An Innovative Approach to Sugar Reduction

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What is a ‘lower sugar’ product?

You see

Consumers see
How do we re-think the path?

In the next 30 minutes...
For today...

- Introduction
- The Framework
- Examples and Challenges to bring the framework to life
My background
RTI International

A non-profit research institute, RTI’s mission is to improve the human condition by turning knowledge into practice.
RTI’s position in the marketplace enables “best of both worlds” attributes from academia and industry.
Introduction to RTI Innovation Advisors

About the RTI Innovation Advisors
Along the Innovation Funnel

From fuzzy front end to technology commercialization, we enhance innovation and promote “learn by doing”.

<table>
<thead>
<tr>
<th>stage</th>
<th>project types include:</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRONT END</td>
<td>01  User Insights &amp; Trends Innovation Labs</td>
</tr>
<tr>
<td>MID-STREAM</td>
<td>02  Opportunity Analysis Technology Landscaping</td>
</tr>
<tr>
<td>LATE STAGE</td>
<td>03  Technology Scouting Partner Mapping Business Model Design</td>
</tr>
</tbody>
</table>
Innovation Tools to Answer Questions

User insights.....trend analysis.....innovation labs.....technology landscaping.....partner identification.....technology commercialization.....

How to grow in emerging markets?

What product will let us compete?

What features should we include?

How can we get smart from the beginning?

How can we lean on local partners but assure quality?
We know that innovation happens at the intersection of technology, markets, and users. How do we find that intersection?
We find that intersection within the DFV Framework.

This framework can identify solutions all across the supply chain, and frame the challenge at any step of the innovation process.

**DESIRABILITY** [human]

What do people desire?

**FEASIBILITY** [technical]

What is technically and organizationally feasible?

**VIABILITY** [business]

What is financially viable? Sustainable?
The DFV Framework: What is Desirable?

Desirability

Understand the needs of the end user and the customer, which may be different.

• What are the perceived and real benefits for the users? For the customers?
• For products, what drives purchase decisions?
• For processes and programs, what drives adoption?
The DFV Framework: What is Feasible?

Feasibility

Technical solutions that may work best in the current, or local context.

• What are the physical, biological, contextual and environmental requirements?
• Is it possible to deliver on those requirements?
• What can we learn from others?
• How might products, partners, and expertise be leveraged?
The DFV Framework: What is Viable?

Viability

Identify the market opportunity and business model to grow and scale a new innovation.

• Who is the customer?
• How might the solution benefit them?
• What is their willingness to pay?
• How big is the opportunity?
• What is the unique advantage over competitors?
• What is the impact to the current product portfolio?
Balancing DFV throughout the innovation process.

- **What are consumers’ unmet needs?**
- **Internal vs. external production options?**
- **Value proposition and supply chain?**

- **Delivering on consumer wants? Changes needed?**
- **Production and supply chain challenges?**

- **Product meeting consumer needs?**
- **Is it manufacturable, safely?**
- **Can the supply chain offer the product in the right places and the right price, consistently?**
Desirability challenges and considerations

Desirability:
Consumers want lower sugar, but what does that mean?

<table>
<thead>
<tr>
<th>Consumer may want</th>
<th>Formulation considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Different from current products</td>
<td>New brand; emerging ingredients</td>
</tr>
<tr>
<td>Lower g of sugar</td>
<td>Smaller serving size or package size</td>
</tr>
<tr>
<td></td>
<td>Inherently sweet ingredients; flavor vs. taste</td>
</tr>
<tr>
<td>No ‘added sugar’</td>
<td>Fruits</td>
</tr>
<tr>
<td></td>
<td>High-intensity sweeteners</td>
</tr>
<tr>
<td>More good, less bad</td>
<td>FOS as probiotics</td>
</tr>
<tr>
<td></td>
<td>Nutrients with product and health benefits - fiber</td>
</tr>
<tr>
<td>Old favorite but less sweet</td>
<td>Process/formula adjustments</td>
</tr>
<tr>
<td></td>
<td>Bulk replacement, other product characteristics</td>
</tr>
</tbody>
</table>
# Feasibility challenges and considerations

Feasibility: Can we make this?

<table>
<thead>
<tr>
<th>Manufacturing challenges</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>We don’t have this equipment</td>
<td>Co-man</td>
</tr>
<tr>
<td></td>
<td>Lease/buy equipment</td>
</tr>
<tr>
<td></td>
<td>Components, then finished in different locations</td>
</tr>
<tr>
<td>Food safety</td>
<td>Additional process steps for ingredients or finished product</td>
</tr>
<tr>
<td></td>
<td>Cold chain</td>
</tr>
<tr>
<td>Not running as designed</td>
<td>Partner with experts, early!</td>
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</table>
## Viability challenges and considerations

**Viability:**
Should we make this? Is the business sustainable?

<table>
<thead>
<tr>
<th>Supply Chain challenges</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ingredient supply</td>
<td>Partner with procurement early and often</td>
</tr>
<tr>
<td></td>
<td>Alternate ingredients and levels; Label constraints?</td>
</tr>
<tr>
<td>Product costs</td>
<td>Production locations</td>
</tr>
<tr>
<td></td>
<td>Process, ingredient, package adjustments</td>
</tr>
<tr>
<td>Distribution</td>
<td>Meeting needed and labeled shelf-life?</td>
</tr>
<tr>
<td></td>
<td>Temperature control, food safety</td>
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<tr>
<td>Channels and sell through</td>
<td>Product quality maintained</td>
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<tr>
<td></td>
<td>Desired consumers finding the product?</td>
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Applying the Framework

Think about how to meet the challenges throughout the innovation process.

- **Balance** is key
- **Smart, fast steps** – ‘fail fast’ then adjust
- **Leverage partners** – fill skill and resource gaps

Let’s look at some examples...
Lakanto Sugar Free Syrup and Chocolate

Desirability
• Who is the consumer, their need or expectation?
• Front panel vs. back panel?

Feasibility
• Manufacturability?
• Food safety?

Viability
• Price sensitivity and market size?
• Competition?

Lakanto Sugar Free 55% Chocolate Bars
As with its Maple Flavored Syrup, Lakanto's Sugar Free Chocolate bars combines erythritol with monk fruit extract for a sweetener system.
Desirability Challenge: Consumer desire for sugar-free.

**Ingredients:** Purified Water, Vegetable Fiber, Lakanto Monk Fruit Sweetener (Non-GMO Erythritol, Monk Fruit Extract), Vegetable glycerin, Natural Flavorings, Sea Salt, Vitamin B 35b (Plant Based Preservative), Guar Gum.

**Nutrition Facts:** Serving Size 2 tsp (30 ml), Calories 20, Fat 0g, Saturated Fat 0g, Trans Fat 0g, Cholesterol 0mg, Sodium 75mg, Carbohydrates 11g, Fiber 5g, Polyols/Sugar Alcohols 5g, Sugars 0g, Protein 0g

Lakanto’s Sugar Free Chocolate bars also combines erythritol with monk fruit extract. It has 0g sugar and 12g sugar alcohol. $5.69/3 oz bar online.

**GFF Comments:** Claims include the product “looks, smells, and tastes like real maple syrup with fewer calories and a lower glycemic index. All natural – Vegan – 100% Sugar Free – Gluten Free and Non-GMO” and that it “is perfect maple syrup alternative for blood sugar and weight management, and is ideal for sports enthusiasts, keto diets, diabetics…”, or those who want to stay away from too much sugar which isn’t good for your health.” Chosen as an example of the use of erythritol and monk fruit extract. Product cost $10 per 13 oz. bottle of syrup.

Lakanto Sugar Free 55% Chocolate Bars
As with its Maple Flavored Syrup, Lakanto's Sugar Free Chocolate bars combines erythritol with monk fruit extract for a sweetener system.
Smarty Grow Omega-3 Bars

Desirability
- Who is the consumer, their need or expectation?
- Front panel vs. back panel?

Feasibility
- Manufacturability?
- Food safety?

Viability
- Price sensitivity and market size?
- Competition?
Examples

Viability Challenge: currently made in South Korea.

**Ingredients:** Peanuts, Fructooligosaccharide (FOS), Raisins (Raisins, Sunflower Seed Oil), Almonds, Brown Rice Crisps (Brown Rice, Malt Syrup, Salt), Cane Sugar, Dried Cranberries (Cranberries, Sugar, Cranberry Concentrate, Sunflower Oil), Quinoa, Rice Syrup, Brown Rice, Peanut Butter (Roasted Peanut, Peanut Oil, Salt), Palm Oil, Agar, Natural Flavors, Omega-3 DHA Algal Powder.

**Nutrition Facts:** Serving Size 1 Bar (40g), Calories per serving 180. Total Fat 11g (14% DV), Saturated Fat 1.5g (8% DV), Trans Fat 0g, Cholesterol 0mg, Sodium 20mg (1% DV), Total Carbohydrate 21g (8% DV), Dietary Fiber 2g (7% DV), Total Sugars 7g – Includes 4 g added Sugars (8% DV), Protein 5 g.

**GFF Comments:** Claims include DHA All Natural Healthy Gluten Free Non-GMO. $14.99 for a box of twelve 1.4oz bars.

Smartygrow was created for a simple purpose: to provide healthy snack bar options people can feel good about. Whether it’s a quick breakfast on-the-go or an afternoon fix, our snack bars were made to provide you with a guilt-free snack option.

Smarty Grow Omega-3 Bars
Bitsy’s Brainfood Smart Cookies

**Desirability**
- Who is the consumer, their need or expectation?
- Front panel vs. back panel?

**Feasibility**
- Manufacturability?
- Food safety?

**Viability**
- Price sensitivity and market size?
- Competition?

Bitsy’s Sweet Potato Raisin Oatmeal Cookies
Desirability Challenge: Meeting the needs of both customer and consumer.


**Nutrition Facts:** Serving Size 1 oz (28g); Calories 110; Calories from Fat 35; Total Fat 4g (6% DV), [Saturated Fat 1.5g (8% DV), Trans Fat 0g]; Cholesterol 0mg (0% DV); Sodium 55mg (2% DV); Total Carbohydrate 17g (6% DV), Dietary Fiber 1g (4% DV), Sugars 6g; Protein 2g

**GFF Comments:** Found at 2017 NPEE. Product uses two added sweeteners, brown sugar and molasses as well as two whole foods (raisins and dehydrated sweet potato) to obtain the desired level of sweetness. Company’s website says Cost $16.99 online from company for three 5oz bags.

“Just like grandma made but with way less sugar. Bitsy’s Sweet Potato Oatmeal Raisin Smart Cookies bring together veggies and sweetness in perfect harmony.”

Bitsy’s Sweet Potato Raisin Oatmeal Cookies
Wella Refrigerated Protein Bars

Desirability
- Who is the consumer, their need or expectation?
- Front panel vs. back panel?

Feasibility
- Manufacturability?
- Food safety?

Viability
- Price sensitivity and market size?
- Competition?

Examples

Wella Bar Chilled Organic Protein Bars
Desirability, Feasibility, Viability
Challenges: Target, texture, competition


Nutrition Facts: Serv. Size: 1 bar (58g), Amount Per Serving: Calories 280, Total Fat 19g (29%DV), Sat. Fat 3g (16%DV), Trans Fat 0g, Cholesterol 0mg (0%DV), Sodium 30mg (1%DV), Total carb. 21g (7%DV), Fiber 3g (14%DV), Sugars 14g, Protein 13g, Vitamin A (0%DV), Vitamin C (0%DV), Calcium (8% DV), Iron (4%DV)

GFF Comments: Originally found at 2017 NPEW, the Peanut Cacao variety claimed “Wild Flower Honey” on the front of the pack. Identifying the flower source is popular with some high-end honey products. By late summer 2017, that differentiating characteristic was declared only on its website. Label notes that “A portion of sales of Wella Bars goes to fund research to enhance the health and vitality of honey bees.” Bars require refrigeration.

Wella Bar Chilled Organic Protein Bars
Other strategies: Consumers decide what is desirable.

Consumer desire for ‘real ingredients’ over sugar content.

Product benefits more important than ‘real ingredients’.

Contains 11 g sugar, no ‘added sugar’; cherries and apples. “Made with only two ingredients and no juices, purees, concentrates, preservatives or added sugar, they’re the perfect fruit snack for any lunchbox,“

Claims 20g Protein, 1 Billion Probiotics, 5g Fiber, 2g Sugar, Prebiotics, Antioxidant Vitamin A, Gluten Free and GMO Free. Monk fruit extract and stevia extract for sweetness. Chicory root fiber may also contribute sweetness.
Other strategies: Is birch water the next big thing?

Sweetened with xylitol derived from xylan hemicellulose in the bark. Products are touted for their low glycemic index and magnesium content.

**Ingredients:** Organic birch sap (99%), citric acid

**Nutrition Facts.** Serving Size: 1 Bottle (10.2oz, 300ml), Calories 10, Total Fat 0g, Sodium 0g, Total Carbohydrates 3g [1% DV], Sugars 3g**, Protein 0g, Calcium, Zinc and Magnesium all 2% DV, Manganese 125% DV. ** Only sugars naturally occurring in birch trees [on label]

“Birch water is also jam-packed with naturally built-in nutrients, minerals, electrolytes, and antioxidants,” and that “Treo gets its lightly sweet taste from xylitol, a naturally occurring sugar found in birch sap, that’s also good for your teeth and gums.”
Applying the Framework

Think about how to meet the challenges throughout the innovation process.

- **Consider** the DVF framework
- **Listen** to insights from today’s speakers
- **Apply** to your projects

What are your thoughts and questions?
Thank You!

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Our workforce is diverse.

5,032 Staff Members Worldwide

90 Languages
250 Degree Fields
105 Nationalities

Staff By Region

3,184 United States
131 Latin America and the Caribbean
883 Africa
686 Asia
92 Europe
54 Middle East and North Africa
2 Australia
Who We Are

A diverse team with 50 years of experience connecting technology to business for companies, universities and government agencies.

Average Team Member
- 7 Years Innovation Advising Average Experience
- 14 Years Industry Average Experience