| **Project Title** | **Customer Demographics and Purchase Behavior Analysis** |
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| **Skills take away From This Project** | **Data Cleaning & Preprocessing using Excel**  **Data Visualization Techniques in Excel (Charts, Pivot Tables)**  **Statistical Analysis in Excel**  **Trend Analysis and Forecasting in Excel**  **Interpretation of Business Insights from Data** |
| **Domain** | **Business Analytics, Marketing Analytics, Retail Analytics** |

**Problem Statement:**

"XYZ Retail wants to understand customer demographics and purchase behavior trends to optimize their marketing and inventory strategies. As a business analyst, your task is to analyze and visualize customer demographics, product categories, and purchase patterns using the provided dataset in Excel."

**Business Use Cases:**

* **Customer Segmentation**: Identify key customer groups based on demographics and purchasing behavior to develop targeted marketing strategies.
* **Sales Forecasting**: Understand purchase trends to forecast future sales and inventory needs.
* **Product Category Performance**: Assess the performance of different product categories and their impact on revenue generation.
* **Marketing Strategy Optimization**: Use demographic insights to tailor marketing strategies for different regions and age groups.

**Approach:**

### **Task 1: Styling Tabulation**

Format the dataset to improve readability.

* Bold headers, apply alternating row colors, and format the Amount column as currency.

### **Task 2: Age Distribution Histogram**

Visualize customer age distribution.

* Group ages into bins and create a histogram to analyze which age groups are most prominent.

### **Task 3: Box Plot for Purchase Amounts**

Examine the variability in Amount spent across Product Categories.

* Plot a box plot to identify outliers and the median purchase amounts.

### **Task 4: Pie Chart for Customer Distribution**

Represent the percentage of customers in each Region with a pie chart.

* Display percentages and highlight the region with the highest customer base.

### **Task 5: Donut Chart for Product Revenue Contribution**

Show the contribution of each Product Category to the total revenue.

* Use a donut chart to display the data visually.

### **Task 6: Stacked Bar Plot for Regional Revenue by Gender**

Analyze total revenue by Region, segmented by Gender.

* Create a stacked bar plot for better comparison.

### **Task 7: Relative Stacked Bar Plot for Age Groups**

Visualize the proportion of purchases made by different age groups in each Region.

* Represent data proportionally in a stacked bar plot.

### **Task 8: Stacked Area Plot for Monthly Revenue**

Analyze monthly revenue trends across Product Categories.

* Use a stacked area plot to observe how each category contributes over time.

### **Task 9: Scatter Plot for Age vs. Purchase Amount**

Explore the relationship between Age and Amount.

* Use a scatter plot to identify patterns or trends in spending behavior.

### **Task 10: Bar Plot for Total Purchases**

Compare the total number of purchases across Product Categories.

* Create a bar plot to identify the most popular categories.

### **Task 11: Continuous vs Continuous Analysis**

Visualize how Purchase Amounts vary with Customer Age.

* Plot continuous variables to identify correlations or trends.

### **Task 12: Line Plot for Monthly Purchase Trends**

Track the number of purchases made in each month.

* Use a line plot to identify peak shopping periods.

**Results:**

A cleaned and structured dataset in Excel format.

A set of visualizations in Excel illustrating key insights, such as the most profitable customer segments, trends in purchasing behavior, and regional performance.

Insights into how demographic factors influence customer purchasing patterns, which can inform marketing and inventory decisions.

**Project Evaluation metrics:**

**Data Quality**: Completeness, correctness, and consistency of the data.

**Visualization Effectiveness**: Clarity, appropriateness, and insightfulness of the Excel charts and tables.

**Insights Derived**: The depth of actionable insights generated from the data analysis.

**Technical Execution**: Correct use of Excel functions, formulas, and charts.

**Documentation**: Quality and clarity of project documentation and explanations

**Technical Tags:**

Excel, Data Analysis, Data Visualization, Pivot Tables, Customer Segmentation, Marketing Analytics

**Data Set:**

[**Customer\_Demographics\_and\_Purchase\_Behavior**](https://docs.google.com/spreadsheets/d/1hxyKvp24qhmwTvD0ZH08qNp-Pr8ICuHpqesInowr5Lo/edit?usp=sharing)

Customer ID, Name, Age, Gender, Region, Product Category, Product ID, Purchase Date, Amount.

**Data Set Explanation:**

**Customer ID**: A unique identifier assigned to each customer.

**Name**: The customer's full name (optional for this analysis).

**Age**: The age of the customer, expressed in years.

**Gender**: The gender of the customer, categorized as Male, Female, or Other.

**Region**: The geographic region where the customer resides (e.g., North, South, East, West).

**Product Category**: The type of product purchased, such as Electronics, Clothing, Groceries, etc.

**Product ID**: A unique identifier for each product.

**Purchase Date**: The date of the purchase, in YYYY-MM-DD format.

**Amount**: The total amount spent by the customer on a specific purchase, in currency

**Project Deliverables:**

**Source File**: Excel workbook with data analysis, visualizations, and insights.

**Charts**: Visualizations (graphs, plots, and charts in Excel).

**Summary Report**: A project report in Excel summarizing insights, methodology, and outcomes.

**Project Guidelines:**

Follow proper formatting and naming conventions in Excel (e.g., named ranges, consistent date formats).

Use Excel’s built-in functions for calculations (e.g., SUM, AVERAGE, COUNTIF, etc.).

Ensure that your visualizations are clear and appropriately represent the data (e.g., use relevant chart types for different tasks).

Provide detailed explanations for each visualization and insight.

Deliver a clean, well-organized workbook with separate sheets for data, analysis, and visualizations.

**Timeline:**

The project must be completed and submitted **within 7 days from the assigned date**.

**References:**

| **Project Orientation Video** | [**customer-demographicsorientation-video.mp4**](https://drive.google.com/file/d/1mNN0MpG17SEHp7Yny7nLFFoQ3XZIPtgZ/view?usp=sharing) |
| --- | --- |
| **Capstone Explanation Guideline** | [Capstone Explanation Guideline](https://docs.google.com/document/d/1gbhLvJYY7J73lu1g9c6C9LRJvYemiDOdRDAEMe632w8/edit) |
| **Project Live Evaluation** | [Project Live Evaluation](https://docs.google.com/document/u/0/d/1QisLD2kqDWFZJG2oDknKn2eMGi-Xq8oFPgA7UWSbcIQ/edit) |

**PROJECT DOUBT CLARIFICATION SESSION ( PROJECT AND CLASS DOUBTS)**

**About Session:** The Project Doubt Clarification Session is a helpful resource for resolving questions and concerns about projects and class topics. It provides support in understanding project requirements, addressing code issues, and clarifying class concepts. The session aims to enhance comprehension and provide guidance to overcome challenges effectively.

**Note: Book the slot at least before 12:00 Pm on the same day**

**Timing: Saturday (5:00PM to 7:00PM)**

**Booking link :**[**https://forms.gle/NtkQ4UV9cBV7Ac3C8**](https://forms.gle/NtkQ4UV9cBV7Ac3C8)

**LIVE EVALUATION SESSION (CAPSTONE AND FINAL PROJECT)**

**About Session:** The Live Evaluation Session for Capstone and Final Projects allows participants to showcase their projects and receive real-time feedback for improvement. It assesses project quality and provides an opportunity for discussion and evaluation.

**Note: This form will Open on Saturday and Sunday Only on Every Week**

**Timing: Monday-Saturday (11:30AM to 12:30PM)**

**Booking link :** [**https://forms.gle/1m2Gsro41fLtZurRA**](https://forms.gle/1m2Gsro41fLtZurRA)

**Approval Workflow**

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