MG-GY 9753: Business Analytics

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Short Case 4 Report

Submitted by

Rushi Thakar

Bidding for a Launch Contract:

Cost of Bidding Solo-Bid Co-Bid

Actinium $6.7 $4.3

Francium $8.5 $5.2

Polonium $7.6 $3.8

Profit Solo-Bid Co-Bid

Actinium $28.9 $21.5

Francium $35.5 $25.1

Polonium $32.8 $22.4

Probability

Solo-Bid Win 15%

Co-Bid Win 20%

Solo-Bid Lose 40%

Co-Bid Lose 25%

|  |  |
| --- | --- |
|  | Expected Payoff |
| Actinium | $10.52 |
| Francium | $12.37 |
| Polonium | $11.41 |

If you calculate **expected Payoff** with given probability above table is the result of the calculation. And looking at the table company should bid on **Francium** bid as it has highest payoff with $12.27 (Millions).

Evaluating Risk:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Win |  | Lose |  |  |  |
|  | SOLO | Co-bid | Solo | Co-bid |  | Standard Deviation |
| Actinium | 4.335 | 8.6 | 1.34 | 1.075 |  | 3.502276641 |
| Francium | 5.325 | 10.04 | 1.7 | 1.3 |  | 4.058691035 |
| Polonium | 4.92 | 8.96 | 1.52 | 0.95 |  | 3.690992414 |

If you calculate the standard deviation the above table is the result of it. If you apply **Evaluating Risk** on this table, we choose one **with lowest Standard Deviation: 3.5022** and that is why company should bid for **Actinium.**

* Suggest which of the two recommendations should be used and why.

It is always risk vs reward. Sometimes it depends on how much risk you are willing to take or how much reward you want. As this is the company’s main revenue generating business and business is stable in this market company can take more risk and go for better reward and Invest in **Francium** as it has better reward in terms of others and market is stable, so company can afford to take risk in this comparing to other markets.

**GEO Satellite Launch:**

**Prepare a Decision Tree showing all possibilities with associated probabilities and**

**Payoffs.**



• **Provide recommendation to Aakash on which bid to submit and which rocket to use**

Once again this comes to risk vs reward but this time company should play safe in terms of risk and go for **AccuGPS with rocket AGP-523** as it has most probability of being successful launch and in right orbit with almost best expected payoff 93.0112 million.

**What is the expected payoff in your recommendation?**

Expected payoff in my recommendation is **93.0112 million.**

• **What is the overall probability of the success of your recommendation?**

Overall probability in my recommendation (AccuGPS with rocket AGP-523 with successful launch and right orbit) is **0.2362**.

**Mining an Asteroid**

**What is the expected payoff in each options if the consulting company in not hired?**

|  |  |
| --- | --- |
|  | **Expected payoff without consulting company** |
| **Glutoes** | **$92.50** |
| **Vitan** | **$48.00** |

With the probability of 0.15 for High ratio. Amount is in Millions of $. Expected payoff = (probability \* Amount) - Cost

**What is the expected payoff in each option if the consulting company predicts high**

**ratio?**

|  |  |
| --- | --- |
|  | Expected payoff with Consulting company |
| Glutoes | $670 |
| Vitan | $939 |

**What is the expected payoff in each option if the consulting company predicts low**

**ratio?**

|  |  |
| --- | --- |
|  | **Expected payoff with Consulting company** |
| **Glutoes** | **$303** |
| **Vitan** | **$372** |

**What is the maximum amount the company should be ready to pay for the opinion of**

**the consulting company?**

Maximum amount company should pay to the consulting company should be the

= (max. Expected payoff with Consulting company) – (min. Expected payoff without consulting company)

= $891 (Millions)

**Moon Landing:**

**What is the expected utility for each landing site?**

When R=3000

|  |  |
| --- | --- |
|  | Average Utility |
| Aitken | 0.0470 |
| Birkhoff | 0.0619 |
| Grimaldi | 0.0739 |
| Imbrium | 0.0806 |

**Which landing site the company should choose?**

Company should choose **Imbrium** which has **highest average utility**.

**What is the expected utility for each landing site?**

When R=4000

|  |  |
| --- | --- |
|  | Average Utility |
| Aitken | 0.0635 |
| Birkhoff | 0.0622 |
| Grimaldi | 0.06 |
| Imbrium | 0.0627 |

**Which landing site the company should choose?**

Company should choose **Aitken** which has highest average utility.