

**Guidance:**

YOU WILL USE THE SCENARIO AND MARKET RESEARCH REPORT TO COMPLETE THIS TASK.

**MARKET RESEARCH REPORT**

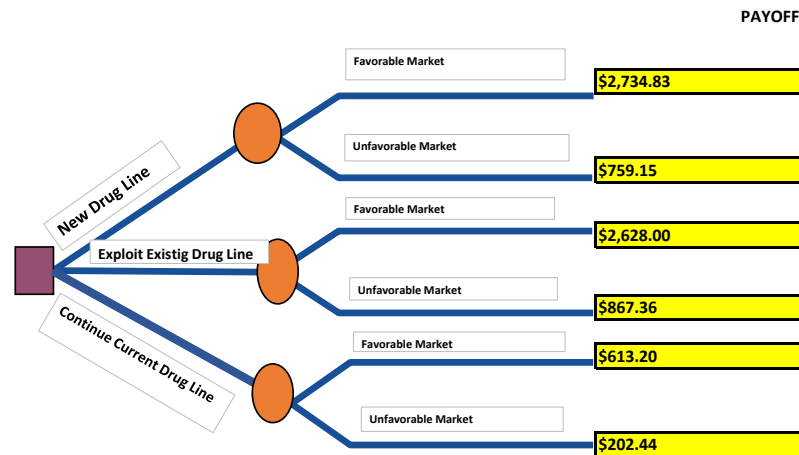
MPC contracted with Drug Markets Analysts Inc. (DMA). Based on competitive research, DMA has found that there are new competing drugs recently granted FDA approval. MPC will need to be aware of the competition in the market as they consider whether to develop a new drug line, exploit the existing drug line for potential new applications, or simply continue with the current drug line at this time. The new formula is a clear advancement developed under strict guidelines and is scheduled for FDA approval in the first quarter of the year. Currently, there are only two other widely available products on the market that meet the same needs. In a highly favorable market that is supported by MPC's drug offering being considered the better solution, a new drug line will have 71% likelihood of success with a demand of 4341 units per month, the existing drug will have a 63% likelihood with a demand of 5475 units per month, and making no changes will be 81% likely to succeed with a demand of 730 units per month. In an unfavorable market, a new drug line will have a demand of 1205 units per month, the existing drug will have a demand of 1807 units per month, and making no changes will have a demand of 241 units per month. Profits are estimated to be 0.63 per unit for the new drug line, 0.48 per unit for the existing drug line with new FDA-approved uses, while the current profit is 0.84 per unit.

**A. Describe a business question that could be answered by applying decision tree analysis and is derived from the scenario.**

What is the best course of action for MPC drug line development when considering the probability of success and payoffs based on competitive research conducted by DMA?

**B. Identify the relevant data values required for your decision tree analysis, including the following: • probabilities • payoffs • profits • demand**

Probability of need		Demand			
Low	High	Profit	Low	High	Alternative
29%	71%	0.63	1205	4341	New drug line
37%	63%	0.48	1807	5475	Exploit existing drug line
19%	81%	0.84	241	730	Continue current drug line

**C1. Complete a decision tree diagram, including each of the following: • state-of-nature nodes • calculated payoffs, each expressed out to two decimal places • expected values, each expressed out to two decimal places****Calculate the Expected Value of each node.**

New Drug Line		State of Nature	Pay off	Probability
Favorable			\$2,734.83	71%
Unfavorable			\$759.15	29%
Calculation for Expected Value (EV)				
Probability X Payoff for Both			\$2,161.83	
Exploit Existing Drug Line		State of Nature	Pay off	Probability
Favorable			\$2,628.00	63%
Unfavorable			\$867.36	37%
Calculation for Expected Value (EV)				
Probability X Payoff for Both			\$1,976.56	
Continue Current Drug Line		State of Nature	Pay off	Probability
Favorable			\$613.20	81%
Unfavorable			\$202.44	19%
Calculation for Expected Value (EV)				
Probability X Payoff for Both			\$535.16	

Enter decision selection based on EV (your final decision node):

New drug line and then exploit existing drug line and then continue current drug line. The current drug line has a high probability but low demand, the new drug line has a high probability and high demand.