REPORT ON SALES PREDICTION

Estimating long term and short term sales for furniture sofas

Our machine learning project aimed to develop a predictive model for sofa sales using Azure, focusing on predicting sold counts and enabling informed decisions based on historical data and seasonal fluctuations. This benefits end customers, furniture manufacturers, and supply chain managers. We gathered data by scraping over 255 records and 11 features from the WoodenStreet website using Selenium. Data cleaning involved steps like price normalization, whitespace trimming, dimension parsing, numeric transformation, integer extraction, and missing data imputation, consolidating details into a single CSV file for accessibility.

Next, we preprocessed the data for model training, employing regression techniques to create a pipeline in Microsoft Azure with a 0.7 to 0.3 training-to-testing split. Deploying the model enabled real-time predictions, supporting accurate sofa sales forecasts and enhancing supply chain efficiency for all stakeholders.

As part of our analysis, we compared regression models including boosted decision tree, decision forest, linear regression, and Poisson regression. Among these, the boosted decision tree regression yielded the highest accuracy of approximately 0.96. By focusing on correcting errors from previous iterations, boosted decision trees can capture intricate patterns and interactions among variables, making it well-suited for our goal of accurately predicting sofa sales based on diverse and interrelated factors such as price, dimensions, ratings, and warranty. Thus, its superior performance in our analysis made it the preferred choice for our predictive model.

Our project focused on analyzing sales influencing factors using these regression models. Variables such as price, dimensions (height, length, breadth), rating, and warranty were examined to quantify their impact on sales performance. This approach provided insights into how adjustments in pricing, dimensions, ratings, and warranty durations affect sales outcomes, guiding effective financial, marketing, and pricing strategies to meet customer preferences and market trends.

Customers prioritize quality and reliability over initial cost, favoring products with superior ratings and longer warranties. Emphasizing these aspects enhances customer satisfaction and boosts sales. Additionally, our model demonstrated higher sales for products with high-quality inputs at an average cost compared to higher-priced alternatives, highlighting the significance of perceived value and affordability in purchasing decisions.