the airline that increased its fares will see a decrease in the demand for its services. Meanwhile, gasoline is an example of a relatively inelastic good because many consumers have no choice but to buy fuel for their vehicles, regardless of the market price.

Price Elasticity of Demand

If the quantity demanded of a product changes greatly in response to changes in its price, it is elastic. That is, the demand point for the product is stretched far from its prior point. If the quantity purchased shows a small change after a change in its price, it is inelastic. The quantity demanded didn't stretch much from its prior point.

Price elasticity of demand can be expressed mathematically as:

Price Elasticity of Demand = Percentage Change in Quantity Demanded ÷ Percentage Change in Price

Price Elasticity of Demand

Types of Price Elasticity of Demand

CALCULATED PRICE ELASTICITY OF DEMAND	TYPE OF ELASTICITY	RESULT OF CHANGE IN PRICE
Infinity	Perfectly elastic	Demand declines to zero
Greater than 1	Elastic	Significant change in demand
1	Unitary elasticity	Equivalent percentage change in demand
Less than 1	Inelastic	Insignificant change in demand
0	Perfectly inelastic	No change in demand

Price Elasticity of Demand

Problems:

If price increases by 10% and consumers respond by decreasing purchases by 20%, the equation computes the elasticity coefficient as -2. The result is negative because an increase in price (a positive number) leads to a decrease in purchases (a negative number). Because the law of demand says it will always be negative, many economists ignore the negative sign, as we will in the following discussion.

$$PED = \frac{20\%}{10\%} = 2$$

Price Elasticity of Demand

Problem 1:

If the price of certain goods falls from 20/- to 10/-, that causes increase in the demand from43 units to 75 units. Calculate the price elasticity of demand.

Solution:

I f the values are given separately and not in the percentages, we should apply the following formula model 1

$$PED = \frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$$

- ΔQ =change in the demand.(difference in demand) =43- 75= 32
- ΔP=change in the price.(difference in the price) =20-10 = 10
- P=initial price. (first price/ old price) =20
- Q=initial demand. (first demand/ old demand)= 43

$$\frac{43-75}{20-10} \times \frac{20}{43} = \frac{32}{10} \times \frac{20}{43} = 1.48$$

Hence Price Elasticity of Demand =1.48

Price Elasticity of Demand

QUIZ CORNER :

If the elasticity of demand for college textbooks is -0.1, and the price of textbooks increases by 20%, how much will the quantity demanded change, and in what direction? *

- a. The quantity demanded increases by 2%
- b. The quantity demanded decreases by 20%
- c. The quantity demanded decreases by 2%
- d. The quantity demanded remains the same

If the elasticity of demand for spring break packages to Cancun is -5, and if you notice that this year in Cancun the quantity of packages demanded increased by 10%, then what happened to the price of Cancun vacation packages? *

- a. The price fell by 10 percent
- b. The price fell by 2 percent
- c. The price increased by 2 percent
- d. The price remained the same

THANK YOU