

Capstone Project

Customer Intelligence Platform: Forecasting, Segmentation & Insight Dashboard

Objective:

Develop a complete analytics platform that uses **descriptive**, **predictive**, and **prescriptive** analytics to understand customer behavior, forecast future outcomes, and support strategic decisions—deployed on a cloud platform.

Business Use Case:

Your company wants to improve customer retention and marketing ROI by identifying key customer segments, predicting future behavior, and visualizing insights for decision-makers.

Project Components:

Phase	Deliverables	Tools
1. Data Integration & Cleaning	Load, merge & clean customer, product, and sales data	Excel, Pandas
2. Exploratory Data Analysis (EDA)	Outlier detection, correlation, visual summaries	Pandas, Seaborn, Pandas Profiling
3. Customer Segmentation	Apply K-Means Clustering to group similar customers	Sklearn
4. Churn Prediction / Classification	Use Logistic Regression / Decision Tree / SVM to predict churn	Sklearn
5. Sales Forecasting	Apply Linear Regression to predict future sales	Sklearn
6. Text Analysis	Analyze feedback using NLTK for sentiment or topic modeling	NLTK
7. Interactive Dashboard	Build dashboards showing clusters, KPIs, and predictions	Power BI / Tableau
8. Cloud Deployment	Deploy model or dashboard using Streamlit or Flask on AWS/GCP/Azure	Docker, Git, Cloud Console

Key ML Techniques Used:

- Clustering → **K-Means**
- Classification → **Logistic Regression, Decision Trees, SVM**
- Regression → **Linear Regression**
- Text Mining → **Sentiment Analysis, Tokenization**
- Dimensionality Reduction → **PCA (Optional)**

Cloud Integration:

- Host dashboard or prediction API using **Streamlit on EC2 / Azure App Service / GCP App Engine**
- Optional: Dockerize the app for easier deployment