A New Approach to Product Selection with Numerous Practical Constraints

John M. Ennis - The Institute for Perception, Richmond, VA, USA,
Joey C. Lu - GlaxoSmithKline CH, Parsippany, NJ, USA, and
B. Thomas Carr - Carr Consulting, Wilmette, IL, USA

Goal

Select optimal combination of products for category appraisal

Challenge

24 total products, but resources only permit 16 to be tested

Starting Point: Descriptive Profiling

Product	Sweetness	Bitterness	Sourness	
1	4.07	3.93	3.29	…
2	6.78	1.50	3.61	…
3	3.49	4.43	3.69	…
4	5.84	2.45	3.36	…
5	6.33	2.04	3.14	…
6	3.08	4.59	3.33	…
7	3.07	4.70	3.71	…
8	3.34	4.44	3.58	…
9	3.16	4.57	3.05	…
…	…	…	…	

Additional Complications

► 8 flavors of main brand

► 8 flavors for each of 2 competitors

► Need one competing flavor for each main brand flavor

Landscape Segmentation Analysis
used to convert descriptive data to sensory distances

Product	1	2	3	4	…
1	0	7.5	2.2	4.5	…
2	7.5	0	8.1	5.2	…
3	2.2	8.1	0	4.9	…
4	4.5	5.2	4.9	0	…
…	…	…	…	…	…

1. Create network of sensory similarity from distance matrix
2. Modify network to reflect constraints
3. Search nework for independent sets to select products

Note: *representative picture only*

Main Brand   Competitor 1   Competitor 2
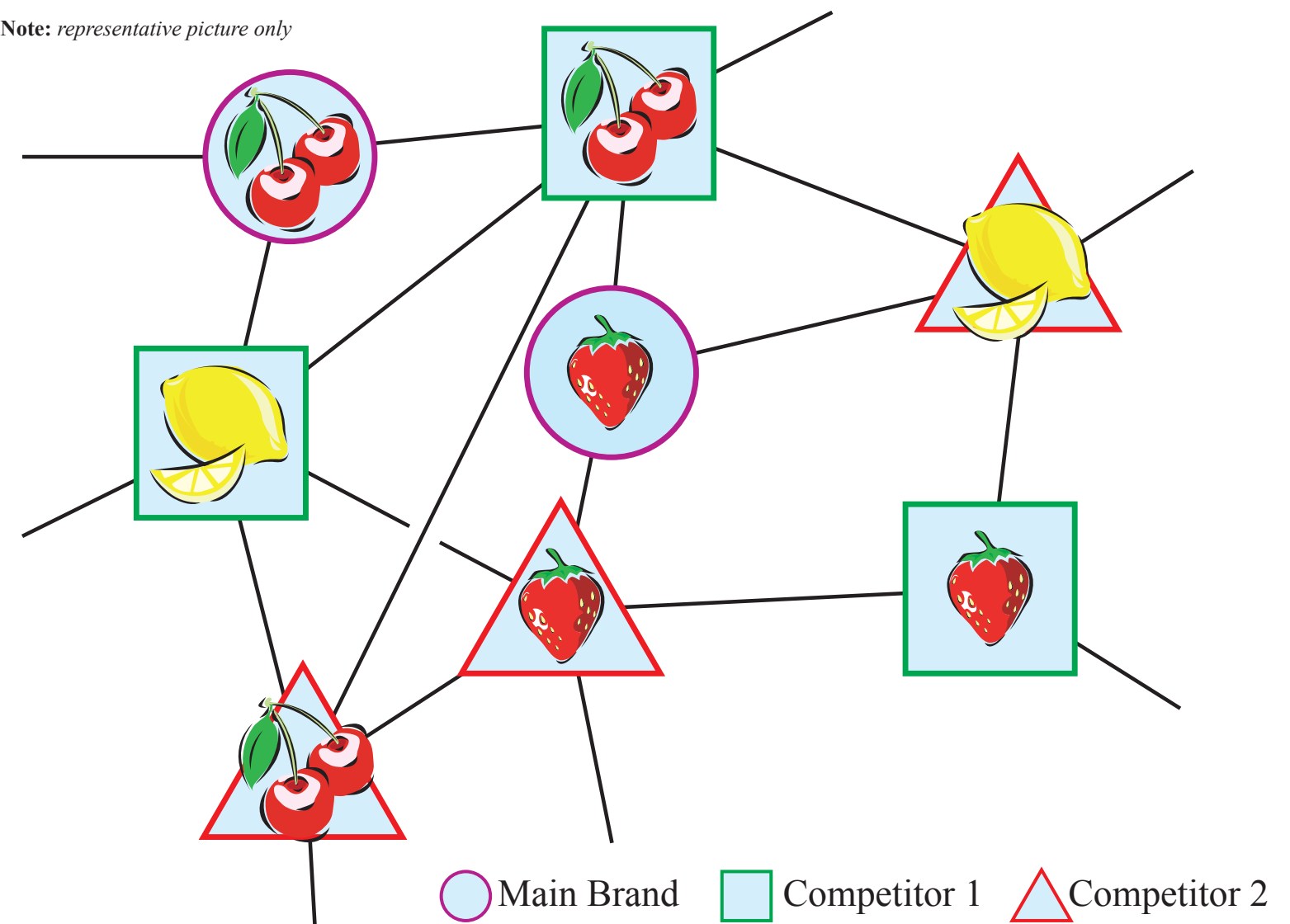
New Technique: *Graph Theory can be used for product selection with constraints*

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