

# Enabling Quality Assurance Analytics through the Use of Information Systems: The Case of a Juice Manufacturing Company

*Au Vo, Claremont Graduate University, Claremont, CA, USA*

*Rahul Bhaskar, California State University, Fullerton, CA, USA*

---

## EXECUTIVE SUMMARY

*The juice manufacturing industry is a nascent industry. The increased pace of life and focus on a healthy life style has given rise to the industry. Orange Juice Company (OCJ), based in California, is one of the leading juice co-packers in the nation. However, despite their excellence in manufacturing, their technology adoption is behind that of their competition, especially in quality assurance. Because quality assurance plays an essential part in their businesses, they want to improve the processes by digitization and enable quality assurance analytics. They hope that by investing in quality assurance, they would be able to gain competitive advantage in juice manufacturing.*

**Keywords:** *Food Manufacturing, Juice Co-Packing Processes, Juice Manufacturing, Juice Processing, Quality Assurance*

---

## ORGANIZATION BACKGROUND

Orange County Juice (OCJ) is an independent co-packer company in the Southern California. Established in 1995 as Orange County Foods by three Italian chefs its mission was to provide a comprehensive food manufacturing facility. In 2009, the company was sold by the original owners to Jan Callahan, the new president of the Orange County Foods. Due to the slow

growth, he wants to pursue different markets than the original company. Keeping this in mind, in 2011, the newly christened company Orange County Juice started focusing only on manufacturing juice drinks.

OCJ operates two separated areas within one food processing facility: one is the main processing facility and the other one specializes in the usage of innovative food technology such as Steam Vacuums, Steam Pasteurization, and

DOI: 10.4018/jcit.2014010101

High Pressure Processing (HPP). In 2012, the company stopped offering Steam Vacuum and Steam Pasteurization because of low demand and high overhead. The company exclusively focused on High Pressure Processing. As a result, as of 2013, they are the recognized leader in the market of juice drinks co-packing using the HPP specialization.

## Industry Background

In the US, the food processing industry, also known as the food manufacturing industry, is highly diversified. According to the Bureau of Economic Analysis (BEA), segments the food processing industry into 24 NAICS Codes with the 311 prefix. It ranges from “Dog and cat food manufacturing” to “Seasoning and dressing manufacturing.” The food industry revenue was approximately \$0.7 trillion dollars in 2012 (BEA 2012). See Table 1 for an adapted food manufacturing GDP table.

The industry currently has several dominant players that include Pepsi Co, Dole, General Mills, Tyson Foods, and Kraft Foods (Forbes, 2010). There are also a various niches that new and existing players can participate. As an example, “organic” has given a rise to small players that are focusing solely on producing organic products. Several food companies are focusing on specific ethnic groups. Many companies focus on manufacturing food for the Military which is one of the major repeat purchasers. Some companies also focus on other organizations such as schools and Universities. These niches have given rise to a number of small food processing facilities including a large number of private food labels.

Many private food owners in their startup stage have an aspiration for creating consumable food product but lack the resources to run their own manufacturing plants. As a result, they rely on the third-party facilities, usually referred as “co-packers.” To provide food owners, the supply chain management that they need. Co-packers in general run several different products owned by different companies in a facility.

Regulatory bodies regulate the food industry in multiple ways. Depending on the process of manufacturing, they are governed under different governmental entities: the Food Drug Administration (FDA) and the United States Department of Agriculture (USDA) to ensure product quality and wholesomeness. In particular, The Food Safety and Inspection Service (FSIS), a part of USDA, is the governing body for the meat-and-poultry related processing facility. In addition, the facilities would also be under inspection of the Health Department of the specific county or city in which the facilities are physically located. They also have to respond to the quality required by the retailer or the end-consumers. Each of these entities has different requirements, preferences, and different metrics to ensure food safety and quality. Among all the metrics, FDA and USDA guidelines is thought to be the minimum standards for all food processing facility.

The food quality system relies largely on the companies’ own quality assurance for record keeping to ensure product safety. In order to comply with the regulations, the quality assurance department in the company monitors the production processes and provides record-keeping for the stakeholders (OCJ, the food owners, the inspectors, and the regulators).

## Management Structure

OCJ employs 15 permanent employees who handle daily operations. OCJ outsources employment of line workers and sanitization workers to a staffing agency. Back office includes the Sales and Marketing as well as Finance and Accounting personnel with one office assistant that helps with the daily tasks. The Production manager handles the production scheduling, determines how many shifts and lines are running and how many line workers are needed. The Quality Assurance manager handles the quality assurance of the product, scheduling of maintenance in lieu of equipment malfunction and overall facility updates, and schedule sanitization crew to ensure that the facility is

11 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: [www.igi-global.com/article/enabling-quality-assurance-analytics-through-the-use-of-information-systems/109513](http://www.igi-global.com/article/enabling-quality-assurance-analytics-through-the-use-of-information-systems/109513)

## Related Content

---

### Control-Based Database Tuning Under Dynamic Workloads

Yi-Cheng Tu and Gang Ding (2009). *Encyclopedia of Data Warehousing and Mining, Second Edition* (pp. 333-338).

[www.irma-international.org/chapter/control-based-database-tuning-under/10841](http://www.irma-international.org/chapter/control-based-database-tuning-under/10841)

### Positive Unlabelled Learning for Document Classification

Xiao-Li Li (2009). *Encyclopedia of Data Warehousing and Mining, Second Edition* (pp. 1552-1557).

[www.irma-international.org/chapter/positive-unlabelled-learning-document-classification/11026](http://www.irma-international.org/chapter/positive-unlabelled-learning-document-classification/11026)

### Cost-Sensitive Learning

Victor S. Sheng and Charles X. Ling (2009). *Encyclopedia of Data Warehousing and Mining, Second Edition* (pp. 339-345).

[www.irma-international.org/chapter/cost-sensitive-learning/10842](http://www.irma-international.org/chapter/cost-sensitive-learning/10842)

### Spectral Methods for Data Clustering

Wenyuan Li (2009). *Encyclopedia of Data Warehousing and Mining, Second Edition* (pp. 1823-1829).

[www.irma-international.org/chapter/spectral-methods-data-clustering/11066](http://www.irma-international.org/chapter/spectral-methods-data-clustering/11066)

### Cluster Analysis with General Latent Class Model

Dingxi Qiu and Edward C. Malthouse (2009). *Encyclopedia of Data Warehousing and Mining, Second Edition* (pp. 225-230).

[www.irma-international.org/chapter/cluster-analysis-general-latent-class/10825](http://www.irma-international.org/chapter/cluster-analysis-general-latent-class/10825)