

SALES FORECASTING MODELS FOR PAINT AND FURNISHING PRODUCTS

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Abstract

As per Gartner's Analytic Ascendancy Model, there are four stages of analytics. It has been used as a base for the given research. Organisations are invested heavily in BI solutions which help them to provide descriptive analytics. Descriptive analytics helps organisations to analyse the current situation and get insights. For example, one of the companies in the US called Hello Fresh invested in Descriptive analytics and gather various new insights. For an instance, it has found out that northeastern state of united states has generated high sales for fish-based recipes. They have done the market research identified that there is scientific study released in their local newspaper that consumption of fish will provide many health benefits to female. This has led to increase in sales in the given area.

The above-mentioned market research is called diagnostic analytics, where the company has found out the reason for sudden spike in sales for fish-based recipes. Further, reason for increase in sales can also be found using correlation, for an example summertime, there is a high demand for flight tickets as people travel various places to enjoy during the season. After identifying the reason for sudden spike in fish-based products, management of Hello Fresh have been thinking whether this demand would continue in the future. To do that, they will have to invest it on Predictive Analytics. Once they have forecasted the demand of fished based recipes, they will have to plan what to do next which is prescriptive analytics. They could implement material requirement planning (MRP) to find out the required materials to produce and keep the stocks ready before the forecasted demand materialize. The purpose of this thesis is to implement machine learning or deep learning model to forecast sales for next 12 months for the selected company. The given case study primarily focused on predictive analytics, and it has used Cross-Industry Standard Process for Data Mining as a research design to successfully implement predictive analytics in the selected organization.

The final results show that it is safer to implement machine learning models such as random forest or XGBoost as a final model since deep learning models were giving insufficient outcomes due to a limited amount of data. This case study or research shows how machine learning can be applied for sales forecasting using regression techniques to achieve higher accuracy with a limited dataset—one of the key reasons why deep learning couldn't be implemented due to limited data. Millions of data are available in the data warehouse, however the current machine which used to run the model have limited capacity such as 16 GB and CPU Process. It couldn't have handle millions of data. Therefore, data were limited for 40,000 records or rows.

Keywords : Artificial Intelligence, Machine Learning, Deep Learning, Sales Quantity, Forecasting, Random Forest Regressor and XGBoost Regressor