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BIG MART Prediction Sales

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Abstract

Industrial engineering is about enhancing a process and improving the return of investment both to make more profit. Such is the background behind the BigMart Data analysis, the purpose being the determination of the properties of products and stores that help increase the sales. The data analysis was part of a competition launched by the American stop-shop BigMart with the aim of building a predictive model that could predict the sales of the following year for each of the 1559 products in the 10 different stores of BigMart.

The Data scientists provided a data base of 2013 ‘s sales for each product in each store along with a set of parameters concerning the products and the stores. In order to predict the volume of sales, we had to determine the importance and impact of the characteristics of the products presented in the database: the item identifier, its type, weight, fat content, visibility in the store and its Maximum retail price (MRP). However, the products alone don’t explain the sales, we had to also take into consideration the contribution of the type of each outlet, its location, size and number of running years.

We used Data science and statistical learning on R software to create the predictive models that allowed us to have a better understanding of the client’s behavior and an estimation of the store’s future sales. It turned out that customers tend to prefer a product with a high MRP because the negotiation margin is bigger and because a high price tends to be associated with a better quality. Also, we concluded that the outlet type and how old it is, influences the volume of sales. However, even though our model could predict the sales, it was unable to explain all the variability due to lack of data.