Capital Investment Simulation Case St

Description: As the chief operation officer a manufacturing company, you need to decide on the inve
year to meet growing market demand. The sales & marketing division of the company provided the
procurement and HR divisions also provided guidance on materials price and labor cost forecast. The
and worst cases) which represent economic and market uncertainty.

Forecast of uncertain variables	Simulation Case
Sales demand growth	3%
Unit price growth	2%
Material price growth	4%
Fixed cost price growth	3%

Simulation case

Demand, delivery and revenue	**Current year**
Annual sales demand	700,000
Annual delivery	700,000
Unit price	$ 250.00
Annual revenue	**175,000,000**

Production capacity	
# of machines	70
Capacity per machine	10,000
Total capacity	700,000

Total production	700,000

Variable cost		
Variable cost per unit	$	150.00
Total variable cost	**$**	**105,000,000.00**

Fixed cost		
Machine and operating labor (per machine)	$	720,000.00
Total machine and operating labor cost	$	50,400,000.00
Others	$	4,000,000.00
Total fixed cost	**$**	**54,400,000.00**

Total cost	159,400,000.00
Total profit	**15,600,000.00**

Decision and Impact

Likely-case summary
Investment (machine and operating labor)
Profit change
ROI

Statistics results
Profit change
ROI

Risk: percentage of investment loss

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estment on additional machines and associated labor for the next
ir forecast of sales demand and price for the next year, your
eir forecast includes three possible scenarios (likely, best case

Recession	Strong economy	Likely case
2%	8%	6%
1%	4%	2%
1%	4%	2%
1%	4%	2%

Next year (additional machine)	Next year (status quo)
721,984	721,984
721,984	700,000
$ 254	$ 254
183,480,055	**177,893,189**

74	70
10,000	10,000
740,000	700,000

721,984	700,000

$ 155	$ 155
$ 112,130,279	**$ 108,715,974**

$ 741,439	$ 741,439
$ 54,866,462	$ 51,900,707
$ 4,119,104	$ 4,241,754
$ 58,985,565	**$ 56,142,461**

$ 171,115,844	$ 164,858,435
12,364,211	**13,034,754**

Additional machine #	Additional machine #
4	0

4 additional machines
$ 2,965,755
$ (670,543)
-23%

Mean	Stdev
$ 738,751.42	$ 643,586.31
25%	22%

16%

Triangle distribution of the key market, economic and operational inputs (variables) based on the three scenarios

Based on demand forecast
The amount of product delivery is bounded by the production capacity and market demand
Based on unit price forecast

There are 70 machines at the end of the current year

The amount of product delivery is bounded by the production capacity and market demand

Based on procurement and HR forecast

Based on procurement and HR forecast

Under the likely-case, four additional machines provide significant incremental profit