

## **ADM STEM Challenge**

### **Introduction: About ADM**

Archer Daniels Midland Company (ADM) is one of the largest agricultural processors in the world. Serving as a vital link between farmers and consumers, we take crops and process them to make food ingredients, animal feed ingredients, renewable fuels and naturally derived alternatives to industrial chemicals.

Because everything ADM does begins with agriculture, our partnership with the farming community is vital. Farmers are essential to the overall economy, and that's why we work to be essential to them - creating thousands of products from their crops, hundreds of markets for their crops.

Founded in 1902 and incorporated in 1923, ADM is headquartered in Chicago, Illinois, and operates processing and manufacturing facilities across the United States and worldwide. Through our extensive global distribution facilities and capabilities, ADM makes a significant contribution to the world's economy and quality of life.

For more than a century, the people of Archer Daniels Midland Company have transformed crops into products that serve vital needs. Today, 30,000 ADM employees around the globe convert oilseeds, corn, wheat and cocoa into products for food, animal feed, industrial and energy uses. With more than 265 processing plants, 400 crop procurement facilities, and the world's premier crop transportation network, ADM helps connect the harvest to the home in more than 160 countries.

### **The ADM Challenge**

ADM has four areas of research and development for their products and services: food, feed, fuels, and industrials. The company is involved in all stages of the food life cycle from the harvest to the home. In serving their customers, ADM is involved in sourcing, transporting and processing key ingredients in their food products. ADM also works with clients to take innovative approaches to creating new products include transforming, distributing, marketing, and selling new food products.

ADM engages with and serves clients in a number of ways. For example, a new client may be a food company that approaches ADM to create a new product. The ADM team engages with the client to determine the needs and current products on the market. Utilizing their large ingredient catalog and leveraging the expertise of food scientists, ADM can then come up with product options for their client.

New research, trends, food guidelines, recommendations, and regulations are changing American's perceptions about what they should be eating. Product research development, food labeling, and marketing are responding to shifts in public awareness and perception.

ADM's team is seeking your help and expertise to re-develop your favorite snack food to make it healthier. As part of the ADM team, you will need to research processes that go into creating this product. Consistent with ADM's overall core value chain, you will need to consider the *origination* of each ingredient including those that add texture, color, flavor, and preservatives. Consider the *processing* of each existing ingredient and any new ingredients, including the byproducts created by harvesting and processing, as well as the life cycle of the ingredient and packaging. *Marketing* and *distribution* recommendations should also be considered including nutrition labels, packaging design, keywords, and market strategies.

### **Predicted Problem Statement**

In order to address this problem, you will need to consider the following questions:

*Phase I: Perform an assessment of your favorite food product and what it is made of.*

- What do you like about this product? What don't you like about this product? How do your fellow consumers feel about the product?
- What are the ingredients in this product?
- What does each ingredient bring to the product? (ie. sweetness, texture, etc.)
- How are these ingredients made and/or processed?
- Distill the nutrition label of your product - how is nutritional information calculated?
- What considerations need to be addressed when making something "healthy" (ie. calories, total fat, carbohydrates, fiber, protein)
- What regulations or health recommendations are relative to the snack foods?

*Phase II: How can you make to make this product healthier and what considerations must you take into account to do so?*

- What are alternative ingredients or changes in process that you would like to propose? What ingredients are within ADM's ingredient list?
- What are the product life cycles of the existing and proposed ingredients? From where do they originate? What are the by-products?
- What are the tradeoffs with each of your proposed new ingredients? Consider tradeoffs based on nutritional value, additives, and cost.
- How do consumers in your age group make decisions about food?
- What does it mean to be "certified organic"? What are other regulations regarding food labeling?

*Phase III: What are strategies for packaging and marketing your product?*

- How do you develop a nutrition label for your product?
- What labels, marketing, or information is available, utilized, relevant, and credible to the audience of users?
- What label guidelines are necessary?
- Where are your users getting current information about nutrition? Are these sources credible?

- What improvements could you recommend to make the communication of nutritional information about food more effective?
- What new technology could be created or improved to provide resources related to shopping and eating, such as apps or smart devices?
- What packaging images, words, and phrases are appealing to your user group?
- What suggestions would you make around marketing and distribution?

## Potential Resources

### ADM & Local Resources

- <http://www.adm.com/> ADM's main website
- Brochure containing the [harvest to home story](#) of ADM Foods
- [ADM's Food Division](#), contains the link for the Ingredient Catalog
- [Fortune Magazine](#) article about ADM's reach in the market
- [National Foodworks Services](#), Decatur, IL

### Nutritional Guidelines and Regulations

- [Let'sMove.gov](#) provides information for healthy kids and families
- The [US Department of Agriculture's Food and Nutrition Services Department](#) has a wealth of information particularly relevant to public school lunch programs.
- [ChooseMyPlate.gov](#) has a specific section for college student nutrition information.
- [BestColleges.com](#) has resources pages about college nutrition.
- [The US Department of Agriculture's National Agriculture Library](#) has a variety of articles about college nutrition studies and guidelines.
- The USDA site also has information about certified organic foods [here](#) on their main site and in the [Agriculture Marketing Services](#) page.
- The FDA has information about [food nutrition labels](#) as well as [proposed changes to the nutrition facts labels](#).
- [The Corn Refiner's Association](#) site containing information about high fructose corn syrup.

### Innovations in Foods

- [The Cornell Food and Brand Lab](#) site has an abundance of information about food innovation, psychology, marketing, etc.
- [reThinkFood](#) is a national conference in November 2015 linking food innovation and design. Their conference will be entirely recorded and available for streaming.
- [The National Institutes of Health Library](#) published a study about web based nutrition information for college students.
- Smart mobile technology is becoming available to assist consumers, [such as this app featured in Fast Company](#).
- Food Technology is a fast growing tech sector area, [according to CBinsights](#).

### Marketing and Distribution Resources

- [The Federal Trade Commission](#) published a review of food marketing to children and adolescents.
- [Consumer Psychologist.com](#) has a large section on food marketing, consumption, and manufacturing as well as [food distribution](#).
- The [website FoodDude](#) has resources and information for those wishing to enter the food market, presenting questions to consider for use throughout your challenge.