# Customer Insights Dashboard - Project Documentation

## 1. Introduction

The Customer Insights Dashboard is a data analytics project designed to analyze customer purchasing behavior, segment customers based on revenue, and provide actionable insights for business growth. This project showcases skills in data analysis, visualization, and business intelligence.

## 2. Project Workflow

The project follows a structured workflow:

* 1. \*\*Data Collection\*\* – Gather customer data (Customer ID, Age, Purchases, Revenue, Region).
* 2. \*\*Data Preprocessing\*\* – Clean and organize data using Pandas.
* 3. \*\*Customer Segmentation\*\* – Categorize customers into 'Low', 'Medium', and 'High' revenue segments.
* 4. \*\*Data Visualization\*\* – Use Matplotlib & Seaborn to analyze revenue distribution.
* 5. \*\*Export Processed Data\*\* – Save the refined dataset for further use.

## 3. Technology Stack

✔ Programming Language: Python

✔ Libraries Used: Pandas, Matplotlib, Seaborn

✔ Data Format: CSV

✔ Future Enhancements: Integration with SQL database, Web Dashboard using Flask/Django

## 4. Key Features

* 🔹 \*\*Customer Segmentation\*\* – Classifies customers based on revenue range.
* 🔹 \*\*Revenue Distribution Analysis\*\* – Visualizes revenue trends across customers.
* 🔹 \*\*Data Cleaning & Processing\*\* – Handles missing values and prepares data for insights.
* 🔹 \*\*Business Value\*\* – Helps businesses identify high-value customers for targeted strategies.

## 5. Code Explanation

### \*\*Main Script (app.py)\*\*

1️⃣ \*\*Load Data\*\* – The script reads customer data into a Pandas DataFrame.

2️⃣ \*\*Process Data\*\* – Performs customer segmentation based on revenue.

3️⃣ \*\*Visualization\*\* – Plots revenue distribution using Seaborn.

4️⃣ \*\*Save Processed Data\*\* – Exports the refined data to a CSV file.

## 6. Deployment Guide

To run the project, follow these steps:

* 1. Install dependencies: `pip install -r requirements.txt`
* 2. Run the script: `python app.py`
* 3. View the visualizations generated in Matplotlib.
* 4. Use the processed data for further analysis.

## 7. Interview Preparation

This project is designed to showcase data analytics skills in an interview. Key points to focus on:

* ✔ Explain the \*\*business value\*\* – How this helps companies understand customer behavior.
* ✔ Describe the \*\*technical implementation\*\* – How Pandas is used for processing and Seaborn for visualization.
* ✔ Discuss \*\*scalability\*\* – How this project can be extended to SQL databases, Flask APIs, or Power BI dashboards.
* ✔ Mention future improvements – Integration with machine learning for customer churn prediction.