Chapter 6
Forecasting the Daily Sales of a Franchise

Sezgi Şener
Istanbul Technical University, Turkey

ABSTRACT

Historically, restaurant managers used either historical data or simple logical methods to estimate customer numbers or sales volume. These techniques usually consist of an intuitive prediction based on the experience of the manager. However, restaurant sales forecasts are a complex task because they are influenced by numerous factors that can be classified as time, weather conditions, economic factors, and random events. In this case, old techniques may give insufficient results. It is aimed to compare the estimation Simit which is one of the most consumed daily snacks in Turkey sales accuracy of the learning methods and determine the model that provides the highest accuracy and determine the factors affecting the buying behavior of one of the leading Simit chain stores in Turkey in the food sector by using popular machine learning algorithms.

DATA ANALYSIS

The first step in learning the machine before estimating the data is the Data clearing and visualization process. It is necessary to bring the data that we have found without applying the Machine Learning methods into a processable form. It is necessary to visualize the Basic Effects in the Model. We have received from the company and we interviewed the authorities and we classified the variables as follows. Since our variables are categorical variables, we tried to derive the relationship with the dependent variable mostly with barplots and decision trees.

We used R Programming for data processing. After the variables are translated into the corresponding formats. We converted the time values into time format and converted the values to be used as factors. This is followed by Data feature engineering. Here we need to derive new variables from making your data more meaningful. As a reason to do this, you may need to convert the time series into a feature series to reflect the temporal model.

Table 1. Important days

	Tanım	Tip	Aralık	Açıklama	
1	IsNationalHoliday	Factor	0,1	National Holiday	**Important Days**
2	Ramazan	Factor	0,1	Ramadan	

Table 2. Seasonal variations

	Tanım	Tip	Aralık	Açıklama	
1	IsWeekend	Factor	0,1	Weekend or not	**Seasonal Variations**
2	WeekDays	Factor	1,2,3,4,5,6,7	Weekdays or not	
3	Weeks	Date		Date of Weeks	
4	Year	Date		Date of Years	
5	Month	Date		Date of Months	
6	MonthDT	Factor	Ocak-Aralık	Month of the year	

Table 3. Weather conditions

	Tanım	Tip	Aralık	Açıklama	
1	Temp.avg	integer		Average Temperature	**Weather Conditions**
2	Dew.Point.avg	integer		Average Dew	
3	Humidity.avg	integer		Average Humidity	
4	Press.avg	integer		Average Press	
5	Visibility.avg	integer		Visibility	
6	Wind.avg	integer		Average Wind	
7	Precip	numeric		Precipitation	

Related Content

Algebraic Reconstruction Technique in Image Reconstruction Based on Data Mining
Zhong Qu (2006). *International Journal of Data Warehousing and Mining (pp. 1-15).*
www.irma-international.org/article/algebraic-reconstruction-technique-image-reconstruction/1767

Techniques for Sampling Online Text-Based Data Sets
Lynne M. Webband Yuanxin Wang (2016). *Big Data: Concepts, Methodologies, Tools, and Applications (pp. 655-675).*
www.irma-international.org/chapter/techniques-for-sampling-online-text-based-data-sets/150187

Finding Associations in Composite Data Sets: The CFARM Algorithm
M. Sulaiman Khan, Maybin Muyeba, Frans Coenen, David Reidand Hissam Tawfik (2011). *International Journal of Data Warehousing and Mining (pp. 1-29).*
www.irma-international.org/article/finding-associations-composite-data-sets/55077

A Directed Acyclic Graph (DAG) Ensemble Classification Model: An Alternative Architecture for Hierarchical Classification
Esra'a Alshdaifat, Frans Coenenand Keith Dures (2017). *International Journal of Data Warehousing and Mining (pp. 73-90).*
www.irma-international.org/article/a-directed-acyclic-graph-dag-ensemble-classification-model/185659

Ranking News Feed Updates on Social Media: A Review and Expertise-Aware Approach
Sami Belkacemand Kamel Boukhalfa (2021). *International Journal of Data Warehousing and Mining (pp. 15-38).*
www.irma-international.org/article/ranking-news-feed-updates-on-social-media/272016