

ASSESSMENT BRIEF EXPLANATION

1. Lost Revenue Analysis in Excel

The initial analysis of lost revenue was conducted in Excel. To estimate potential revenue lost due to Buy Box unavailability, I added several columns to the dataset. These columns calculated key metrics such as:

- **Sessions with Buy Box:** The number of sessions where the "Buy Box" was available for customers to add the product to their cart.
- **Sessions without Buy Box:** The number of sessions where the "Buy Box" was not available.
- **Units per Session with Buy Box:** The average number of units ordered per session when the Buy Box was present.
- **Potential Additional Units:** The estimated number of additional units that could have been sold if the Buy Box had been available during all sessions. This was calculated by multiplying the "Units per Session with Buy Box" by the "Sessions without Buy Box."
- **Potential Additional Revenue:** The estimated revenue that could have been generated from these potential additional units.
- **Lost Revenue:** The estimated revenue lost due to the unavailability of the Buy Box, which was calculated as the "Potential Additional Revenue."

Formulas were entered into Excel to perform these calculations, and comments were added to each cell to explain the logic behind the calculations.

2. Lost Revenue Analysis in Python

The lost revenue analysis was then replicated in Python using the Pandas library. This step allowed for more advanced data manipulation and handling. A key difference in the Python implementation was the handling of missing data. Instances where the "Buy Box %" or "Sessions" were missing were addressed by imputing the missing values with the corresponding weekly average for that particular metric. This imputation technique ensured more accurate calculations by mitigating the impact of missing data points. The core calculations, such as determining the number of sessions with and without the Buy Box, estimating potential additional units, and calculating lost revenue.

3. Forecasting the Next 12 Weeks

Python was used to forecast sales for the next 12 weeks for each product. Optimized Autoregressive Integrated Moving Average (ARIMA) models were employed. Time series cross-validation was used to determine the optimal ARIMA order (p, d, q) for each product by minimizing the Root Mean Squared Error (RMSE). The resulting forecasts were exported to an Excel file.

4. Dashboard Creation:

A dashboard was created in Tableau to visualize both the lost revenue analysis and the 12-week sales forecasts. The dashboard included:

- A card displaying the total lost revenue.
- A bar chart showing the lost revenue for each product (top 5 worst performing).
- A line chart showing the lost revenue by week
- A line chart showing the forecast by ProductID (could filter)
- A bar chart showing the Current Data + Forecasting for the next 12 weeks