Hacktiv8 Talent Fair Challenge

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Analyzing product development data and build a regression model to predict target growth

01 Kalbe Product Sales

Background Problem

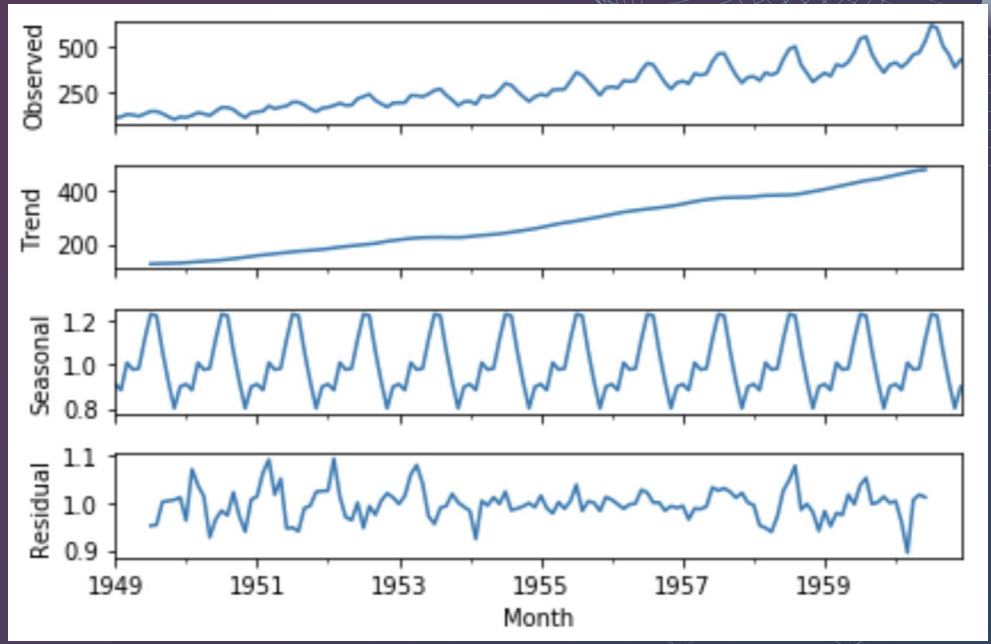
Uncertainty of product sales are one of the most common problem a business owner might face. Without the knowledge of sales performance we might not be able to gain proper understanding of market demand an might invest on producing supply for the wrong product.

Objective

- In this project I'm going to analyze each product sales performance to gauge market demand
- Build a machine learning model to forecast each product sales to get an insight about future sales performance.

Method of Forecasting

SARIMAX is a machine learning algorithm commonly used to make forecast about time-series data.



Data Analysis

VIEW DASHBOARD

Business Insight

- Product A1 has the lowest sales average, but it sales trend are actually increasing. This might be because Product A1 is specialized product that not many people need to consume. The sales performance increase trends shows that the customer are gaining awareness of the product.
- Product A2 has the highest average sales and also increasing trends. Since this product has the best sales performance it is the best for the company to invest on this product
- Product B1 has second highest average sales but stagnant trends. This product trends might not increasing but there are always constant demand for iso it;s also a good product to invest.
- Product B2 has the highest increasing trend amongst the products. The demand for this product are quite high proven by at the end of the period the sales number for this product are the highest.

Challenge and Future Improvements

- The forecasting for product B1 quite inaccurate. This might be because product B1 has many outliers value in it's sales data.
- The forecasting for product B2 also inaccurate. For inaccuracy of this product forecast, it could be because of the small number of data recorded for this product which is just 29 days.
- Improvement for a more accurate forecasting could be done by increasing the amount of data for product B2 and using a better model that are robust against outliers.

02

Aria Target Growth Regression

Background Problem

Challenge in a product development process is more often than not are how to design the best product that meets the customer demands. It could be hard to figure which component in the formula that can be beneficial in the formula so our products can meet customer expectation.

Objective

- Analyze the nutrient data to get an understanding of how each components affect plant growth
- Build a machine learning regression model to predict nutrient effect on plant growth.

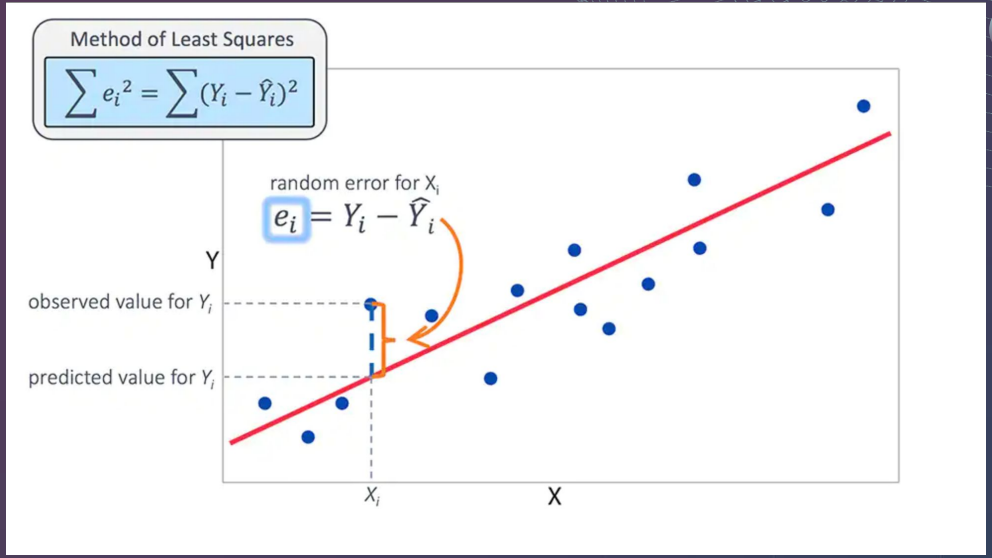
Data Analysis

VIEW DASHBOARD

Method of Prediction

There are going to be 4 different regression model that will be used and we will evaluate their performance to choose for the best model for the dataset.

The model that will be used are Linear Regression, SVM, Random Forrest and Gradient Boost



Business Insight

- Nutrient V1 through V7 are found to be negatively correlated with target growth. This means the more this nutrient administered to the target the more it hinders the target growth. It will be wise to reduce the usage of this nutrient in the future to promote target growth.
- Nutrient V8 are found to be positively correlated with target growth. So it is recommended to use this nutrient to promote target growth.
- There are no correlation between the target growth and sample type. This means there are no contributing factor for either lab 1 or lab 2 in target growth.

Challenge and Future Improvements

- The minimum information that given about this dataset make it difficult to do a proper analysis about the subject.
- For future improvement it could be good to be able to know more about the dataset so the I can make a more thorough research and analysis about the subject.