

Forecasting demand for buy-on-board food items for an airline caterer

Summary

The client is one of the largest airline caterer that provides catering and provisioning solutions for airlines, airport lounges, and related establishments.

Challenge

The Airline catering industry is struggling to accurately predict the demand of in-flight food demand especially on an SKU level. Predicting demand for three meals a day across 2000 routes across hundreds of airports using traditional methods was difficult. The long time to build forecasting models (6-9 months) in such a dynamic environment resulted in inaccurate results and thus affected the bottom-line.

Solution

This solution was built on mAdvisor, an AI & Cognitive Computing Platform from Marlabs. mAdvisor automated the entire process of data analysis and machine learning using cognitive approaches like Machine Reasoning, NLP, NLG etc. The solution designed for this client was based on two Innovative Features – Automated NLP Analysis and Automated Machine Learning. The Solution aims to

- Forecast accurate estimates of the expected quantity of food items that could be ordered by customers during their journey.
- Predict quantity of meals, dishes and ingredients for each flight so that food wastage could be minimized

This helped solve many of the issues with the existing systems:

- **Scalability** – There are hundreds of SKUs across hundreds of airports and 2000+ routes. Using mAdvisor, automated Machine Learning separate models were built for each category.

“ Simple and powerful with a quick learning curve, mAdvisor has been exceptional in supporting our data science needs. Reducing model creation time from 6 months to mere weeks with heightened accuracy is our biggest win. ”

- Client COO

- **Emphasis on Feature Extraction** – Derived features were extracted from the data for each source, destination and route. Around 30 features were extracted from a single destination and 100 features extracted per route.
- **Single Unified Solution for the entire ecosystem** – the mAdvisor Solution is being used by every stakeholder in the ecosystem – The Airlines, Catering Firm and their Suppliers.
- **Elimination of Manual Error** – A lot of steps in the model building process like feature extraction, missing value treatment, feature transformation and parameter tuning is automated reducing manual error.

Results

Using mAdvisor, a demand forecasting application was built that could estimate the expected demand for meals & dishes by breakfast, lunch, & dinner for each flight they service.

The forecasting solution was deployed on the client platform for end user consumption and is being used by all stakeholders of the ecosystem. Looking at various trends, the client was able to accurately predict rise and fall in demand for food items thereby helping them customize menus and add new food items at the right time. Other Benefits include:

- Enhanced customer experience through better predictability of demand.
- Less food and packaging go into the landfill thereby becoming more green.
- **15%** reduction in perishable raw materials inventory
- **\$47M** annual savings in raw material costs

About mAdvisor

mAdvisor is a patent pending AI & Cognitive Computing platform, which helps enterprises to translate data into meaningful insights and narratives without any manual intervention. Now enterprises can reduce the analytics timelines from weeks to minutes using mAdvisor.

mAdvisor employs cognitive technologies like machine learning, machine reasoning, deep learning, natural language generation, natural language processing and expert rules systems, thereby enabling enterprises to identify revenue streams, enhance customer experience and productivity.

About Marlabs

Marlabs helps companies adopt digital transformation using Digital360 - a comprehensive digital framework comprising of Digital Product Engineering, Digital Automation, Enterprise Analytics, Cloud, Digital Security and User Experience; delivering a next-generation Digital Customer Experience.

Marlabs' digital life-cycle model delivers rapid innovation using prototyping, co-creation, concept-to-completion and rapid deployment.

Marlabs' innovation labs, "marlabs.next" incubates cutting-edge technologies like Intent-Intelligence, IoT, IoP, Blockchain and Hyper-Personalization.

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