Problem Statement

Context -

As an analyst at ABC Estate Wines, we are presented with historical data encompassing the sales of different types of wines throughout the 20th century. These datasets originate from the same company but represent sales figures for distinct wine varieties. Our objective is to delve into the data, analyze trends, patterns, and factors influencing wine sales over the course of the century. By leveraging data analytics and forecasting techniques, we aim to gain actionable insights that can inform strategic decision-making and optimize sales strategies for the future.

Objective -

The primary objective of this project is to analyze and forecast wine sales trends for the 20th century based on historical data provided by ABC Estate Wines. We aim to equip ABC Estate Wines with the necessary insights and foresight to enhance sales performance, capitalize on emerging market opportunities, and maintain a competitive edge in the wine industry.

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1 - Define the problem and perform Exploratory Data Analysis:

* Read the data as an appropriate time series data
* Plot the data
* Perform EDA
* Perform Decomposition.

2 - Data Pre-processing:

* Missing value treatment
* Visualize the processed data
* Train-test split

3 - Model Building - Original Data:

* Build forecasting models
* Linear regression
* Simple Average
* Moving Average
* Exponential Models (Single, Double, Triple)
* Check the performance of the models built

4 - Check for Stationarity:

* Check for stationarity
* Make the data stationary (if needed)

5 - Model Building - Stationary Data:

* Generate ACF & PACF Plot and find the AR, MA values.
* Build different ARIMA models - Auto ARIMA - Manual ARIMA
* Build different SARIMA models - Auto SARIMA - Manual SARIMA
* Check the performance of the models built.

6 - Compare the performance of the models:

* Compare the performance of all the models built
* Choose the best model with proper rationale
* Rebuild the best model using the entire data
* Make a forecast for the next 12 months.

7 - Actionable Insights & Recommendations:

- Conclude with the key takeaways (actionable insights and recommendations) for the business.