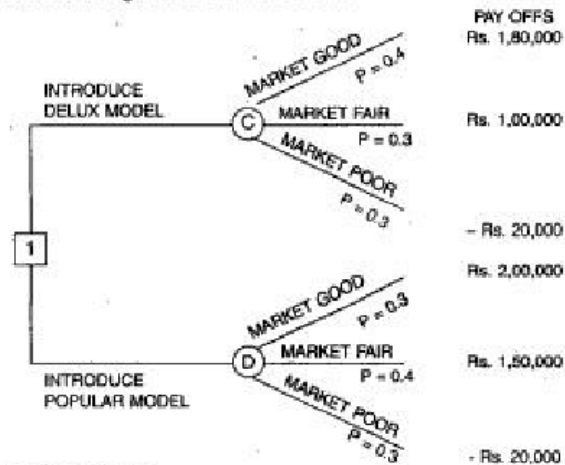The decision tree for the given is drawn below:



## ROLL-BACK TECHNIQUE

A decision tree is analysed using the roll-back technique. This technique proceeds from the last decision in the sequence and works back to the first for each of the possible decisions. There are two rules concerning roll-back technique in the decision tree analysis:

   (i)   If branches emanate from a circle, the total expected payoff may be calculated by summing the expected value of all the branches.
   (ii)  If branches emanate from a square, we calculate the total expected benefit for each branch emanating from the square and let the total expected payoff be equal to the value of the branch with the highest expected benefit.

Let us analyse the tree given above by the roll back technique. Here point '1' is the decision point and C & D are the chance nodes.

$$EMV \ (at \ C) \ = \ .4 \times Rs. \ 1,80,000 + .3 \times Rs. \ 1,00,000 + .3 \times (Rs. -20,000)$$
$$= \ Rs. \ 72,000 + Rs. \ 30,000 - Rs. \ 6,000 = Rs. \ 96,000$$
$$EMV \ (at \ D) \ = \ .3 \times Rs. \ 2,00,000 + .4 \times Rs. \ 1,50,000 + .3 \times (Rs. -20,000)$$
$$= \ Rs. \ 60,000 + Rs. \ 60,000 - Rs. \ 6,000 = Rs. \ 1,14,000.$$

The decision point '1' is to introduce the popular model since it results in the highest EMV.