

Global Supply Chain Management Simulation

Habib Ullah Baig (34280966)

	Year 1	Year 2	Year 3	Year 4
Design Room Options	Stylish	Stylish	Audio Quality	Audio Quality
	Storage Capacity			
Forecasting Room Estimates				
Model A	58k	54k	69k	62k
Model B	28k	30k	22k	29k
Profit	46,673,500	41,003,180	46,677,500	48,293,880
Votes	★★★★	★★★★	★★★	★★★★

Suppliers were chosen based on the cost the firm incurs. Also, the capacity and lead time were taken into consideration while choosing the suppliers.

Flexibility was an important consideration while creating the supply chain. Also, the demand for both the models were increasing and decreasing irrespective of the forecasting demand, hence, there was a lot of inventory as well as underproduction in several months. However, a production plan was built based on probabilistic demand forecast, weighing the relative importance of process performance measures.

With more than one product models, it makes predicting and fulfilling demand highly complex.

Problems Faced:

- Mounting inventories
- Stockouts due to increased demand of hot selling items
- Frequent markdowns
- Sudden increase or decrease in demand.

Solutions:

- Predicting demand more accurately
- Using production capacities and selecting suppliers wisely
- Forecasting demand as per the past year demand
- Also, stockout, holding, and markdown costs need to be checked.

Year 1:

Design Room Options:

- Stylish (Profitable, and low difference)
- Storage Capacity (Profitable, and low difference)

Forecasting Room Estimates:

Model A: 58k (Selected the estimate with mean and variance of the forecast)

Model B: 28k (Selected the estimate with mean and variance of the forecast)

Production Room:

	Model A	Model B	Production Month Started
FarFarAway	48	10	January
FarAway			
PrettyClose	10	18	May
VeryClose			

There should have been a production change based on Celldex market research forecast but I didn't change the order of model A or B as the change in order is costing around 2,000,000.

Boardroom Votes: (Four Stars)

Adele, Carla, Ankit, Matheo - (Agreed with reasoning in feature selection and production numbers)

Mia did not agree with choice of suppliers and production capacity. She felt I could have included a change in the order for model A owing to the demand forecast.

Decision History

YEAR 1	YEAR 2	YEAR 3	YEAR 4	SUMMARY
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Design Room Options

- Stylish
- Storage Capacity

Forecasting Room Estimates

Model A: 58k

Model B: 28k

Boardroom Votes

- Adele
- Carla
- Ankit
- Mattheo

Year 1 Results

REVENUES

	Model A	Model B	Total
Sales	\$88,795,000	\$57,120,000	\$145,915,000
Markdown	\$6,288,300	\$0	\$6,288,300
Total Revenue	\$95,083,300	\$57,120,000	\$152,203,300

COSTS

	Model A	Model B	Total
Production	\$64,368,000	\$36,448,000	\$100,816,000
Inventory	\$713,800	\$0	\$713,800
Total	\$65,081,800	\$36,448,000	\$101,529,800
		Setups	\$2,000,000
		Celldex	\$2,000,000
		Change Orders	\$0
		Total Cost	\$105,529,800

GROSS MARGIN

Gross Margin	\$46,673,500
Gross Margin %	30.67

Year 2:

Design Room Options:

- Stylish (Profitable, high margin, and low difference in opinion)

Forecasting Room Estimates:

Model A: 54k (Selected the estimate with first year data to forecast)

Model B: 30k (Selected the estimate with first year data to forecast)

Production Room:

	Model A	Model B	Production Month Started
FarFarAway	44	12	January
FarAway			
PrettyClose	10	18	May
VeryClose			

Did not consider Celldex forecast.

Boardroom Votes: (Four Stars)

Adele, Carla, Ankit, Matheo - (Agreed with reasoning in feature selection, production levels, and supplier selection)

Mia was unhappy with sourcing and production strategy.

YEAR 1	YEAR 2	YEAR 3	YEAR 4	SUMMARY
Design Room Options <ul style="list-style-type: none">Stylish Forecasting Room Estimates <p>Model A: 54k Model B: 30k</p> Boardroom Votes <ul style="list-style-type: none">AdeleCarlaAnkitMatheo		Year 2 Results		
		REVENUES		
		Model A	Model B	Total
Sales		\$91,584,000	\$46,116,000	\$137,700,000
Markdown		\$0	\$2,616,300	\$2,616,300
Total Revenue		\$91,584,000	\$48,732,300	\$140,316,300
		COSTS		
		Model A	Model B	Total
Production		\$58,256,000	\$38,160,000	\$96,416,000
Inventory		\$0	\$897,120	\$897,120
Total		\$58,256,000	\$39,057,120	\$97,313,120
			Setups	\$2,000,000
			Celldex	\$0
			Change Orders	\$0
		Total Cost		\$99,313,120
		GROSS MARGIN		
		Gross Margin		\$41,003,180
		Gross Margin %		29.22

Year 3:

Design Room Options:

- Audio Quality (Profitable and low difference in opinion)

Forecasting Room Estimates:

Model A: 69k (Selected the estimate with second year data to forecast)

Model B: 22k (Selected the estimate with second year data to forecast)

Production Room:

	Model A	Model B	Production Month Started
FarFarAway	50	10	January
FarAway			
PrettyClose	19	12	May
VeryClose			

Boardroom Votes: (Three Stars)

Carla, Ankit, Matheo - (Agreed with reasoning in feature selection and production numbers)

Adele did not agree with production levels (Overproduction and underproduction), and Mia was unhappy with the production strategy.

YEAR 1	YEAR 2	YEAR 3	YEAR 4	SUMMARY																																																				
<div>Design Room Options<ul style="list-style-type: none">Audio Quality</div> <div>Forecasting Room Estimates</div> <div>Model A: 69k</div> <div>Model B: 22k</div> <div>Boardroom Votes<ul style="list-style-type: none">CarlaAnkitMatheo</div>			<div>Year 3 Results</div> <div>REVENUES</div> <table><thead><tr><th></th><th>Model A</th><th>Model B</th><th>Total</th></tr></thead><tbody><tr><td>Sales</td><td>\$108,360,000</td><td>\$42,330,000</td><td>\$150,690,000</td></tr><tr><td>Markdown</td><td>\$6,048,000</td><td>\$480,000</td><td>\$6,528,000</td></tr><tr><td>Total Revenue</td><td>\$114,408,000</td><td>\$42,810,000</td><td>\$157,218,000</td></tr></tbody></table> <div>COSTS</div> <table><thead><tr><th></th><th>Model A</th><th>Model B</th><th>Total</th></tr></thead><tbody><tr><td>Production</td><td>\$78,800,000</td><td>\$29,120,000</td><td>\$107,920,000</td></tr><tr><td>Inventory</td><td>\$584,800</td><td>\$35,700</td><td>\$620,500</td></tr><tr><td>Total</td><td>\$79,384,800</td><td>\$29,155,700</td><td>\$108,540,500</td></tr><tr><td></td><td></td><td>Setups</td><td>\$2,000,000</td></tr><tr><td></td><td></td><td>Celldex</td><td>\$0</td></tr><tr><td></td><td></td><td>Change Orders</td><td>\$0</td></tr><tr><td></td><td></td><td>Total Cost</td><td>\$110,540,500</td></tr></tbody></table> <div>GROSS MARGIN</div> <table><tbody><tr><td>Gross Margin</td><td>\$46,677,500</td></tr><tr><td>Gross Margin %</td><td>29.69</td></tr></tbody></table>			Model A	Model B	Total	Sales	\$108,360,000	\$42,330,000	\$150,690,000	Markdown	\$6,048,000	\$480,000	\$6,528,000	Total Revenue	\$114,408,000	\$42,810,000	\$157,218,000		Model A	Model B	Total	Production	\$78,800,000	\$29,120,000	\$107,920,000	Inventory	\$584,800	\$35,700	\$620,500	Total	\$79,384,800	\$29,155,700	\$108,540,500			Setups	\$2,000,000			Celldex	\$0			Change Orders	\$0			Total Cost	\$110,540,500	Gross Margin	\$46,677,500	Gross Margin %	29.69
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Year 4:

Design Room Options:

- Audio Quality (Profitable and low difference in opinion)

Forecasting Room Estimates:

Model A: 62k (Selected the estimate with third year data to forecast)

Model B: 29k (Selected the estimate with third year data to forecast)

Production Room:

	Model A	Model B	Production Month Started
FarFarAway	50	10	January
FarAway			
PrettyClose	12	19	May
VeryClose			

Boardroom Votes: (Four Stars)

Adele, Carla, Ankit, Matheo - (Agreed with reasoning in feature selection, production levels, and supplier selection)

Mia did not agree with sourcing and production strategy.

YEAR 1

YEAR 2

YEAR 3

YEAR 4

SUMMARY

Design Room Options

Audio Quality

Forecasting Room Estimates

Model A: 62k

Model B: 29k

Boardroom Votes

Adele

Carla

Ankit

Matheo

Year 4 Results

REVENUES

	Model A	Model B	Total
Sales	\$92,008,000	\$58,464,000	\$150,472,000
Markdown	\$7,644,600	\$0	\$7,644,600
Total Revenue	\$99,652,600	\$58,464,000	\$158,116,600

COSTS

	Model A	Model B	Total
Production	\$68,912,000	\$37,944,000	\$106,856,000
Inventory	\$966,720	\$0	\$966,720
Total	\$69,878,720	\$37,944,000	\$107,822,720
	Setups		\$2,000,000
	Celldex		\$0
	Change Orders		\$0
	Total Cost		\$109,822,720

GROSS MARGIN

	Gross Margin	\$48,293,880
	Gross Margin %	30.54

Summary by Year

Year 1

	Model A	Model B	Total
Revenue	\$95,083,300	\$57,120,000	\$152,203,300
Costs	\$65,081,800	\$36,448,000	\$101,529,800
Administrative Costs			\$4,000,000
	Gross Margin		\$46,673,500
	Gross Margin %		30.67

Year 2

	Model A	Model B	Total
Revenue	\$91,584,000	\$48,732,300	\$140,316,300
Costs	\$58,256,000	\$39,057,120	\$97,313,120
Administrative Costs			\$2,000,000
	Gross Margin		\$41,003,180
	Gross Margin %		29.22

Year 3

	Model A	Model B	Total
Revenue	\$114,408,000	\$42,810,000	\$157,218,000
Costs	\$79,384,800	\$29,155,700	\$108,540,500
Administrative Costs			\$2,000,000
	Gross Margin		\$46,677,500
	Gross Margin %		29.69

Year 4

	Model A	Model B	Total
Revenue	\$99,652,600	\$58,464,000	\$158,116,600
Costs	\$69,878,720	\$37,944,000	\$107,822,720
Administrative Costs			\$2,000,000
	Gross Margin		\$48,293,880
	Gross Margin %		30.54

CUMULATIVE TOTALS

	Model A	Model B	Total
Revenue	\$400,727,900	\$207,126,300	\$607,854,200
Costs	\$272,601,320	\$142,604,820	\$415,206,140
Administrative Costs			\$10,000,000
	Gross Margin		\$182,648,060
	Gross Margin %		30.05