

SOLUTIONS

to accompany

management science the art of
modeling with spreadsheets excel
2007 update 1st edition by powell

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Racquetball Racket

Question 1

What do we *know*?

- variable cost of our ball and Woodrow's ball
- plant costs
- history of number of players, price, sales
- focus group results

What can we *assume*?

- Woodrow will not change price
- focus group estimates are accurate about the total market
- no new competitors will emerge
- our price, once set, will not change
- costs will not change over time

What could the results *look like*?

- estimate of profit (NPV)
- scenarios under which we could make a profit
- estimate of profits if Woodrow retaliates
- strategy for pricing over time
- estimate of the risks of investing

What *information* can be brought to bear?

- history of related products, such as tennis balls
- information on competition between an established player and new rival with a cost advantage

What can we *ask the client*?

- how important is the ball business to Woodrow?
- is Woodrow likely to retaliate?
- how price sensitive are players currently?
- would players compare prices on a relative or absolute basis?

Similar situations or problems?

- entry of new competitor with a cost advantage

Question 2

Problem statements: *In what ways could we....?*

- ensure profitable production of the new ball?
- best negotiate a partnership with Woodrow?
- drive Woodrow from the ball business?
- develop our production process for sale to other makers of balls

Question 3

Decisions

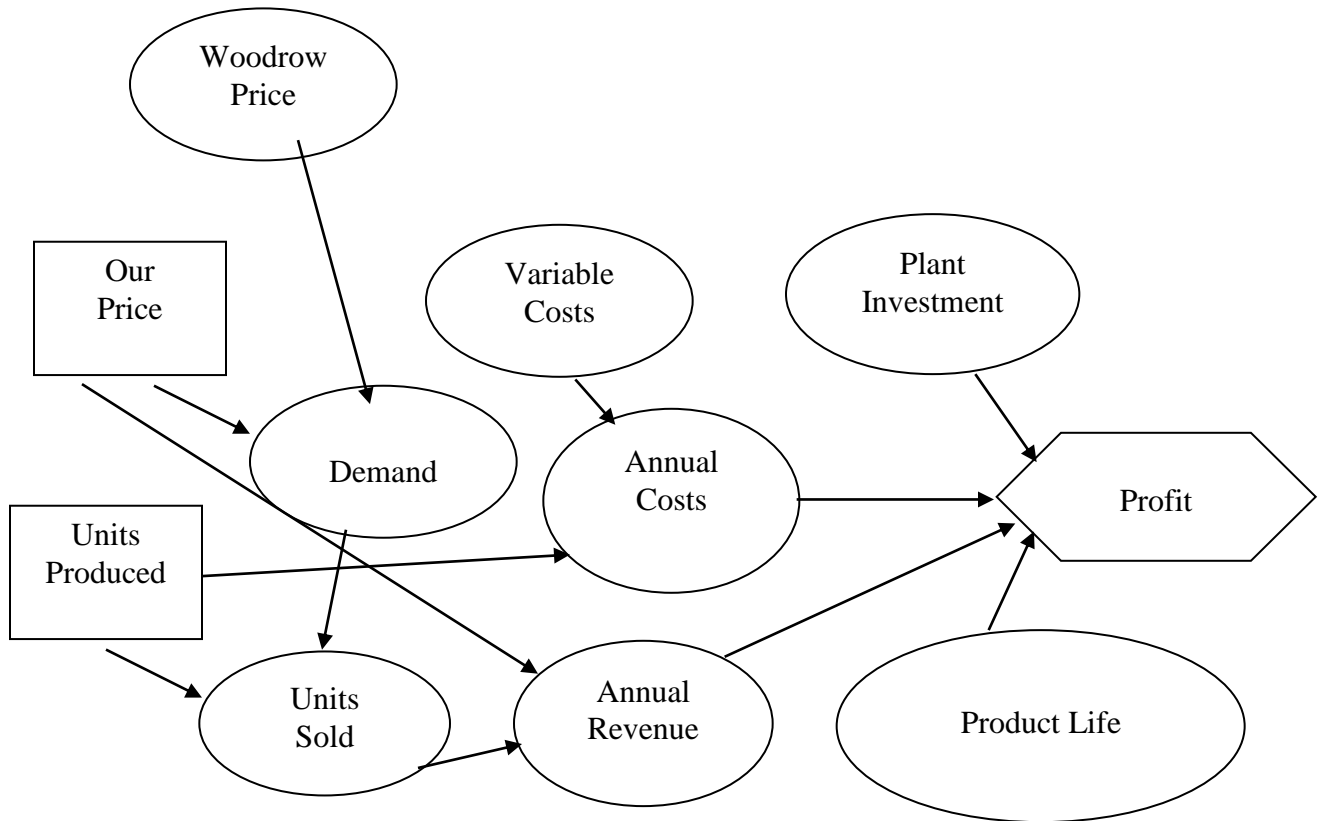
- enter market or not
- price of our ball
- units of production each year

Objectives

- maximize profit

Constraints
NA

Question 4



Question 5

Ways to simplify
ignore competitive reaction
assume zero price elasticity

Question 6

Modules
total players
our market share
balls/player/year
annual contribution
NPV

Question 7

Key relationships
market share
number of players
Woodrow price response

Question 8

Parameters
various parameters in market share relationship
initial number of players
Woodrow's price
growth rate in players
variable costs
plant costs