



# CASE STUDY



## IS IT POSSIBLE TO PREDICT A RESTAURANT'S SUCCESS?

### Company Info

**Name:** Tab Food Investments

**Location:** Istanbul, Turkey

**Industry:** Food

**Tab Food Investments has been operating quick service restaurants mainly in Turkey and China since 1995.**

When experts answer the question "What is the marketing mantra?" they say location, location, location. With this question in mind, TAB Food Investments (TFI) has successfully expanded its Quick Service Restaurant (QSR) operations worldwide.

From its beginnings, TFI has made use of the available technology to help expand their businesses. Today, with more than 2,500 restaurants and about 60,000 employees, they are leaders in Turkey and China, and their presence extends to countries such as Macedonia and Cyprus.

With over 25 years in the market, TFI has accumulated countless amounts of data. As a cutting-edge technology savvy company, they decided to use their data to find a way to improve their method to predict if a location will be the correct one for a new restaurant or not.

TFI assembled data containing information from 137 different restaurants. The data included the open date, location, city type, demographics, real estate data, commercial facts, and revenue figures. Using this data, they wanted to predict a particular location's annual revenue, when given the necessary information associated with that location.

*“LogicPlum produces human-readable results, which makes its interpretation very straightforward.”*



## LogicPlum Sets a Goal

LogicPlum has two essential advantages to face this challenge: a team of well-trained data scientists and a platform designed for companies to benefit from the latest AI and machine learning.

The team was very enthusiastic and, in the words of one of them, *“we wanted to solve this problem for two reasons: first, we had the right tool in our hands, and second, because this was a problem that we had seen many times and in many countries.”* They set the goal: to find an efficient prediction model and prepare it for immediate use.

## Analyzing The Data

The team decided that first, they had to take a quick look at the data. One of the scientists suggested that *“the restaurant’s age should not be considered, as it biases the data towards those with higher revenues.”* Others disagreed. As usual, with LogicPlum’s AI platform, it considers both views. The platform was fast enough to tackle both hypotheses.

So, they prepared the data, correcting for outliers, creating conflicts. LogicPlum’s platform allowed them to create two new feature lists: one containing a restaurant’s age and another without it. Now, it was time to put the LogicPlum’s platform to work!

## LogicPlum’s Platform Assists

The team let the platform go through hundreds of different algorithms. First, the system worked with Random Forest Regression, an ensemble learning method that constructs a multitude of decision trees at training time and then selects a final one.

Random forests generally outperform decision trees. However, they are many times surpassed in model performance by gradient boosted trees.

Thus, the platform created a model based on Gradient Boosting Machines or GBM, which is a technology that makes a robust model by generating an ensemble of weak decision methods, in a step-wise way using a differentiable loss function. *“Obtaining the final result was fast and easy,”* explained one of the team members. LogicPlum predicted the annual restaurant sales with a 1,885,869 root mean squared error (RMSE).





## Finalizing Success

LogicPlum's platform, created a blueprint of success, which explained how the platform had analyzed the data and created a model. It also included information about how the platform had performed feature engineering to maximize the value of the data provided by TFI. This blueprint was a vital tool for the scientists, as they wanted to make it clear to the potential users of the model that they were not using a magic black box, but a proper scientific procedure.

Next, they created a user-friendly final version for the end-user through the Platform's single point API, which permits an organization to connect to the model without knowing its internal technical aspects. Thus, any user could use the model without having to be a datascience guru.

Finally, a business report was written with the help of R.E.A.S.O.N., the module in the platform that helps users to analyze information and compile it into a comprehensive and well-organized report for a compliance department or business leadership team.



### Contact Us

LogicPlum  
1550 West  
McEwen Drive  
Suite 300  
Franklin, TN 37067USA

[www.logicplum.com](http://www.logicplum.com)  
[message@logicplum.com](mailto:message@logicplum.com)

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