Do American consumers have lager beer preferences?

Robin Goldstein
Center for Sensory Perception, Culinary Institute of America
Rady School of Management, University of California, San Diego

Joint work with
Johan Almenberg, Ministry of Finance of Sweden
Seamus Campbell, Fearless Critic Media
Anna Dreber, Harvard University

Research supported by the University of California, Berkeley and the Center for Sensory Perception & Behavior at the Culinary Institute of America. PowerPoint support provided by Dolly Li.

Assumed drivers of consumer taste preferences

<table>
<thead>
<tr>
<th>Intrinsic properties</th>
<th>Extrinsic properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taste</td>
<td>Price</td>
</tr>
<tr>
<td>Smell</td>
<td>Branding</td>
</tr>
<tr>
<td>Texture</td>
<td>Reputation</td>
</tr>
<tr>
<td>Appearance</td>
<td>Packaging</td>
</tr>
</tbody>
</table>

Do intrinsic taste preferences actually exist?

Goldstein, Almenberg et al. (2008): in blind tasting of 6,000 wine samples, consumers show inverse correlation between price and hedonic rating; no price-preference correlation for experts

Plassmann, Shiv, O’Doherty & Rangel (2008): in fMRI study, reward area left vmPFC activated by wine price and not wine quality

Bohannon, Goldstein et al. (2009): In randomized double-blind tastings, subjects did worse than chance at guessing which of 5 processed meat products was Newman’s Own® Canned Turkey & Chicken Formula for Puppies/Active Dogs

Intrinsic preference existence tests for wine

• “Triangle test” setup
• Weil (2001): subjects blind taste “good” Parker vintage vs. “bad” vintage
  – Tasters get it right 41% of the time
  – When tasters can distinguish, equally likely to prefer each
• Weil (2005): subjects taste “reserve” vs. “regular” wine from same producer
  – Tasters get it right 40% of the time
  – When tasters can distinguish, equally likely to prefer each
• In both cases, the wines differ in price by an order of magnitude
Intrinsic taste preference experiments for beer

- 326 regular beer drinkers were given two bottles of each of three brands
- Tasters gave beers taste and smell evaluations and 10-point ratings
- Tasters did not significantly prefer their favorite brand to other brands
- Tasters did not significantly distinguish quality between brands

<table>
<thead>
<tr>
<th>Favorite brand</th>
<th>AB</th>
<th>CD</th>
<th>EF</th>
<th>GH</th>
<th>IJ</th>
<th>Own brand rated significantly higher?</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB</td>
<td>67.0</td>
<td>62.4</td>
<td>57.7</td>
<td>65.0</td>
<td>65.8</td>
<td>No</td>
</tr>
<tr>
<td>CD</td>
<td>64.9</td>
<td>65.6</td>
<td>65.4</td>
<td>63.2</td>
<td>63.9</td>
<td>No</td>
</tr>
<tr>
<td>EF</td>
<td>68.8</td>
<td>74.5</td>
<td>65.0</td>
<td>62.5</td>
<td>61.4</td>
<td>No</td>
</tr>
<tr>
<td>GH</td>
<td>55.4</td>
<td>59.2</td>
<td>68.7</td>
<td>60.0</td>
<td>71.4</td>
<td>No</td>
</tr>
<tr>
<td>IJ</td>
<td>68.4</td>
<td>60.5</td>
<td>69.2</td>
<td>62.0</td>
<td>65.6</td>
<td>No</td>
</tr>
</tbody>
</table>

Taste test ratings by brand rated

Our case study: an “identity test” for existence of intrinsic taste preferences in the US market for European pale lagers

- Pale lager is the world's most popular style of beer, dominating the beer market on every continent
- Competition in the pale lager market is fierce, and brand allegiance amongst consumers is strong
- Can regular beer drinkers in the US distinguish between major premium brands of European pale lager?

Our field experimental setup

- Three major brands of European pale lager from three different countries
  - Czechvar (Czech Republic)
  - Heineken (Netherlands)
  - Stella Artois (Belgium)
- Similar color, alcohol, bitterness
- Triangle test: 2 identical, 1 different
- Subjects asked to identify which 2 were same
- Order of samples randomized, brands rotate

Results

Subjects performed no better than chance (N=138, coefficient=.370, std error=.041, 0.288<95% CI<0.451) at identifying the two identical beers
### Results

<table>
<thead>
<tr>
<th>Lager</th>
<th>Coefficient</th>
<th>Std error</th>
<th>95% conf interval</th>
<th>Better than random?</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Czechvar, 1 Heineken, N=58</td>
<td>0.483</td>
<td>0.066</td>
<td>.352 .613</td>
<td>Yes</td>
</tr>
<tr>
<td>2 Heineken, 1 Stella, N=38</td>
<td>0.289</td>
<td>0.075</td>
<td>.143 .436</td>
<td>No</td>
</tr>
<tr>
<td>2 Stella, 1 Czechvar, N=42</td>
<td>0.286</td>
<td>0.071</td>
<td>.147 .425</td>
<td>No</td>
</tr>
<tr>
<td>All, N=138</td>
<td>0.37</td>
<td>0.041</td>
<td>.288 .451</td>
<td>No</td>
</tr>
</tbody>
</table>

### Conclusions of “identity test”

- The differences between these three pale lager brands are too subtle to be detected by American beer drinkers, even under controlled conditions.
- In US, brands must rely on means other than taste differentiation to win customer loyalty.
- This is consistent with the extraordinarily high advertising spend as a proportion of cost base amongst large pale lager producers:
  - Anheuser-Busch InBev: ~$1.5B/yr direct advertising spend in US alone.
- Beer drinkers may differ in other countries.

---

The Beer Trials
thebeertrials.com

Robin Goldstein
robin@cspcia.org
blindtaste.com