**Supply Chain Assignment**

This project aims to build an efficient forecasting model to predict the sales SKU wise in its portfolio at its 76 different stores using historical sales data for the past 3 years on a week-on-week basis and forecast accurately the sales values for every such product/SKU-store combination for the next 12 weeks accurately

**Libraries used:**

* pandas
* numpy
* matplotlib
* seaborn
* scikit-learn
* xgboost
* lightgbm
* category\_encoders
* bayes\_opt

**Code Structure:**

* Import necessary libraries and modules.
* Load the training data, testing data, and the submission format.
* Perform data exploration and data preprocessing to handle missing values.
* Feature engineering is carried out to create new features for better model performance.
* Model Building:
  + RandomForestRegressor and LightGBM models are used to predict demand.
  + Model tuning and hyperparameter optimization are also applied.
  + Ensemble models are constructed to combine predictions.

**Running the code**: python forecast.py

**Output:** The code generates a CSV file named "output.csv" containing demand predictions for the test dataset.