**Dataset Overview**

The dataset contains sales data with numerical features, including Unit\_Cost, Total\_Revenue, and Total\_Profit. The target variable used for regression is Total\_Profit.  
Unnecessary columns (Unnamed: 9, Unnamed: 10) were removed, and rows with missing values in numerical columns were excluded from analysis.

**Methodology**

Lasso regression was applied to the cleaned dataset. The alpha value (regularization strength) was varied between **0.111 and 12** to find the optimal value that minimizes the **Mean Squared Error (MSE)**.  
The model's performance was evaluated using the following metrics:

* **Mean Squared Error (MSE)**
* **Mean Absolute Error (MAE)**
* **Root Mean Squared Error (RMSE)**

**Results**

* **Best Alpha:** 0.111
* **Mean Squared Error (MSE):** 19,706,851,280.75
* **Mean Absolute Error (MAE):** 110,112.60
* **Root Mean Squared Error (RMSE):** 140,381.09

**Conclusion**

The optimal alpha value for Lasso regression is **0.111**, which minimizes the MSE to **19,706,851,280.75**. This indicates that the model performs best with this regularization strength, effectively balancing prediction accuracy and feature selection.