Conventional vs Organic – A Market Research and Sensory Case Study

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Background

• Food and Resource Economics Department

• Florida Agricultural Market Research Center
  – Founded in 1975 to provide timely, applied research on current and emerging market problems affecting Florida’s agricultural and marine industries
  – We bring in faculty and students from multiple departments at UF (and other universities) as needed to address research issues
A Market Research and Sensory Case Study

• Todays case study was from thesis work by an MS student in Food and Resource Economics (FRE) working with Food Science and Human Nutrition (FSHN)
  – Danielle Thomas Hausmann

• Partners involved include
  – Dr. Xiang Bi, FRE
  – Dr. Zhifeng Gao, FRE
  – Dr. Charlie Sims, FSHN
Growth in demand for organics

Driven by **perceptions** that organics are:

- Healthier
- Better for the environment
- Safer
- Taste better
Case Study Objectives

• Can consumers identify sensory differences between organic and conventional orange juice?
• How do consumer’s perception of “organic” interact with their perception of sensory attributes?
  – Are consumers willing to compromise taste if a product is labeled organic?
Methods

100 untrained panelists recruited on campus

- Collected food consumption habits, demographic information
- Blind sensory evaluation
- Choice experiment
Demographic profile of participants

- 42% female
- 85% age 30 or under (largely student population)
- 81% report income below $30,000/year

- May limit the interpretation of this study – however:
  - 84% report purchasing at least some organic food
Profile of participants

Percent of participants reporting purchasing organic products

- Fruits
- Vegetables
- Dairy
- Juices
- Meats
- Processed food
Participant reasons for purchasing organics

- Taste: 50%
- Less pesticide: 40%
- More nutritious: 30%
- Cost: 20%
- Safety: 15%
- Support local farmers: 10%
- Avoid GMO: 5%
- Other: 5%
- Recent food scares: 10%
Blind Sensory Evaluation

• Each panelist received a sample of organic OJ and conventional OJ
• Rate five characteristics using a 9-point hedonic scale (1-dislike very much; 9-like very much)
  – Overall appearance
  – Color
  – Overall flavor
  – Mouthfeel
  – Sweetness
Can they taste a difference?

6 = like slightly; 7 = like moderately

Appearance
Color
Flavor
Mouthfeel
Sweetness

Statistically different
Statistically different

Organic
Conventional
### Overall preference

- In paired comparison (which sample do you prefer), 61% preferred conventional OJ

<table>
<thead>
<tr>
<th>Average sensory score</th>
<th>Organic</th>
<th>Conventional</th>
</tr>
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<tbody>
<tr>
<td>Preferred organic</td>
<td>36</td>
<td>33</td>
</tr>
<tr>
<td>Preferred conventional</td>
<td>33</td>
<td>37</td>
</tr>
</tbody>
</table>
Who prefers organic OJ?

Younger, Male, Lower income, Did not purchase organics, Caucasian
Choice experiment

• After tasting, participants were asked a set of 11 choice sets that had information on price and production method.
  – If you had the opportunity to purchase a 1.75 liter (about a 1/2 gallon) carton of orange juice with the following properties, which would you select? If you would not purchase either product, please select neither.
    A. Sample 978, Organic, $4.04;
    B. Sample 270, Conventional, $2.94;
    C. Neither

• Prices and organic/conventional varied in 11 sets
• Goal is to identify willingness to pay for a product labeled organic, knowing how they rated the sensory characteristics of the sample they are picked
Choice experiment results

- Sample is labeled as organic is chosen 44.1% of the time
- Sample labeled conventional is chosen 38.2% of the time
- Participants selected neither 17.7% of the time
- Random choice would lead to 33.3% for each option, therefore, other things influence decision
  - Econometric analysis (random parameter logit analysis) is used to see what influences decisions
## Choice experiment analysis

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<table>
<thead>
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<tbody>
<tr>
<td>Price</td>
<td>As price ↑, likelihood to pick ↓</td>
</tr>
<tr>
<td>Labeled as organic</td>
<td>If it is labeled organic, likelihood to pick ↑</td>
</tr>
<tr>
<td>Sensory evaluation (total score)</td>
<td>Sensory score not related to likelihood to pick (at a lower confidence level, we do pick up a small relationship showing as sensory ratings ↑, likelihood to pick ↑)</td>
</tr>
<tr>
<td>Sensory evaluation and labeled as organic</td>
<td>If it is labeled organic, and sensory score increases, likelihood to pick decreases → indicates label overrides sensory characteristics in this case</td>
</tr>
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</table>
Conclusions

• There were sensory differences identified between the organic and conventional juice with respect to flavor and sweetness
  – Overall sensory scores (sum of all sensory attributes) was not significantly different
  – The majority of participants (61%) preferred conventional juice

• Participants preferred organic labeled juice 44% of the time (compared to 38% for conventional labeled juice)

• Econometric analysis indicates that organic label influences likelihood to purchase, but sensory rating does not (or only very slightly does)
Further thoughts

• Would like to investigate with products with bigger sensory differences to see if organic label still overpowers sensory ratings
  – Expect to see sensory ratings take a larger role if there are larger sensory differences

• Would like to work with a larger and more representative sample