Sales Analytics Dashboard - README

# Project Overview

This interactive Sales Analytics Dashboard is built using Streamlit to empower businesses with insightful sales performance visualizations, filterable KPIs, and predictive forecasting. It allows business analysts, sales managers, and executives to derive actionable insights from historical sales data, identify trends, understand customer buying patterns, and forecast future outcomes.

# Features

• Interactive Filters - Date range, product, region, and category selectors to dynamically segment data.

• KPI Metrics - Total sales, quantities, and unique product counts displayed in real-time.

• Advanced Visualizations - Heatmaps, bar charts, pie charts, word clouds, and scatter plots.

• Sales Prediction Model - Uses Linear Regression to forecast sales over a customizable future period.

# 📂 Dataset Description

The dataset used, `sales\_data.csv`, contains fields such as:  
- Date: Transaction date  
- Product: Name of the product  
- Category: Product category  
- Region: Geographical region of sale  
- Quantity: Number of units sold  
- Unit\_Price: Price per unit  
- Total\_Sales: Derived as Quantity × Unit\_Price  
- Customer\_ID: Identifier for each customer

# 🧠 Code Breakdown

## 1. Data Loading & Preprocessing

• Loads `sales\_data.csv` into a Pandas DataFrame  
• Converts the date column  
• Strips column names of extra spaces

## 2. Sidebar Filters

• Sidebar contains interactive widgets to filter data by date, category, product, and region

## 3. KPI Section

• Displays Total Sales, Quantity Sold, and Unique Products dynamically based on filters

## 4. Visual Analytics

• Correlation heatmaps  
• Monthly trends  
• Total sales over time  
• Top selling products  
• Sales distribution by region  
• Quantity sold by category  
• Price distributions  
• Word cloud for most sold products

## 5. Predictive Modeling

• Uses Linear Regression on date-ordinal vs. total sales to predict future sales  
• User selects future period via slider

## 6. Report Download

• A downloadable Word report (`Sales\_Analysis\_Report.docx`) can be downloaded directly from the dashboard.

# Deployment Notes

• Ensure the `sales\_data.csv` and `Sales\_Analysis\_Report.docx` files are in the same directory as `final\_test.py`  
• Run the app using `streamlit run final\_test.py`

# Required Libraries

- streamlit  
- pandas  
- matplotlib  
- seaborn  
- numpy  
- wordcloud  
- scikit-learn