



[Frequently Asked Questions]

Decision Theory

Subject:	Business Economics
Course:	B.A., 4 th Semester, Undergraduate
Paper No. & Title:	Paper – 403 Quantitative Techniques for Management
Unit No. & Title:	Unit - 4 Theory of Game, Decision Theory and Decision Analysis
Lecture No. & Title:	Lecture – 2 Decision Theory

Frequently Asked Questions

Q1. What is Course of action (Acts) in decision theory?

A1. A decision is made among a set of defined alternative course of action. These are also called actions, acts or strategies and are under control and known to the decision-maker.

Q2. Explain States of nature (Event).

A2. Outcomes of any course of action are dependent upon certain factors beyond the control of the decision-maker. These factors are called states of nature.

Q3. What is Pay off in decision theory?

A3. For each combination of an act and states of nature, there will exist an outcome. This outcome may be quantified in terms of monetary value. This outcome of act-event combination is called pay off.

Q4. What is Decision making under certainty?

A4. In this case the decision-maker has the complete knowledge of outcome of every course of action with certainty. Clearly, he will select an act that will give the largest pay off for the known state of nature.

Q5. What Decision making under risk?

A5. In this case the decision-maker has less complete knowledge with certainty of outcome of every course of action. This means there is more than one states of nature and for which the decision-maker knows the probability with which each state of nature will occur.

Q6. Name the criteria under decision making under risk?

A6. Following are the few criteria under decision making under risk:

Expected Monetary Value (EMV)

Expected Opportunity Loss (EOL)

Expected Value of Perfect Information (EVPI)

Q7. What is decision making under uncertainty

A7. In this case the decision-maker is unable to specify the probabilities with which the various states of nature will occur.

Q8. Name the criteria under decision making under uncertainty?

A8. Following are the few criteria under decision making under risk:

Maximax or Minimax Criterion

Laplace Criterion

Hurwicz Criterion

Criterion of Regret (Savage Criterion)

Q9. Give formula for Expected Monetary value.

A9. $EMV(A_j) = \sum a_{ij} * p_i$

where a_{ij} = payoff associated with state of nature E_i and course of action A_j

p_i = probability of occurrence of states of nature E_i

Q10. Give the formula for EVPI.

A10. $EVPI = \sum a_{ij} * p_i - \text{Maximum EMV}$

Where a_{ij}^* = best payoff associated with state of nature E_i

p_i = probability of occurrence of states of nature E_i