**Existing Supply Chain**

**Supplier:**

The first stage of Kellogg’s supply chain includes the suppliers of ingredients and raw materials. There are nine ingredients that are necessary for our new “Honey Smack Treat” product. Each of these materials is received from a separate supplier. The suppliers will provide Kellogg’s with margarine and marshmallows, which are the two items that are manufactured outside of the Kellogg’s factory. The other individual suppliers are plantations and mills that will simply provide the additional raw materials necessary for the product. These materials include: wheat, sugar, salt, honey, corn syrup, soybean oil, and caramel coloring. All of these ingredients are sent to the manufacturers within the Kellogg Company.

These suppliers may be located all over the country, or possibly the world. For example, the Kellogg’s website for Australia is much more involved and intricate in terms of discussing the production of certain materials in great detail. Previously, even the milling of corn was carried out by Kellogg in a plant in Botany, Australia. However, now it is handled by a specialized corn mill in another area. This leads us to believe that there is a possibility that Kellogg’s still receives some of its raw materials from plants in that country. In addition, we have found that there is a certain type of wheat that is best for creating Honey Smacks cereal that is produced Queensland, Australia. Whether or not these ingredients are produced in the United States as well is uncertain.¹

**Manufacturer:**

Kellogg manufactures the majority of the ingredients for its products. For our product, only the margarine and marshmallows will be manufactured separately.
Kellogg’s has a total of 29 manufacturing locations within the United States and 22 outside of the country. In researching the supply chain for Kellogg’s company, we focused on the state of Pennsylvania. Within Pennsylvania there are two manufacturing locations: one in Lancaster and the other in Muncy. At these manufacturing locations all of the Kellogg’s products are made and packaged.

**Distributor:**

Each of the company’s manufacturing facilities distributes the finished products to its own major warehouse near the factory. From one of these large warehouses, the products are then distributed to approximately three smaller warehouses located in surrounding towns. The smaller warehouses provide local stores with all of the finished products.

**Retailers:**

The retailers include food stores, grocery stores, convenience stores, supermarkets, and any other stores selling food products. The Company’s largest retailer is Wal-Mart Stores, Inc. The retailers receive the Kellogg’s products from the smaller, satellite warehouses. Each store or supermarket will receive the products from the warehouse located closest to it.

**Consumer:**

The consumer may purchase the products from their local food store. This new product will be found in the snack section of the supermarket, located next to the Rice Krispies Treats.
Alterations to the Existing Supply Chain

The Kellogg Company is specifically interested in serving Southeastern Pennsylvania with its products. In order for this to occur, a structural adjustment to the supply chain in Pennsylvania will help facilitate Kellogg’s mission of bringing not only their new Honey Smack Treats, but all products, to this geographic location.

Currently, there are only two plant locations where Kellogg products are manufactured in Pennsylvania (Lancaster and Muncy). Structural adjustment begins at the manufacturing stage of the supply chain. The first change includes adding a new manufacturing plant located in Southeast Pennsylvania. As the nine suppliers fulfill orders of the already existing two plants, they will do the same for the new manufacturing location. It is within these facilities that Kellogg products, including the new Honey Smack Treats will be made. The second structural adjustment involves the distribution process where an additional primary warehouse will be added, located in a nearby the manufacturing plant. The products manufactured by the Southeast plant will then be stored in this new warehouse for future distribution.

The third phase of the new structural adjustment process changes the structure of the surrounding warehouses. Since a new manufacturing center and primary warehouse will be created to specifically serve Southeast Pennsylvania, the surrounding warehouses must be re-centered around the new facilities. Instead of three surrounding warehouses feeding from each of the two primary warehouses, our project team suggests that under the proposed alterations, each of the now three warehouses will be distributing Kellogg products to only two surrounding warehouses. With this change, six surround warehouses are still maintained, however they are now located to serve a more specific
geographic region. These surrounding warehouses are now closer to the retailers, specifically within Southeast Pennsylvania.

These proposed changes to the supply chain will help Kellogg better distribute their products. The final products stored in the strategically placed surrounding warehouses will more efficiently serve the retailers. Time spent transporting products from warehouse to retail store will be greatly reduced.

**Additional/Secondary Suggestions:**

From the research conducted on the Kellogg Company, our project team has come to the conclusion that all of Kellogg’s products are produced within each manufacturing facility. Perhaps investing in more manufacturing plants of smaller size to specialize in the production process of only a few product lines will increase the amount produced. For example, the Kellogg Company may want to concentrate on selling its new product, Honey Smack Treats, to Southeast Pennsylvania. In this case, a manufacturing plan can be set up in this area to produce only Rice Krispie and Honey Smack Treats. These treats will be closer to the final consumer, increasing Kellogg’s efficiency to provide this product to the Southeast region.

Another suggestion may be to invest in warehouses located near the manufacturing plants where raw materials from the suppliers can be stored. Although no information has been provided by the Kellogg Company, our project team speculates that currently, inventory is held in the manufacturing facilities, taking up valuable space that could be better used in the production process. If new warehouses were purchased to hold inventory, the manufacturing plants could increase production of its many products.
Bill of Materials (BOM)

The product tree contains a list of all raw materials, and other components required to produce one box of Honey Smacks Treats, which contains ten Treats. Two cups of marshmallows and .125 cups of margarine are necessary per box of Honey Smacks Treats. Kellogg buys both the marshmallows and margarine already made from a separate producer. Cardboard packaging made from recycled paper is used to create the cardboard box needed for each box of Treats and is produced by Kellogg. In addition, the company produces its own wrappers. There are ten plastic wrappers necessary per box (one for each individual Treat).

The ingredients used to create the Honey Smacks cereal, which is the major item included in the product are also listed on the product tree. Sugar, wheat, corn syrup, honey, soy bean oil, salt, and caramel color are used to make the cereal itself. A range of sugar is used in Kellogg products but the most common is Manufacturers’ Sugar, which is a white granulated form similar to that found in most kitchens. The total amount of sugar required to produce the Honey Smacks cereal is approximately two cups per box of Treats. Three cups of a type of wheat called durum wheat, which has a higher protein content and larger grain size, is used for this product. Each of the other materials are provided to Kellogg by their suppliers and the amounts included in the product are listed in the product tree. These amounts were derived from a recipe of Rice Krispie Treats, another variation on the marshmallow cereal bar.
MRP and ERP Use

Based on our project team’s research, and little assistance from the Kellogg Corporation, it appears that Materials Requirements Planning is actively used by the company. Since Kellogg’s is producing large amounts of product, in a constant supply, running at least two shifts a day, large scale planning is needed to insure quality and profitability. The ingredients for the Honey Smacks treats are simply shipped in, with the exception of the cereal, thus lead time is critical. From our research, ingredients can come as far from Australia, or merely the Great Plains. Due to this great distance between supplier and Kellogg’s factory, time to transport greatly effects the lead time. MRP must be used to know how much of and when the given ingredients need to be ordered from the suppliers in order to fulfill the demand for a given period.

When dealing with the magnitude of the supply chain that Kellogg’s has, it is essential for them to have a quality Enterprise Resource Planning strategy. The ERP incorporates all departments and aspects of the company to allow for the management and flow of inventory, labor and funds. Dealing with the dozen or so suppliers, and three different levels of distribution takes a tremendous effort to keep the paperwork in order. Although Kellogg’s or the companies that create ERP systems would not disclose which system Kellogg’s uses, it is probably either SAP, Manugistics or i2Technology. The software and systems they create could easily allow for the management level that Kellogg’s requires.
**Additional Issues**

With the addition of our new product, Honey Smacks Treats, there will be several other areas that Kellogg’s will need to handle. First, since the treats use Honey Smacks cereal, additional cereal will need to be produced. This increased output will require more from the supply chain from the cereal aspect.

There are also changes that need to be examined when altering the supply chain. By adding the Southeast Pennsylvania plant, the time between production and consumption by the consumer will have been decreased. Kellogg’s should use this as a time to run a marketing promotion to boast about the freshness of Honey Smacks Treats. This should drive sales, but also incur a cost.

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2. Kellogg 2001 Annual Report
6. [www.chefmom.myria/recipebox/recipes177.htm](http://www.chefmom.myria/recipebox/recipes177.htm)