LECTURE

A. Explore

a. Give an example of a good decision that you made that resulted in a bad outcome. Also give an example of a bad decision that you made that had a good outcome. Why was each decision good or bad?

-The first decision that I made which resulted in a bad outcome involved getting scammed out of a mobile game (rpg). This game has an in-game currency which you can buy in-game items, meaning that you can also buy and sell in-game currency for real money. I had two choices: sell the in-game currency for cheap, or sell it for higher price. Of course, I went for the higher price, but I knew it was too good to be true. And despite this hunch, I still went for the deal and got scammed for a total of P1,500. I didn't consider the high probability of getting scammed by this too good of a deal, resulting in my loss. On the other hand, the decision I made which resulted in a good outcome involved enrolling in a college school. I wanted to be an IT, but the school premises offering IT courses are too far. I was given two choices: to enroll in a different school which offers Computer Science, but the catch is that it's nearer than the school that offers IT. I chose the latter, which is a good thing because the school that offered Computer Science doesn't prioritize this kind of course. Their lessons are way behind the school I chose, meaning that I did a good job sacrificing the distance for the lessons.

B. Explain

a. Discuss the differences among decision making under certainty, decision making under risk, and decision making under uncertainty.

-Decision-making under certainty occurs when all relevant information is known, and the outcomes of each alternative can be precisely determined. In this scenario, decision-makers can accurately assess the consequences of their choices, leading to straightforward decision-making processes. For example, in financial investments where the returns and risks are clearly defined, decisions can be made with certainty.

In contrast, decision-making under risk involves situations where the probabilities of different outcomes are known, but the actual outcome is uncertain. While decision-makers have some information to assess the likelihood of each outcome, there is still an element of unpredictability. Strategies such as risk assessment and probability analysis are commonly employed in these scenarios to optimize decision-making. For instance, in insurance underwriting, actuaries use statistical models to estimate the likelihood of events like accidents or illnesses.

Decision-making under uncertainty, on the other hand, occurs when relevant information about outcomes or their probabilities is incomplete or entirely unknown. In such circumstances, decision-makers face ambiguity and lack the necessary data to assign probabilities to potential outcomes accurately. Consequently, decision-making under uncertainty is often characterized by reliance on intuition, heuristics, or scenario planning. Fields such as emergency management or startup entrepreneurship frequently involve decision-making under uncertainty due to the unpredictable nature of events or markets.

C. Engage

a. Solve the given problem. Show your solution.

1. Maria Rojas is considering the possibility of opening a small dress shop on Fairbanks Avenue, a few blocks from the university. She has located a good mall that attracts students. Her options are to open a small shop, a medium-sized shop, or no shop at all. The market for a dress shop can be good, average, or bad. The probabilities for these three possibilities are 0.2 for a good market, 0.5 for an average market, and 0.3 for a bad market. The net profit or loss for the medium-sized and small shops for the various market conditions are given in the following table. Building no shop at all yields no loss and no gain.

(a) What type of decision do you recommend?

-I will recommend Maria Rojas to open a medium-sized shop based on my computation.

1. Small Shop:

EMV = (0.2 * $75,000) + (0.5 * $25,000) + (0.3 * (-$40,000))

= $15,000 + $12,500 - $12,000

= $15,500

2. Medium-Sized Shop:

EMV = (0.2 * $100,000) + (0.5 * $35,000) + (0.3 * (-$60,000))

= $20,000 + $17,500 - $18,000

= $19,500

3. No Shop:

EMV = (0.2 * $0) + (0.5 * $0) + (0.3 * $0)

= $0

(b) Calculate the EVPI.

-Solution

Max EMV with perfect information = (0.2 * $100,000) + (0.5 * $35,000) + (0.3 * $0) = $20,000

EVPI = Max EMV with perfect information - EMV of the best decision under uncertainty

= $20,000 - $19,500

= $500

Therefore, the EVPI is $500.

(c) Develop the opportunity loss table for this situation. What decisions would be made using the minimax regret criterion and the minimum EOL criterion?

-Opportunity Loss Table:

Decision	Good Market	Average Market	Bad Market
Small shop	$0	$50,000	$115,000
Medium-sized shop	$25,000	$0	$95,000
No shop	$75,000	$75,000	$0

Minimax regret:

Good Market: Minimum regret for Small Shop = $0

Average Market: Minimum regret for No Shop = $0

Bad Market: Minimum regret for Medium-Sized Shop = $0

Therefore, under the minimax regret criterion, the decision would be:

Good Market: Small Shop

Average Market: No Shop

Bad Market: Medium-Sized Shop

Minimum EOL:

EOL(Small Shop) = (0.2 * $0) + (0.5 * $50,000) + (0.3 * $115,000) = $37,500

EOL(Medium-Sized Shop) = (0.2 * $25,000) + (0.5 * $0) + (0.3 * $95,000) = $24,500

EOL(No Shop) = (0.2 * $75,000) + (0.5 * $25,000) + (0.3 * $0) = $20,000

Therefore, under the minimum EOL criterion, the decision would be:

Good Market: Medium-Sized Shop

Average Market: No Shop

Bad Market: No Shop