

Reducing food waste at theme parks with *predictive modeling*

All theme parks try to draw visitors with exciting rides and fun attractions, but the leaders understand that every detail contributes to a more immersive experience.

Top-rated amusement parks have been developing and promoting new culinary delights that help to flesh out the themed worlds they're creating. Many visitors post images and videos of their favorite snacks and meals while reviewing different parks or posting vacation pictures on social media.

In the past, parkgoers may have just viewed park food as energy sources for cramming in a day's worth of activities. But for many guests today, the menu items can be just as important (if not more important) than its associated ride. Having these sought-after meals and snacks in stock can make or break a trip.

Theme park companies can stay ahead of the curve by gathering data on food perishability, customer preferences, and more to forecast future needs. With better visibility into what customers want (and when they want it), these brands will minimize food waste while maximizing margins.

Client: A major theme park company

Region: USA

Industry: TMT

Client challenges:

A theme park company was struggling with inconsistent inventory levels at its food venues and warehouses.

Our approach:

Capgemini created a customized, Azure-based solution that uses key variables to forecast food demand accurately and inform order decisions.

Business outcomes:

By optimizing food levels, the theme parks reduce spoilage while keeping popular menu items in stock, becoming more sustainable and driving sales.

Food as an experience: It's not just sustenance

A major theme park company requested Capgemini's assistance in developing a better way to predict food demand and optimize inventory levels.

The brand operates beloved travel destinations around the world that offer a wide array of meals to visitors. The company relied on manual processes for determining inventory levels when ordering ingredients and pre-packaged snacks for its food venues and warehouses.

With these methods, however, it was difficult to strike the right balance. On the one hand, ordering too much food would result in spoilage, which harms the environment and wastes money. On the other hand, not ordering enough would disappoint customers and miss sales opportunities.

Without consistency, the food venues – ranging from small snack stands to elaborately designed restaurants – would shift between disposing of excess supplies and placing emergency requisitions, depending on fluctuations in foot traffic. Neither was ideal.

The company needed a way to maintain steady inventory levels to avoid shortages or overages of its food products.

A modern data pipeline: Powered by Azure

Capgemini developed a demand and inventory replenishment solution that uses key variables to forecast demand and determine the quantity and frequency of inventory orders.

The team built the cloud-based solution on Microsoft Azure, with several complementary tools that create a modern data pipeline.

Azure Data Factory (ADF), the fully managed, serverless data integration service, was used to consolidate all the data across each theme park. This happened through the ETL (extract, transform, load) process for combining data from various sources into a central data warehouse.

Azure Machine Learning (Azure ML), the end-to-end business service, supports the entire ML lifecycle, from preparing data to deploying models. Its powerful AI infrastructure accelerates model development and streamlines workflows with continuous integration and delivery.

Microsoft Power BI, the collection of analytics tools, enables users to visualize data, create collaborative dashboards, and produce business intelligence reports. It turns data into visually immersive, interactive insights.

The final product is a transformative solution that organizes data using ADF, builds predictive models using Azure ML, and visualizes the insights using Power BI.

Inventory optimization: Bringing the solution to the parks

The company's food and beverage team is feeding the transformative solution with historically relevant data on food demand. These include attendance projections, seasonal customer behavior, weather effects, park events, and more.

It is obvious that the park will need more food during busy seasons or more ice cream during the summer months, but there are so many variables that determine what is needed precisely.

To accurately optimize inventory levels, the team also needs to provide the latest information on the food products themselves. These include lead times for preparation, perishability, turnover rates (whether it's a slow-moving or fast-moving consumer good), and so forth.

Although the solution could work for various industries, here's how it's being used at the theme parks: the employees input data on food and guest preferences to create predictive models for what will be needed, and these are then transformed into accessible reports and data visualizations for decision-makers.

Behind the scenes, ADF, Azure ML, and Power BI work together flawlessly. This is just one of Capgemini's many solutions that are helping organizations reduce food waste across a variety of sectors.



Real-world value: Food and beverage optimization, done right

This is resulting in several important benefits for the business.

- Improved customer experience: Visitors have been delighted with consistent, reliable food choices.
- Reduced food waste: This solution is moving the company toward fulfilling its lofty sustainability goals, specifically around waste reduction.
- Reduced costs: The company is no longer purchasing food that is unlikely to sell.
- Increased revenue: The company is far less likely to run out of popular menu items.

Amusement parks are designed to be fun, and running out of popular food items takes a bite out of the joy for the company and parkgoers. Capgemini has helped one client ensure the good times are not slowed down.

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