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Risk Analysis - Budget-Constrained Project Selection by Oracle Crystal Ball by [Binary Semantics](#)

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(Application - Project Management)

Budget-Constrained Project Selection

	Expected Success	Expected Initial	Expected	
Project Revenue	Rate	Return	Investment	Profit Decisions
1	\$750,000	90%	\$675,000	\$250,000 \$425,000 1
2	\$1,500,000	70%	\$1,050,000	\$650,000 \$400,000 1
3	\$600,000	60%	\$360,000	\$250,000 \$110,000 1
4	\$1,800,000	40%	\$720,000	\$500,000 \$220,000 1
5	\$1,250,000	80%	\$1,000,000	\$700,000 \$300,000 1
6	\$150,000	60%	\$90,000	\$30,000 \$60,000 1
7	\$900,000	70%	\$630,000	\$350,000 \$280,000 1
8	\$250,000	90%	\$225,000	\$70,000 \$155,000 1

Budget \$2,000,000

Invested \$2,800,000

Surplus (\$800,000)

Total profit \$1,950,000

Using Oracle Crystal Ball:

Oracle Crystal Ball enhances your Excel model by letting you create probability distributions that describe the uncertainty surrounding specific input variables. This model includes sixteen probability distributions, referred to in Oracle Crystal Ball as "assumptions." Eight assumptions in Column C

describe the uncertainty in the expected revenue for each project. These distributions differ with the different conditions of each project. Each assumption cell is colored green.

This model also includes one Oracle Crystal Ball forecast, shown in light blue heading. Forecasts are equations, or outputs, that you want to analyze after a simulation. During a simulation, Oracle Crystal Ball saves the values in the forecast cells and displays them in a Forecast Chart, which is a histogram of the simulated values. In this example, you want to analyze the Total profit.

When you run a simulation, Oracle Crystal Ball generates a random number for each assumption (based on how the assumption has been defined) and places that new value in the cell. Excel then recalculates the model.

After you run a simulation, you will see the forecast chart, which you can use to analyze the Total profit outcomes. What is the mean Total profit? What is your certainty of making a profit of \$1.95 million (your original prediction)? What is the certainty that you may lose money? Do the forecast values form a smooth curve? If not, why? What happens to the forecast if you decide against certain projects and re-run the simulation?

Using OptQuest:

As OptQuest runs, it uses multiple metaheuristic methods and techniques to analyze past results and improve the quality and speed of its process. You can watch OptQuest's progress through the performance graph, which shows a flattened line as it converges to an optimal result.

What is the best combination of projects that results in the highest mean total profit?

Article Source:

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[Binary Semantics](#) - About Author:

Once OptQuest is finished, you can copy the optimal results back to your spreadsheet through the Copy Best Solution to Spreadsheet option in the Edit menu. Your spreadsheet now displays the optimal solution, and a [Oracle Crystal Ball](#) displays the forecast chart for the simulation from the best optimization. You can use OptQuest's Solution risk analysis view to review the other quantities of products that resulted in high total profit values.

Article Keywords:

Oracle Crystal Ball, Risk Analysis