The Stages of Buying (The Marketing Funnel)

**Marketing**

**Awareness**
- Content
- SEO, SEM, display, email and word-of-mouth

**Familiarity**
- Frequency of user visits (pull)

**Opinion**
- Rise of third-party reviews
- Comments / message boards

**Consideration**
- Typically lose the user and data at this juncture as users exit the network

**Intent**

**Shopping**

**Purchase**

**Other Networks**

**Company X**
- Broadcast of premium content on multiple platforms
- Synchronized marketing campaigns

**Company X** network is comprised of high-value users with expressed intent

**Company X** leverages its relationships with content providers to target a high-value user

10/11/2011
Basic Monopoly Pricing
Monopoly Pricing: Recap

- Constant marginal cost, \( c \).
- Firm chooses quantity to maximize profits

\[
\Pi(q) = q(p(q) - c)
\]

- First-order condition

\[
MR(q) = c
\]

- Inverse elasticity rule

\[
\frac{p - c}{p} = \frac{1}{e} \quad \text{where} \quad e = -\frac{p}{q} \frac{dq}{dp}
\]
Multi-product monopolist

- Microsoft sells Windows and MSOffice
  - If sell separately optimal prices $p_w=200$, $p_o=200$.
  - But they sell both: how should they price them?

- Knopf sells Tony Blair’s biography in Kindle and hardcover
  - If sell separately optimal prices $p_k=10$, $p_h=20$.
  - But they sell both: how should they price?

- Economist sells print and online editions
  - How should they price?
Multi-product monopolist

- Firm chooses \((q_1, q_2)\) to maximize

\[
\Pi(q_1, q_2) = q_1(p_1(q_1, q_2) - c_1) + q_2(p_2(q_1, q_2) - c_2)
\]

- Inverse elasticity rule for \(p_1\)

\[
\frac{p_1 - c_1}{p_1} = \frac{1}{e_{11}} - \frac{(p_2 - c_2)q_2}{p_1q_1e_{11}} e_{12} \quad \text{where} \quad e_{12} = -\frac{p_1}{q_2} \frac{dq_2}{dp_1}
\]

- Substitutes: \(e_{12} < 0\)
  - Negative externality so increase \(p_1\).
- Complements: \(e_{12} > 0\)
  - Positive externality so reduce \(p_1\).
Price Discrimination
Three types of price discrimination

1. **First-degree**
   - Perfect price discrimination. Theoretical ideal.

2. **Third-degree (group pricing)**
   - Price as function of observables.
   - Examples: Student status, zip code, assets.

3. **Second-degree (indirect price discrimination)**
   - Offer menu of options and let people self-select.
   - Examples: Versioning, quantity discounts.
   - Pricing often has elements of both second- and third-degree price discrimination.
First-Degree Price Discrimination

- Suppose know customer’s demand curve, $p(q)$.
- Firm can extract all consumer surplus
  - Let welfare maximizing quantity be $q^*$, so that $p(q^*) = c$.
- Three ways to extract
  1. Block pricing: sell $q^*$ units at $W(q^*) = \int_0^{q^*} p(q) dq$
  2. Two-part tariff: price $p = c$ and fee $CS(q^*) = W(q^*) = \int_0^{q^*} [p(q) - c] dq$
  3. Nonlinear prices: Sell $q^{th}$ unit for price $p(q)$.
- Big assumptions
  - Know customers demand.
  - Able to charge different prices to different customers.
Third-Degree Price Discrimination

- Firm can observe customer characteristics
  - Country (e.g. book prices)
  - Student status (e.g. airline tickets)
  - Individual pricing (e.g. Lexis-Nexis and Universities)

- Optimal pricing: Use inverse elasticity rule for each group.
  - Lower price to most sensitive groups.

- Assumptions
  - No resale (e.g. international editions of textbooks)
  - No cost to setting different prices
  - Cannot change characteristics (e.g. hide student card)
  - No ethical issues (e.g. racial discrimination in car sales)
  - Consumer demand and observable characteristics are correlated

- Has internet made easier or harder?
Second-Degree Price Discrimination

- Offer menu of products and see which consumers choose
  - High and low quality products (vertical differentiation).
  - Indian and American textbook (horizontal differentiation).
  - Quantity discounts.

- Big idea
  - Choose options so different types of customers self-select.
  - Want to separate groups that have different WTP.

- Classic example: Coupons
  - Put coupons in the newspaper.
  - Annoying to cut out and bring to store.
  - How does this raise profits? Why not just lower price?
A Classic Example

It is not because of the few thousand francs which would have to be spent to put a roof over the third-class carriages or to upholster the third-class seats that some company or other has open carriages with wooden benches. [...] What the company is trying to do is to prevent the passengers who can pay the second-class fare from traveling third class; it hits the poor, not because it wants to hurt them, but to frighten the rich.

Jules Dupuit, 1849
How to Price Discriminate

- Theory beautiful but intricate.
  - See notes on website.

- Suppose two types of customers: high and low demand.
  1. Set standard monopoly price $p^*$: agents choose $q_H$, $q_L$.
  - Consider selling as bundles of $q_H$ and $q_L$ units.
  2. Get more money out of high type agent.
    - Raise price of high bundle until high type indifferent between high and low bundle.
  3. Degrade lower bundle
    - Lower $q_L$ to make the low bundle unattractive to high type.
    - Self-selection: lowering $q_L$ is worse for high type than low.
Practical Issues of Versioning

- How many versions?
  - Want to cleanly separate consumers (e.g. business vs. leisure)
  - Cost to maintaining different product lines.
  - Customer confusion from too many options.
  - Different options may reduce network effects.

- Degraded versions
  - Need to ensure customers cannot undo (e.g. unlock software).
  - Use degraded version to promote regular one (e.g. mathematica)

- Framing
  - People like “middle” option.
Other Topics
Bundling

- Bundling is very common
  - Bundling of functions (e.g. Excel)
  - Bundling of programs (e.g. MS Office)
  - Bundling of people (e.g. MS Office site licenses)

- Pure and Mixed Bundling
  - Pure: only sell bundle.
  - Mixed: see bundle and components separately.
Bundling and Price Discrimination

- Bundling can reduce the dispersion of consumers’ WTP.
- Ann and Bob have values for Excel and Word

<table>
<thead>
<tr>
<th></th>
<th>Excel</th>
<th>Word</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ann (accountant)</td>
<td>100</td>
<td>60</td>
</tr>
<tr>
<td>Bob (bureaucrat)</td>
<td>60</td>
<td>100</td>
</tr>
</tbody>
</table>

- If sell separately
  - Prices: $60 for Word, $60 for Excel.
  - Profits $240.

- If sell as bundle
  - Prices: $160 for bundle.
  - Profits: $320.
Bundling and Price Discrimination

- Bundling can reduce the dispersion of consumers’ WTP.
- This is easy to see when there are many goods
  - 1000 customers and 10 songs.
  - Each customers’ value per song is uniformly distributed on [0,1]
Other Reasons to Bundle

- Complimentary consumption (e.g. shoes)
- Complimentary production (e.g. CDs)
- Reduce the number of payments (e.g. newspaper articles)
- Blocking entry (e.g. Microsoft)
Price Complexity

- **Airline Pricing**
  - Airline prices used to be very complex: price depends on whether single/return, on how match flights etc.
  - Increasingly sell single tickets (e.g. Virgin America)

- **Complex prices**
  - May be optimal form of price discrimination
  - Makes price comparison hard, and softens competition

- **But…**
  - Confuses customers
  - People may think differential pricing is unfair
Framing

- Customers stick with default options (endowment effect)
  - Put object “in hands” of customer.

- Don’t overwhelm consumers (choice overload)
  - People more likely to buy nothing.

- Product positioning (reference effects, anchoring)
  - Choose middle option
  - Choose second cheapest (or second most expensive) wine
  - Search by brand then price (affects how recommend)

- Mental accounting
  - People subdivide expenditures (e.g. insurance on computer).
Beyond Prices
Zero Prices

- Zero prices are commonplace (but not universal)
  - Email accounts, Internet hotspots, Online newspapers

- How earn money?
  - Advertising (e.g. gmail)
  - Selling complementary goods (e.g. support with Sun’s MySQL)

- Advantages of zero price (over small prices)
  - No transactions costs (billing, usernames, passwords)
  - Create environment of experimentation
  - Maintain privacy

- Problems
  - Overconsumption if MC≠0 (e.g. data plans, email spam)
  - Hoarding (e.g. IP addresses)
Online Advertising

![U.S. Advertising Spending By Medium (2007-2012E)](image)

Data source: Barclays Capital

- Television
- Direct Mail
- Magazines
- Online
- Outdoor
- Radio
- Newspapers
Motives for Advertising

- **Informative (e.g. restaurants)**
  - Inform customers of products existence
  - Advertise specific features or price
  - Signal quality through commitment to product

- **Persuasive (e.g. branded drugs)**
  - Change customer’s view of product
  - Jam their memory, so first think of your product.

- **Importance of advertising depends on type of good**
  - Search good – inform of existence, jam memory of customer
  - Experience good – persuade customer quality will be high
Intensity of Advertising

- The intensity of advertising varies a lot across industries
  - Breakfast cereals - advertising is 10% of revenue
  - Salt - advertising is essentially 0% of revenue

- Amount of advertising depends on
  - The sensitivity of demand to advertising
  - The markup
  - The efficiency of advertising
  - Whether advertising helps your firm, or helps all firm.

- The sensitivity depends on
  - The amount of product differentiation
  - Search vs. experience good
  - Market concentration
Advertising Strategy

- Single firm
  - Suppose advertising shifts the demand curve.
  - Care about the WTP of the marginal customer.
  - Analogous to vertical differentiation.
  - Like quality, advertising is also investment in brand equity.

- What if there are many firms?
  - Advertising about features can soften price competition
    - Consumers realize products differentiated.
    - Spurious product differentiation (e.g. Nutrasweet vs. generics)
  - Advertising about prices can increase price competition
    - If prices known, firms can cut price to get more customers.
Online Advertising

- Advantages of online advertising
  - Highly targeted (IP, time, registration info, previous pages, GPS)
  - Low fixed cost

- Major types of ad
  - Display ads - visual appeal, branding
  - Search ads – very contextually specific
  - Text ads – specific, unobtrusive
  - Mobile ads – time and location sensitive

- Methods of payment
  - Pay per view
  - Pay per click
Ad Formats Definitions: Display ads on websites look like those in newspapers and magazines. A banner is a space (usually rectangular) on a web page that shows the advertiser’s message; this category includes all display ads except for the other specialized categories listed below it. Sponsorships represent custom content and/or experiences created for an advertiser that may or may not include ad elements (for example, reskinning a section of a website with the advertiser’s branding). Rich media refers to advertisements that incorporate animation, sound, and/or interactivity in any format. Slotting fees are the fee charged for premium ad placement and/or exclusivity. Digital video format includes commercials that appear in live, archived, and downloadable streaming content. Search refers to paying Internet companies to present an advertisement linked to a specific search word or phrase. It includes paid listings (text links appear at the top or side of search results for specific keywords); contextual search (text links appear in an article based on the context of the content rather than on the basis of a user-submitted keyword); and paid inclusion (guarantees that a marketer’s URL is indexed by a search engine). Although this data source includes “contextual advertisements” in the search category, these ads are targeted display ads that are not based on the use of a search engine and are treated as part of display ads in the remainder of this paper. Contextual advertisements accounted for about 8 percent advertising revenue in 2008. “Classifieds” refer to the posting of a product or service in an online listing for a fee. “Lead generation” indicates referrals to qualified purchase inquiries. E-mail ads include banner ads, links, or advertiser sponsorships that appear in commercial e-mail communication. Interstitials are ads displayed during a transition from one Web page to the next.
Industry Structure

- Advertising on search site
  - Second price auction for adwords
  - Bids ranked, and slots allocated with highest first
  - Pay per click
  - Price depends on word ($99 for mesothelioma; typically $0.4)

- Advertising on other websites
  - Pay per view for display
  - Media site: $12 per 1000 impressions
  - Social networks historically lower: $0.5 per 1000 impressions
  - Large firms find own advertisers for display.
  - Otherwise use advertising network (e.g. Doubleclick)
# Market Structure

<table>
<thead>
<tr>
<th>Advertiser</th>
<th>What</th>
<th>Who</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advertiser</td>
<td>Producing ads</td>
<td>Advertising agencies and creative tools</td>
<td>Ominicomed, WPP Group plc, Interpublic, Publicis</td>
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<tr>
<td></td>
<td>Managing ad campaigns, sending ads to publishers</td>
<td>Advertiser tools</td>
<td>DoubleClick, Google, aQuantive</td>
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<tr>
<td></td>
<td>Matching advertisements to inventory and setting prices</td>
<td>Intermediation, direct sales, ad networks, ad exchanges</td>
<td>Speigel's sales force, Valuemedia, Google, Right Media, DoubleClick</td>
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<tr>
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<td>Managing publisher inventory, serving ads into ad space</td>
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<td>DoubleClick, Google, aQuantive, 24/7 Real Media</td>
</tr>
<tr>
<td></td>
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<td>Publishers</td>
<td>Liberto.it, Speigel.de, FT.com, engadget.com</td>
</tr>
</tbody>
</table>