Turf Wars: Product Line Strategies in Competitive Markets

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Marketing Science, Vol. 35, No. 1, January-February 2016, pp. 128-141

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Date 11th January 2017

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Key words

- Product line extension decision under competition
- Hotelling's model
- Aggressive or defensive extension strategies

Product line extension in turf wars

- Competitive market
- Would a product line extension yield more profits?
- **Research question:** ***In what conditions would there be an asymmetry product line extension equilibrium?***

KIRIN's extension

Lager → **Dry**

(rich, bitter)

(less sugar, more alchol)

Related works

- Horizontal differentiation
  - *May offer multiple products* to benefit from 'economy of scope', 'deter entry', and 'preempt competition' (Schmalensee 1978; Bonanno 1987)

- Vertical differentiation
  - Influenced by various types of costs

- (Relatively limited) competitions between multiproduct firms
  - Inefficient product line to prevent cannibalization (Katz, 1984; Desai, 2001)
  - Costs to increase variety affects the decision. (Doraszelski and Draganska, 2006)

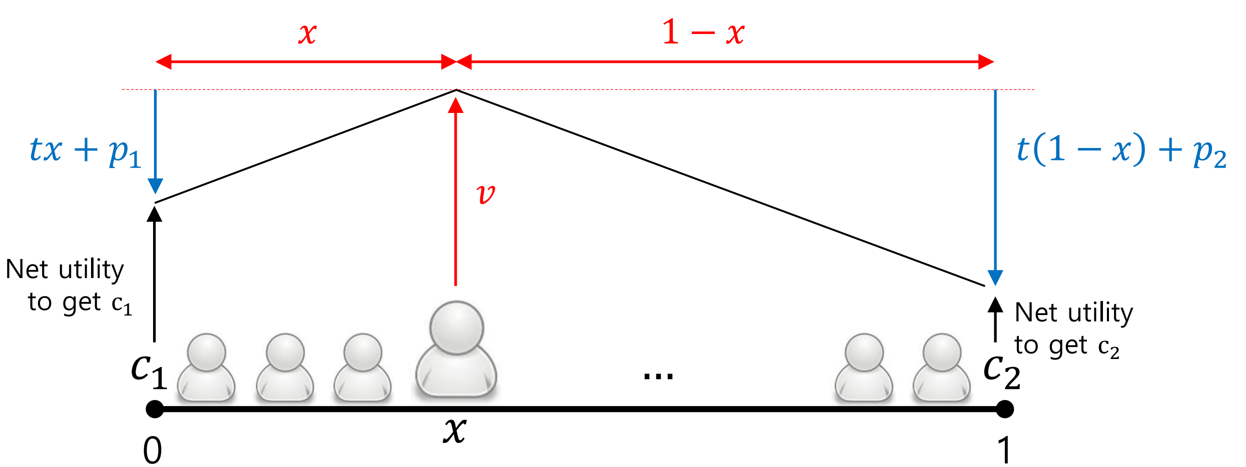
- Little attentions to asymmetric product line equilibrium

Application of Hotelling's model

- Uniformly distributed Consumers on the line $[0, 1]$.

- Two firms $i \in \{1, 2\}$ compete with each other.
  - Their "*core*" products occupies at each end of a line $[0, 1]$.

- Each consumer at x prefers the closer product.
  - Their preferences may change with each product's price.
  - $u_x = \begin{cases} v - tx - p_1^c, & buying\ c_1 \\ v - t(1-x) - p_2^c, & buying\ c_2 \end{cases}$

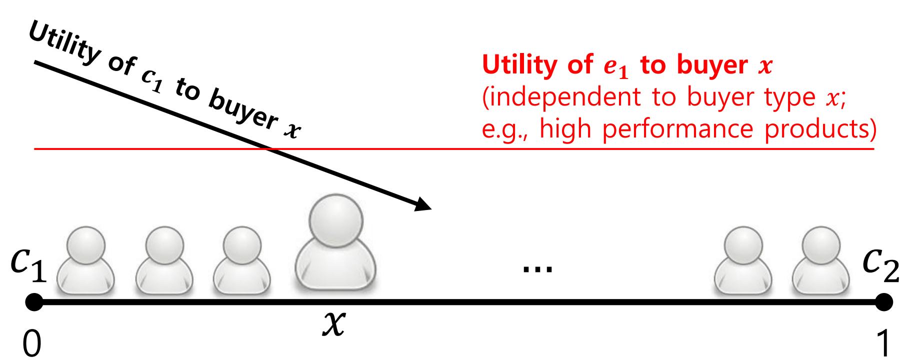


Game formulation

- Two stage game:
  - Stage 1. Each firm decides extension through a *generic product.*
    (Four sub-games $\{Extend, Not\} \times \{Extend, Not\}$)
  - Stage 2. Both firms set prices for their products.

- Generic product e_i represents the product line extension.
  - Generic product of i provides the utility $u_i^e = \gamma v - p_i^e$ where $\gamma \in [0, 1]$ (independent to x, to be generalized).

- Firm i's profit: $\pi_i = \sum_{j \in \{c,e\}} p_i^j d_i^j$.



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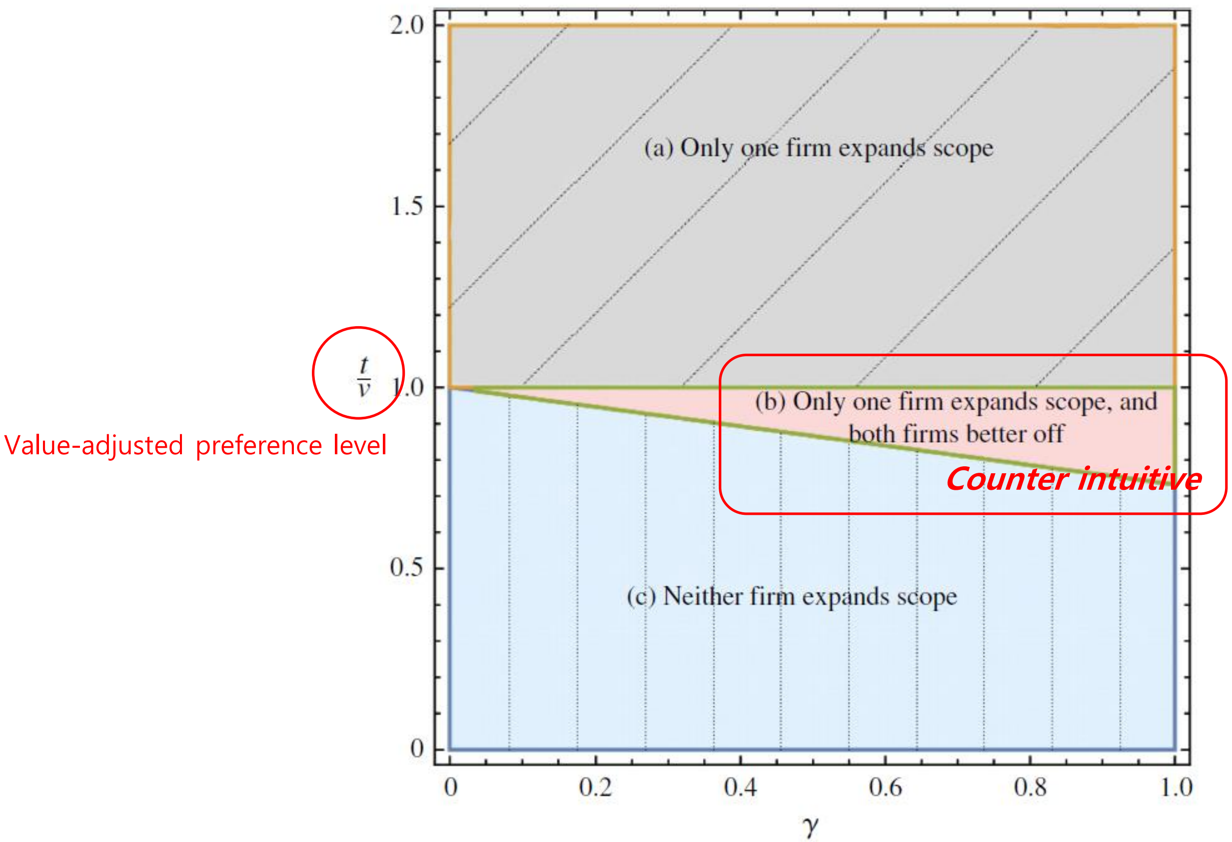
Key finding

- The extension *may not increase competition* and *reduce profits*.
  - Equilibrium prices meets $p_1^{c*} > p_1^{e*}$ extracting more profits with the core products as well as serving the intermediate consumers (*effective discrimination*)



Generalizations

- Extensions with not a generic product with $\alpha \in (0, 1)$:
  - *Offensive* one to allocate another at the competitor's location:

$$u_i^o = \begin{cases} \gamma v - \alpha t(1-x) - p_1^o, buying\ o_1 \\ \gamma v - \alpha t x - p_2^o, \qquad buying\ o_2 \end{cases}$$

  - *Defensive* one to allocate another at the my location:

$$u_i^d = \begin{cases} \gamma v - \alpha t x - p_1^d, \qquad buying\ d_1 \\ \gamma v - \alpha t(1-x) - p_2^d, buying\ d_2 \end{cases}$$

  - It generalizes the previous analyses considering the scenario of $\alpha = 0$.
    1) $\alpha \to 0$ implies a generic product.
    2) $\alpha \to 1$ implies a similar product to the competitor's one.
    3) Restricted $\alpha (< 1)$ implies the extension is less likely to take over the core products.

- **For both cases, *low* α can induce the same finding with:**
  - Moderate valuation adjusted preferences (t/v)
  - High relative valuation for line extension (γ)

Conclusions

- Kirin's line extension may increase her profits as well as Asahi's.
  - With moderate t/v (moderate difference between *Lager* and *Dry*)
  - With a higher γ (easy to be substituted with new products)

- "Benefits from enhanced price discrimination can spill over to the competing firm."
  - Kirin benefits from increasing the price of its Lager and Dry products.
  - Subsequently, Asahi benefits from decreasing the price of its Dry products and capturing more demand.

- Other examples:
  - Fresh McDonald's vs. Subway
  - Strong Lexus vs. BMW

Thank you for your listening.

Do you have any question?