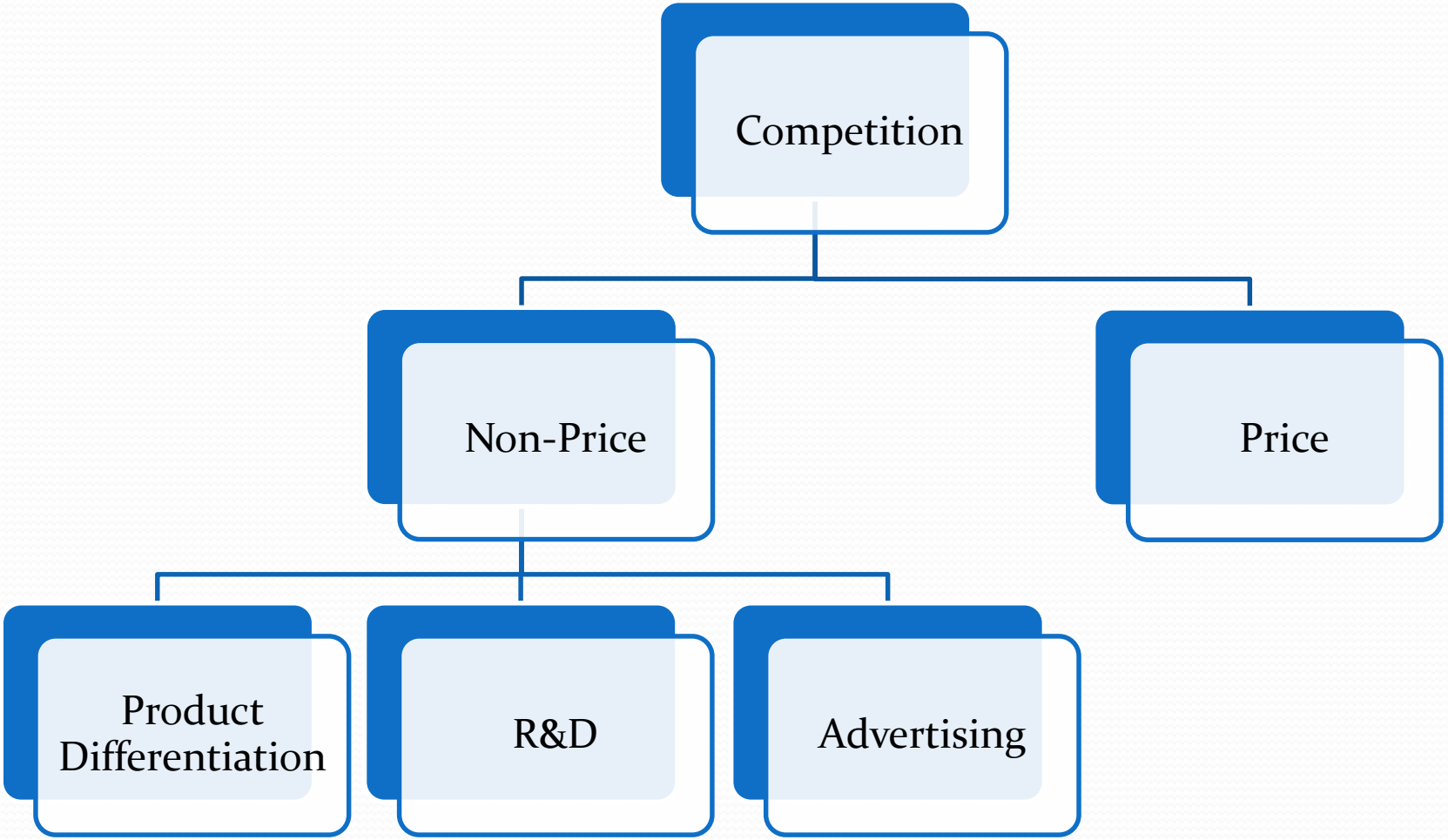
Industrial Organization

Advertising

Competition - Multidimensionality



SCP Paradigm

- Proponents: Mason (1939, 1949), Bain (1956, 1959).
- Structure: Market structure, Concentration of the industry.
- Conduct: Behavior of the firms in an industry, Firm strategies.
- Performance: Market power, Allocative efficiency etc.
- **Causal Relations:**

  Structure influences conduct (lower concentration leads to higher degree of competition).

  Conduct influences performance (more competition implies lesser market power).

  Hence, Structure influences Conduct. **$S \Rightarrow C; C \Rightarrow P; S \Rightarrow P$**

Some Definitions

- Strategies like product differentiation, advertizing, R&D, etc are known as conduct variables on part of the firms (SCP paradigm).
- Informative Advertising: Advertising done to give information regarding existence, launch, price, quality of the firm's product (s).
- Persuasive Advertising: Advertising done in order to switch customers from rival firm(s).
- Search Goods: Quality or characteristics of the product can be ascertained before purchase.
- Experience Goods: Quality can be ascertained only after consumption.
- Advertisement to sales ratio: A_i / S_i

Why Advertise?

Q) What motivates a firm to advertise?

A) Either to inform the potential customers or to elude customers away from rival firms.

Q) Given a firm chose to advertise, what determines the volume of spending after advertising?

B) Depends on the nature of the product (search good or experience good) and/or market structure (degree of competition within the industry, concentration of firms in the market etc)

- Advertisement is more for experience goods than search goods.

Signal

- Advertisement can be used as a signal of product quality – case for experience goods.
- A firm can spend a fortune to advertise to signal that its product has a higher quality.
- Can a firm with lower product quality can do the same?
- No! When a consumer buys the product he can identify that it has a lower quality. Next time he will not buy it.
- High quality firms will experience repurchase but not low quality firms.
- High quality firms can afford such expenditure but not the others.

Monopolist's Decision

- Consider the following information:

$$q = f(p, A);\ f_A > 0,\ f_{AA} < 0,\ f_p < 0$$
$$c = c(q) + A$$
$$\pi = p.f(p, A) - c(q) - A$$
$$= p.f(p, A) - c[f(p, A)] - A$$

- Monopolist's profit maximization problem:

$$\underset{p,A}{Max}\ \pi = p.f(p, A) - c[f(p, A)] - A$$

- We will have two FOCs: 1) $p - c'(q) = -q / f_p$

2) $p - c'(q) = 1 / f_A$

- Let's define elasticities as: $e_p = \frac{dq}{dp}.\frac{p}{q} = -f_p.\frac{p}{q}$

$$e_A = \frac{dq}{dA}.\frac{A}{q} = f_A.\frac{A}{q}$$

Dorfman-Steiner Condition

- Solving the two FOC's we get: $\frac{e_A}{e_p} = \frac{A}{pq}$

- Hence, $\frac{e_A}{e_p}$ equals advertisement to sales ratio.

- Lower price elasticity implies higher ad-sales ratio. In other words, sales is more responsive to advertisement.

- Implications:

1. Higher e_A (or lower e_p) higher will be the ad-sales ratio.

2. If $\frac{e_A}{e_p}$ is constant, ad-sales ratio is also constant.

D-S Condition (Continued)

- Higher advertisement to sales ratio affects demand through some information given to the consumers (signal).

- D-S condition tells how much a firm will advertise depends on –

1. How responsive are the sales to price change (given by e_p) and
2. How responsive are the sales to advertisement (e_A)

- So, if the A-elasticity is more than P-elasticity, then it is better to advertise more compared to price-cut.

- e_A / e_p gives relative responsiveness of demand to advertisement vis-à-vis price. A higher value of e_A / e_p implies that sales are more likely to be affected by advertisement rather than by price-cut.

- So invest more on advertisement.

Role of Market Structure

- Think of price elasticity e_p
- As number of firms increases, $|e_p|$ increases. A firm can increase the demand it faces by lowering it's price. This is direct effect. Further, it is increasing its market share by doing so. This is market share effect. Market share effect is more enhanced if the firm initially had low market share.
- Hence, by D-S condition $(e_A/e_p = A/pq)$ we can say that if number of firms is high, the more competitive the industry is and hence, lower will be the optimal ad-sales ratio.
- Now lets think about advertising elasticity e_A

Role of Market Structure (Contd.)

- Take the case of NECC. All egg-sellers are benefitted. These type of ads are rare and can be treated as public good on part of the sellers. Hence, as number of firms increases, e_A decreases.

- Other extreme case is that of a monopoly. He has very little to gain from advertisement as he has no competitors.

- Duopoly: Advertise to switch customers from rival firms.

- So, increase in number of firms in the industry can have three effects –

1. Profit accruing to each firm decreases at the margin.
2. Sales volume increased through ad decreases per firm.
3. Sales increased by switching customers increases per firm.

- Net effect is ambiguous.

Role of Market Structure (Contd.)

- Empirically the net effect of market concentration on e_A have two parts.

1. Advertising intensity increases as market concentration decreases from a highly concentrated industry. (From monopoly to duopoly).

2. Advertising intensity increases as market concentration increases from a less concentrated industry. (From PC to oligopoly).

❖ Note: Industry-wise the highest ad spending in India (2012 data) are done by – Travel, Telecom, Banking, Finance, Automobile and Insurance.

❖ Look all these industries are neither perfectly competitive nor highly concentrated – in the medium zone.

Competing in Advertisement

- Consider two firms – A and B – supplying the same commodity.
- Assume that the total demand is fixed. So is price and unit cost of production.
- Source of more profit is advertising – more you advertise, higher number of customers will switch.
- Profit: $\pi = \overline{p}q - cq - A$ but remember that $q = f(p, A); f_A > 0; f_{AA} < 0$
- Hence, you can construct a pay-off matrix for A and B with each having the strategies LA, HA, NA.
- Result will be similar to BNE: they will advertise till $\pi = 0$

Differences with Price Competition

- The result of competing in advertisement so as to get higher market share ends at both spending highly in advertisement and making zero profits.

- This is similar to BNE but with two major differences.

1. Frequency of ad decision is less frequent compared to pricing decision.

2. Price decisions have SR effects but ad decisions have comparatively longer effects – investing in advertisement.

- These two will make the discount factor lower and make collusion in this front less probable.

Uncertainty and Advertisement

- Consider LCM – product differences analogous to locations.
- Consumers observe only price not locations. Hence treat the commodities as homogeneous. Cross-price elasticity is infinite.
- If firm A quotes a price higher than that of B, consumers go only to B.
- Now, let the firms advertise their locations (in this case ad becomes informative).
- The story becomes analogous to that of Hotelling's model. Firms charge a price above the unit cost proportional to the transportation cost (in this case brand/location preference).
- So, advertising product quality increases differentiation and lessens price competition.

Uncertainty and Advertisement

- Consider a homogenous good LCM but consumers don't know prices – they can check only by visiting – location known.
- Each firm will charge a price equal to MWP – its optimal for them. Lowering price will not increase sale, increasing price will drive the customers away.
- Now let one firm advertises a price $p = u - \varepsilon$
- Optimal for the other firm is to ad a price $p = u - 2\varepsilon$
- Equilibrium: zero profit $\Rightarrow$ BNE.
- Advertising price increases competition.