Decision making under Uncertainty

A decision problem, where a decision-maker is aware of various possible states of nature but has insufficient information to assign any probabilities of occurrence to them, is termed as decision-making under uncertainty. A decision under uncertainty is when there are many unknowns and no possibility of knowing what could occur in the future to alter the outcome of a decision.

We feel uncertainty about a situation when we can't predict with complete confidence what the outcomes of our actions will be. We experience uncertainty about a specific question when we can't give a single answer with complete confidence.

Launching a new product, a major change in marketing strategy or opening your first branch could be influenced by such factors as the reaction of competitors, new competitors, technological changes, changes in customer demand, economic shifts, government legislation and a host of conditions beyond your control. These are the type of decisions facing the senior executives of large corporations who must commit huge resources.

The small business manager faces, relatively, the same type of conditions which could cause decisions that result in a disaster from which he or she may not be able to recover.
A situation of uncertainty arises when there can be more than one possible consequences of selecting any course of action. In terms of the payoff matrix, if the decision-maker selects A1, his payoff can be X11, X12, X13, etc., depending upon which state of nature S1, S2, S3, etc., is going to occur.

Methods of Decision Making under Uncertainty
The methods of decission making under certainity are.There are a variety of criteria that have been proposed for the selection of an optimal course of action under the environment of uncertainty. Each of these criteria make an assumption about the attitude of the decision-maker.

Maximin Criterion: This criterion, also known as the criterion of pessimism, is used when the decision-maker is pessimistic about future. Maximin implies the maximisation of minimum payoff. The pessimistic decision-maker locates the minimum payoff for each possible course of action. The maximum of these minimum payoffs is identified and the corresponding course of action is selected. This is explained in the following example :
Example : Let there be a situation in which a decision-maker has three possible alternatives A1, A2 and A3, where the outcome of each of them can be affected by the occurrence of any one of the four possible events S1, S2, S3 and S4. The monetary payoffs of each combination of Ai and Sj are given in the following table:

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2020-07-04