

Product Design, Multiproduct Production, Brand Proliferation

13.1 Product Design (pg 344)

Choice of vertical characteristic (quality)

Choice of horizontal characteristic

Mass market & niche market product design

13.2 Multiproduct Production (pg 358)

Motives for multiproduct production

Multiproduct production in monopoly

13.3 Brand Proliferation (pg 367)

SECTION 1 Product Design

1) Choice of Vertical Characteristic (Quality)

Primary results:

- 1) Optimal quality increases when **marginal effectiveness** of quality increases
- 2) Optimal quality increases when **marginal cost** of quality decreases

Socially optimal level of quality:

No change in quality when firms doesn't see corresponding P increase.

This results in too low of quality from society perspective

2) Choice of Horizontal Characteristic (Locations)

Primary results:

- 1) Monopoly will choose the socially optimal level of horizontal char (such as location)
- 2) Firms move too far apart from society's perspective with increased competition

3) Mass Market and Niche Market

Primary results:

- 1) Including additional features and making products appealing to the masses will **flatten** demand curve
- 2) Designing niche products will make the demand curve **steeper** and focus on those at the top

SECTION 2 Multiproduct Production

Motives: Multiproduction happens when there is some kind of synergy

- 1) Reduce overall risk
- 2) Higher valued products / lower cost of production (complements in prod)
- 3) Demand synergies that enhance product value
- 4) Hail mary when firm is struggling
- 5) Strategic considerations

Monopoly

Demand Independence (unrelated goods) in a monopoly:

Firm will act as a separate monopoly in each product

Demand Dependence in a monopoly:

Demand Dependence in a monopoly:

- 1) The firm will charge a **higher** price when the goods are **substitutes** than if they were independent
- 2) The firm will charge a **lower** price when the goods are **complements** than if they were independent (loss leader)

Oligopoly

- 1) A large firm is better off using profits from one market to subsidize predatory tactics in another
- 2) Large corps who compete in many markets likely to adopt "live and let live"

SECTION 3 Brand Proliferation

Brand proliferation:

Flooding the market with variety of different product to leave no room for entry for other firms

Implications:

- 1) Monopolist's loss min strategy is to crowd out potential entrants even if it means there is some cannibalization

Review

Assume a Hotelling location problem with four firms. The linear city is of unit length. Firms simultaneously choose their locations, but prices are assumed to be fixed. Find their Nash equilibrium locations. (Hint: you will find that all four firms will not choose the same location but that pairs of firms will cluster.)

Colgate and Crest each produce over 30 different brands of toothpaste.

1. When would this form of brand proliferation be socially desirable?
2. When would it be socially undesirable?
3. Why do you think Colgate and Crest offer so many brands?

Assume that a monopolist is concerned that another firm will enter its market. It is considering a brand proliferation strategy to deter entry. If the monopolist invests in a brand proliferation strategy, this raises its cost and the cost of the potential entrant by $\sigma > 0$. Firms play a two-stage game. In the first stage, the monopolist (M) decides to invest in brand proliferation or not. In the second stage, the potential entrant (PE) decides to enter or not. Payoffs (π) are as follows:

1. With no brand proliferation and no entry, $\pi_M = 36$ and $\pi_{PE} = 0$.
2. With no brand proliferation and entry, $\pi_M = 20$ and $\pi_{PE} = 12$.
3. With brand proliferation and no entry, $\pi_M = 36 - \sigma$ and $\pi_{PE} = 0$.
4. With brand proliferation and entry, $\pi_M = 20 - \sigma$ and $\pi_{PE} = 12 - \sigma$.

Steps:

1. Describe this game in extensive form.
2. Identify the value of σ that will keep PE from entering the market.
3. Identify the value of σ that will make brand proliferation a profitable strategy for M.
4. Is this form of brand proliferation socially desirable? Explain.

Assume a monopoly firm is considering the production of two brands, 1 and 2.

Total cost is $TC = 20q_1 + 20q_2 + \alpha$, where q_i is the output of brand i and α is a constant.

The inverse demand for brand i is $p_i = 140 - q_i - dq_j$, where $i \neq j$ and d is a constant.

- A. Determine the firm's optimal output (q_i^*), price (p_i^*), and profit (π^*).
 - B. Explain how the value of α affects the firm's profits.
 - C. If $\alpha = 0$, how does a change in the degree of product differentiation affect firm profits?
- Recall that product differentiation increases as d falls.