A Roadmap for Success: BIOMIN

Decision Analysis Applied to Pharmaceuticals

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MISSION STATEMENT

■ To offer outstanding services and dynamic solutions
■ To build value-adding strategies by using state of the art decision analysis tools
THE BUSINESS

BACKGROUND
- A small pharmaceutical firm that specializes in:
  - Pediatric medications
  - Vitamins

THE CHALLENGE
- The firm has developed a new vitamin with a 5-year patent
- The vitamin:
  - Helps children learn faster
  - Improves children’s class attention
- BIOMIN has to decide how to expand its manufacturing operations to produce the new product

STRATEGIC DECISIONS

- In Year 0, BIOMIN has to choose the size of its plant. The 3 options are:
  - Build a small addition to the factory \( \$12M \Rightarrow 5M \text{ units/yr.} \)
  - Buy the old facility of a bankrupt biotech company \( \$20M \Rightarrow 10M \text{ units/yr.} \)
  - Build a brand new facility on a cheap plot of land currently available for sale \( \$25M \Rightarrow 20M \text{ units/yr.} \)

- In Year 5, BIOMIN will have the following 3 options:
  - Launch an aggressive marketing campaign
    \( \text{The cost of the campaign depends on market success} \)
  - “Business as usual”
  - Exit the market
INFLUENCE DIAGRAM

Demand Yr. 1
5M units/yr.

Demand Growth
-15%, 5%, 20%/yr.

Plant Capacity
5M, 10M, 20M units

Market Share
100%, then less

Marketing
Active or Passive

Price
$6/unit

Total Revenues

Total Sales

Profit

Total Costs

Manufact. Costs
Cost Model

Plant Cost
$12M, $20M, $25M

DECISION TREE

Expected NPV: $64,200,000

Market Growth?

What size?

Payoffs

Patent ends.
Reaction?

Large

High

Marketing Blitz

Exit Market

Large

Medium

Low

Status Quo

Low

Medium

Large

Low

Market share?
ANALYSIS CONDITIONS

- Time frame: 10 years
- Risk-adjusted discount rate: 12%
- Market evolution uncertainties
  - Estimated probabilities
  - 20% growth/yr. 0.4
  - 5%/yr. 0.4
  - -15%/yr 0.2
- Patent ends => Market share uncertainties
  - 25% 50% 75%
  - probabilities affected by marketing efforts

EXPECTED RESULTS

- 1st decision
  - Buy the old facility for $20M

- 2nd Decision
  - Low demand => Exit market
  - Medium demand => Marketing blitz
  - High demand => “Business as usual”
  
  NPV : $64.2M
SENSITIVITY ANALYSIS (I)

Choose small or medium capacity; we recommend medium.

Sensitivity Analysis on Demand

Forecasts demand

SENSITIVITY ANALYSIS (II)

For discount rates smaller than 14%: choose medium capacity.

Sensitivity Analysis on Discount Rate

Discount Rate

NVP (M$)
**OPTION ANALYSIS**

- Wait for one year: monitor market by introducing the vitamin at a few test locations (cost: $2M)
- Low and medium demand
  - Small capacity, "business as usual"
- High demand
  - Medium capacity, "business as usual"

NPV: $82.9M > $64.2M
Value of Option: $18.7M

**RISK PROFILES**

Delayed project: higher minimum NPVs, higher profitability

Delayed Project
Immediate Project
Biomin: Roadmap for Success

- Invest now and buy the old facility
- Valuable option: conduct market survey for one year, then choose investment
- Following our recommendations, no losses can occur