

PRODUCT POSITIONING



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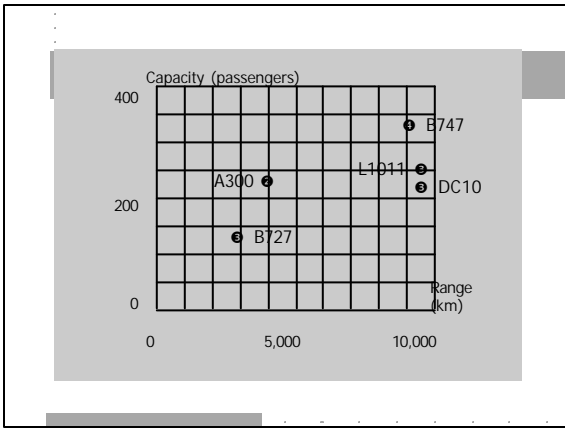
Context and concepts

- Context: You're introducing a new product. Should you imitate a competitor's successful product or differentiate?
- Concepts: strategic product positioning, product differentiation (horizontal and vertical).

The characteristics approach

- Goods are bundles of measurable characteristics.
- Individuals are not interested in goods for their own sake, but for the characteristics they possess.
- Demands for goods are derived from demands for characteristics.

<u>Good examples:</u>	<u>Poor examples:</u>
Vitamins	Fragrances
Computers	Status goods
Houses	Wine?



Statistical estimation

- Based on observed purchases, estimate distribution of consumer implicit valuations for each characteristic. Example: cars.

Characteristic	Valuation (\$1000s)	
	Avg	St Dev.
HP/Weight	≅ 0	4.6
Air Cond.	1.5	≅ 0
Miles Per \$	≅ 0	1.1
Size	3.5	2.1

Rules of thumb

- Know thyself: How valuable is your product to customers? Improvements? [Think: Iridium]
- Know thy competitors 1: Where do competing products fit on a characteristics map?
- Know thy competitors 2: What are the cross-price demand elasticities? How sensitive is demand for my product to prices of competing products?

Price elasticities for cars

	Nissan Sentra	Ford Escort	Toyota Lexus	BMW 735i
Sentra	-6.5282	0.4544	0.0008	0.0000
Escort	0.0778	-6.0309	0.0008	0.0000
Lexus	0.0002	0.0010	-3.0847	0.0322
735i	0.0001	0.0005	0.0926	-3.5151

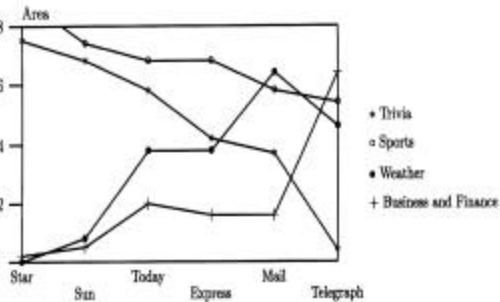
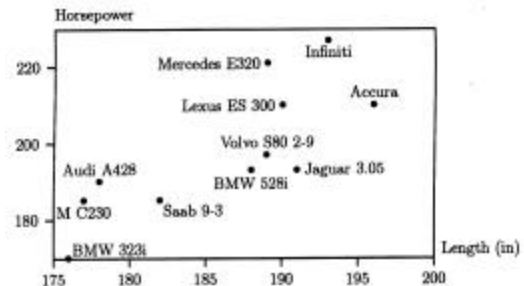
Data are for European cars in the mid-1990s.

Notes: (i) Quantity change in row, price change in column.
 (ii) There are 77 subcompact and compact models (including Sentra and Escort); 24 luxury models (including Lexus and 735i).



Characteristics maps

- Plot different products on a graph of product characteristics.
- Use estimates of characteristic valuations to evaluate distance between products.
- Determine your direct competitors, relevant submarkets, etc.



Pricing w/ diff'ated products

- Consumers are uniformly located along a certain interval.
- Firms are located at fixed positions, I_1 and I_2
- Consumers:
 - Willingness to pay declines with distance from preferred point (value minus "transportation cost").
 - Each consumer maximizes value: willingness to pay minus price.
- Location decision may be interpreted literally or as a metaphor for characteristics choice.
- "Hotelling model" with fixed locations.

Pricing with differentiation

- Orange line gives net value of buying from Firm 1 (pink for Firm 2).
- All consumers left of x buy from Firm 1, others from firm 2.

Pricing with differentiation...

- Undercutting rival does not give you the whole market. (Contrast with Bertrand model, where both firms have the same location/product).
- Optimal response is not necessarily to undercut rival's price.
- Bottom line: product differentiation softens price competition, escapes Bertrand trap.

Pure positioning game

- Consumers are uniformly located along a certain interval.
- Prices are fixed and equal for all firms.
- Consumers:
 - Willingness to pay declines with distance from preferred point (value minus "transportation cost").
 - Each consumer chooses seller closest to her preferred point.
- "Hotelling model" with fixed prices.

Pure positioning game...

- Firm demand (d) as a function of location (l) with two firms:

- What will happen? In equilibrium, will firms be located close together or far apart? Will products be differentiated or similar?

Pure positioning game...

- Optimal strategy is to locate immediately to the right or to the left of the rival firm, depending on whether rival is located on the left or right side of the market, respectively.
- The only equilibrium locations are: one firm just to the left of .5, or firm just to the right of .5. *Minimum differentiation!*
- Intuition: firms want to be "where the demand is" at the center of the market.

Positioning and pricing

- The complete "Hotelling model" (firms choose locations **and** prices)
- Firms simultaneously choose where to locate.
- After choosing locations, firms simultaneously choose prices and receive profits.
- What are the strategic considerations in optimal choice of location l_i ?

$$\frac{\Delta \Pi_1}{\Delta l_1} = \frac{\Delta \Pi_1}{\Delta l_1} + \frac{\Delta \Pi_1}{\Delta p_1} \frac{\Delta p_1}{\Delta l_1} + \frac{\Delta \Pi_1}{\Delta p_2} \frac{\Delta p_2}{\Delta l_1}$$

? + 0 + -

(Assuming Firm 1 is left of Firm 2: $l_1 < l_2$)

Direct and strategic effects

- First term: direct effect, positive. *You want to be where the demand is* (cf pure location game).
- Second term: Zero, by the envelope theorem (this is math, you can forget about it if you want.)
- Third term: strategic effect, negative. *You don't want to be too close to your competitor, since that will make her price more aggressively.*

Pricing & positioning summary

- Two competing forces:
 - Be where the demand is: produce similar products.
 - Minimize price competition: produce different products:
- Products differ in which effect dominates:
 - Banks, other retail outlets
 - Gas stations, toothpaste
 - Airline scheduling
 - Network television, beer
- If the strategic effect dominates: *differentiate to avoid the Bertrand trap.*



Takeaways

- Products are combinations of characteristics.
- The "characteristics map" shows you where your competition is.
- You want to be where the demand is, but you also want to avoid head-to-head price competition. Which one wins depends on the product.
- Differentiate to avoid the Bertrand trap: horizontal and vertical differentiation, advertising.