Project Proposal

Project Title: E-Commerce Data Sd

Dataset Link: https://www.kaggle.com/datasets/danttis/e-commerce-data-sd?select=customers.csv

Group Members :

Name	ID	Role
Ghada Ragab Ali Abdullah	21003629	Analysis & Insights
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Project Description :

The dataset “E-Commerce Data SD” (customers.csv) provides customer-level data for an e-commerce platform. Such data enables better understanding of customer behaviour, segmenting the customer base, and tailoring marketing efforts based on real customer profiles.

Objectives

- Explore and understand the customer data — demographics, registration dates, and activity levels.
- Identify customer segments — classify customers into groups such as new, loyal, high-value, or inactive.
- Analyze customer behavior — evaluate purchase frequency, total spending, and average order value.
- Provide marketing insights — develop data-driven recommendations for customer engagement and retention.
- *(Optional)* Build a predictive model to forecast customer activity or spending trends.

Tools used :

Purpose	Tools
Data Collection & Cleaning	Python (Pandas, NumPy), Excel, SQL
Exploratory Analysis	Python (Matplotlib, Seaborn), Tableau
Forecasting / Modeling	Python (scikit-learn, statsmodels)
Visualization / Dashboard	Tableau, Plotly Dash
Reporting & Presentation	Canva, Google Slides, MS PowerPoint

Milestones & Deadlines

Week / Date	Milestone	Main Tasks	Deliverables	Tools
Week 1	Data Collection & Preparation	• Collect and import datasets (e.g., customers.csv, orders.csv, products.csv) from Kaggle. • Clean and preprocess data: handle missing values, correct data types, and remove duplicates. • Merge datasets if needed (link customers with orders	• Cleaned dataset ready for analysis.• Data preprocessing notebook.	Python (Pandas,NumPy), SQL
Week 2	Exploratory Data Analysis (EDA)	• Analyze customer demographics (age, gender, location). • Explore spending patterns, order frequency, and registration trends. • Identify key correlations between customer attributes and purchase behavior.	• EDA visualizations (heatmaps, scatter plots). • List of key analytical insights.	Python (Matplotlib, Seaborn), Tableau
Week 3	Trend & Forecasting Analysis	• Apply clustering algorithms (e.g., K-Means) to group customers by behavior or value. • Define customer segments (e.g., New, Loyal, High-Value, Inactive). • Analyze characteristics and contribution of each segment.	• Forecast plots showing future climate trends.• Summary of predictive insights.	Python (scikit-learn, statsmodels, Matplotlib)
Week 4	Dashboard Development	• Build an interactive dashboard to visualize customer segments, order trends, and key KPIs.	• Interactive climate change dashboard.	Tableau / Plotly Dash
Week 5	**Final Report & Presentation**	• Prepare final presentation summarizing findings, insights, and marketing recommendations.	• Final report.• Presentation slides.	Canva / Google Slides, MS PowerPoint

KPIs (Key Performance Indicators)

These are the key metrics we will use to **measure the success of the project** once development begins. They will help us track our progress and ensure the project achieves its goals.

KPI Category	Description	Target / Goal
Data Preparation	Ensure the datasets are cleaned and ready for analysis (handle missing, duplicated, or incorrect values).	100% of data cleaned before analysis
Data Analysis	Explore customer demographics, purchase frequency, and spending behavior to uncover patterns and correlations.	At least 3 meaningful insights discovered
Visualization Quality	Create an interactive dashboard that is clear, fast, and easy to use.	Dashboard loads in under 3 seconds
User Understanding	Ensure the dashboard and visualizations are easy to interpret for business users and marketers	80% of test users find it easy to interpret results
Final Report & Presentation	Provide a complete summary of findings and recommendations.	Submit before the deadline with 100% completion

Expected Outcome

A fully interactive and visually engaging dashboard that tells the story of customer behavior and purchasing patterns within the e-commerce platform. The dashboard will enable users to explore customer demographics, identify high-value and inactive segments, and analyze trends in spending and order frequency. It will provide data-driven insights that help businesses optimize marketing strategies, improve customer retention, and enhance overall sales performance.