Customer Purchase Behavior Analysis

Data Analysis and Visualization

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Content

Introduction

- **Project Overview:**

"This project analyzes customer purchase behavior using data from an online retail store. The aim is to provide insights into purchasing patterns, identify top products and customers, and analyze sales trends over time."

- **Objectives:**

1. **Understand Purchasing Patterns:** "Identify and analyze common purchasing behaviors among customers."
2. **Identify Top Products and Customers:** "Determine the most popular products and the most valuable customers based on sales data."
3. **Analyze Sales Trends Over Time:** "Examine how sales vary across different time periods to identify trends and seasonality."

- **Data Source**:

"The data used for this analysis is the Online Retail Data from Kaggle, which includes transactional data for an online retail store."

Data Sources

- **Source:** "The data for this analysis is sourced from Kaggle, specifically the 'Online Retail Data' dataset.“
- **Data Format**: "The dataset is provided in CSV format, which is a common format for storing and exchanging data.“
- **Import Method:** "The data was imported into Excel using the 'Import Data' feature, allowing for easy manipulation and analysis."

Data Cleaning and Preparation

"Steps taken to clean the data included removing duplicates, handling missing values, and correcting data formats.

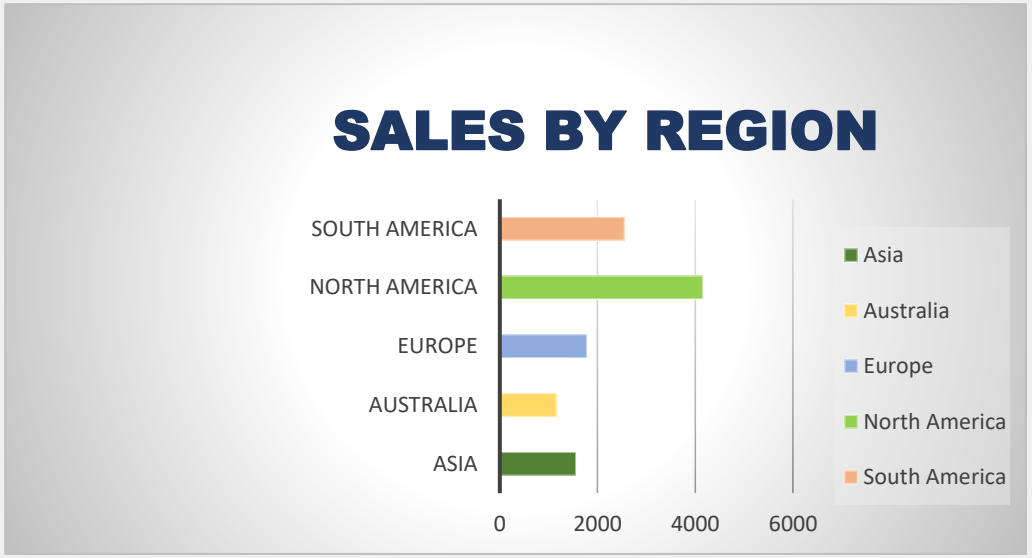
- "**Handling Missing Values and Removing Duplicates:** "Missing values were addressed by either filling them with appropriate values or removing the affected records to ensure data quality .Also ensured that each transaction record is unique."
- **Ensuring Correct Data Formats:** "Data types were checked and corrected to ensure consistency, such as converting date columns to the proper date format and ensuring numerical values were correctly formatted.“
- **Created additional column for month and year and discount category.**

Key Metrics

- **Total Sales:** "The total sales amount is $2,180,279.21, calculated using the SUM function to aggregate all sales data."
- **Average Sales:** "The average sales amount per transaction is $948.36, calculated using the AVERAGE function on the sales data."
- **Total Quantity Sold**: "The total quantity of items sold is 11,382, calculated using the SUM function to aggregate all quantity data."
- **Number of Unique Customers:** "The number of unique customers is 1, calculated using the COUNTA function combined with the UNIQUE function on the CustomerID column.“

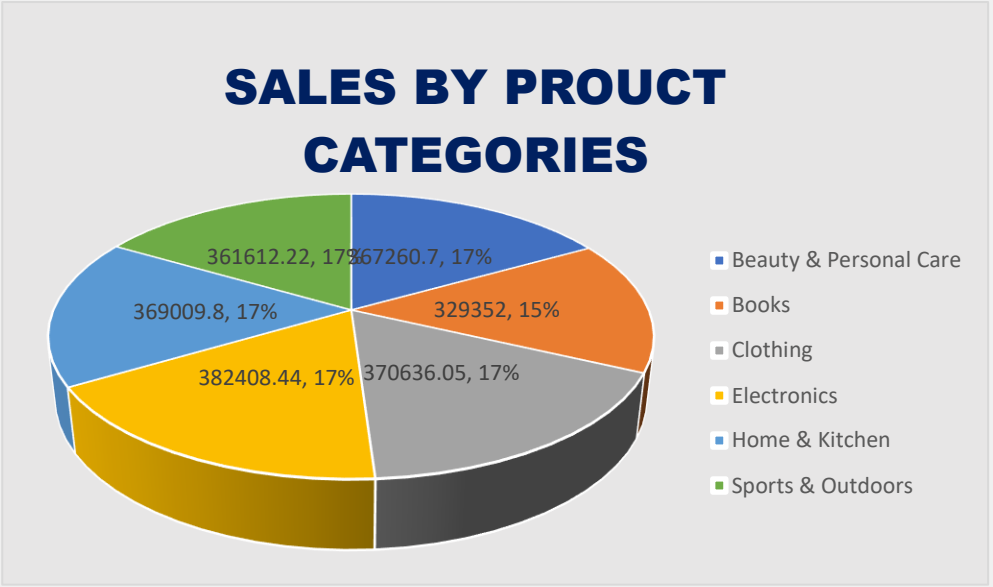
Sales by Region

- **Bar Chart:** "A bar chart was used to visualize sales data by region.
- Used Pivot Tables to compare sales data across different regions and product categories.“
- This helps in understanding which regions contribute the most to total sales.“
- **Key Observations:**
- "Region A has the highest sales."
- "Region B and C have moderate sales."
- "Region D has the lowest sales."



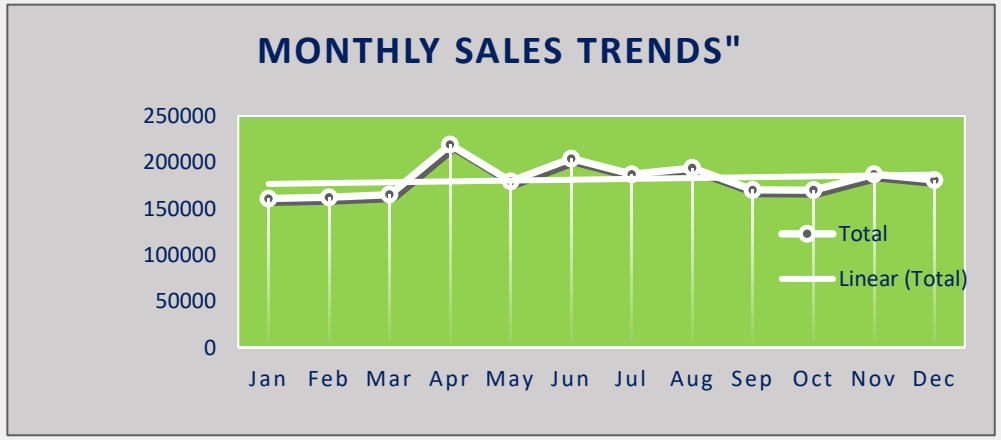
Sales by Product Category

- **Pie Chart:** "A pie chart was used to visualize sales data by product category. This helps in understanding which product categories are the most popular.“
- Used Pivot Tables to compare sales data for different product categories
- Enabled dynamic analysis and filtering, allowing for detailed comparisons and insights
- **Key Observations:**
- "Category A has the largest share of sales."
- "Category B and C have moderate shares."
- "Category D has the smallest share of sales."



Monthly Sales Trends

- **Line Chart:** "A line chart was used to visualize sales trends over time. This helps in identifying any seasonality or trends in sales data.
- Used Pivot Tables to compare sales data for total sales in every month .“
- Enabled dynamic analysis and filtering, allowing for detailed comparisons and insights.
- **Key Observations:**
- "Sales peak in certain months."
- "Monthly sales trends show a consistent seasonal pattern, with a peak during the holiday season.."
- "Some months show a decline in sales."

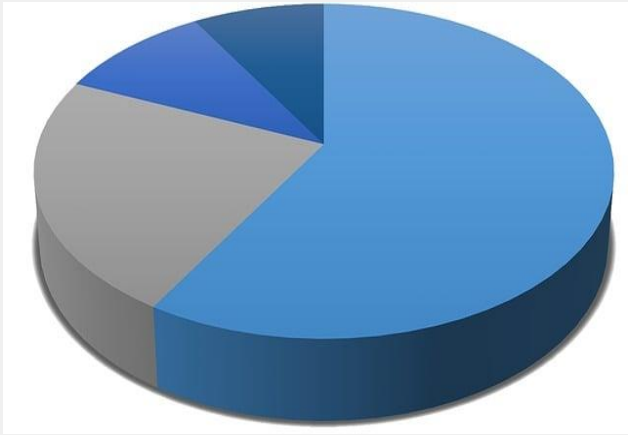


Top Products Analysis

- A pie chart was used to display the top-selling products visualized with the help of pivot tables and charts. This visualization helps in identifying which products have the highest sales and their relative performance.

Key Observations:

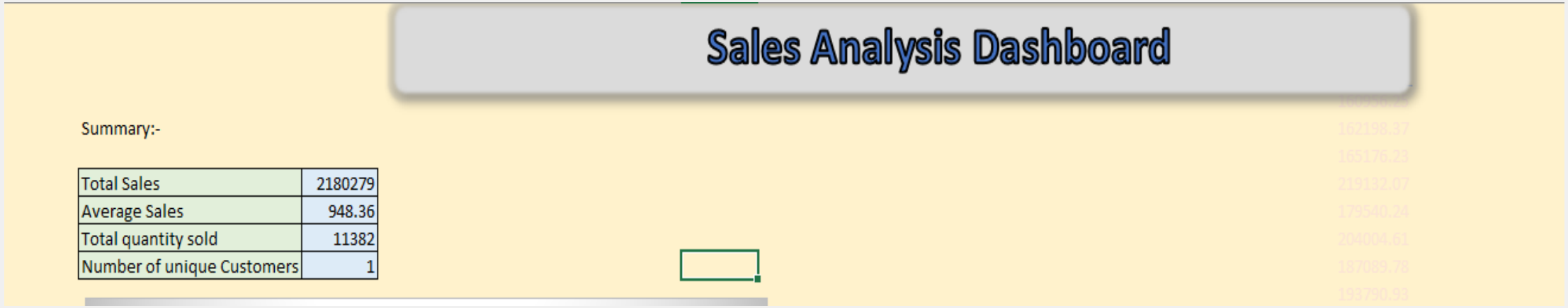
- “ Electronics Product are the top-selling products."
- “Clothing Products and beauty & Personal Care products are also among the top performers."
- "Products with lower sales contribute less to the total revenue."



Dashboard Overview

- "The dashboard provides a comprehensive view of sales performance, allowing users to interact with key metrics and visualizations to gain insights. The layout is organized into several sections for clarity and ease of use. "**Sections:**

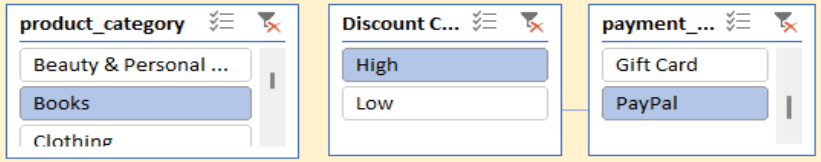
1. **Top Section:**
    1. **Content:** "Displays key metrics such as Total Sales, Average Sales, Total Quantity Sold, and Number of Unique Customers."
    2. **Visualization:**

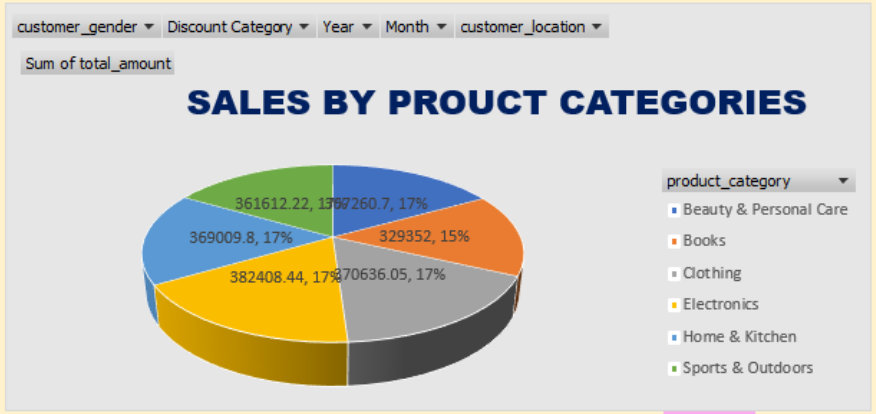


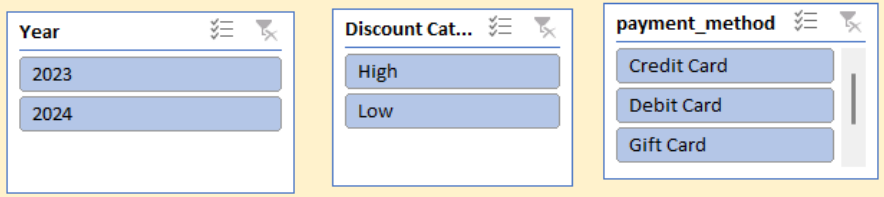
2.Middle Section:

•**Content:** "Features two key visualizations: a Bar Chart for Sales by Region with slicers for filtering data by product category,discount category,payment methods and a Pie Chart for Sales by Product Category having slicers for year,discount category,payment methods.“

•**Visualization:**

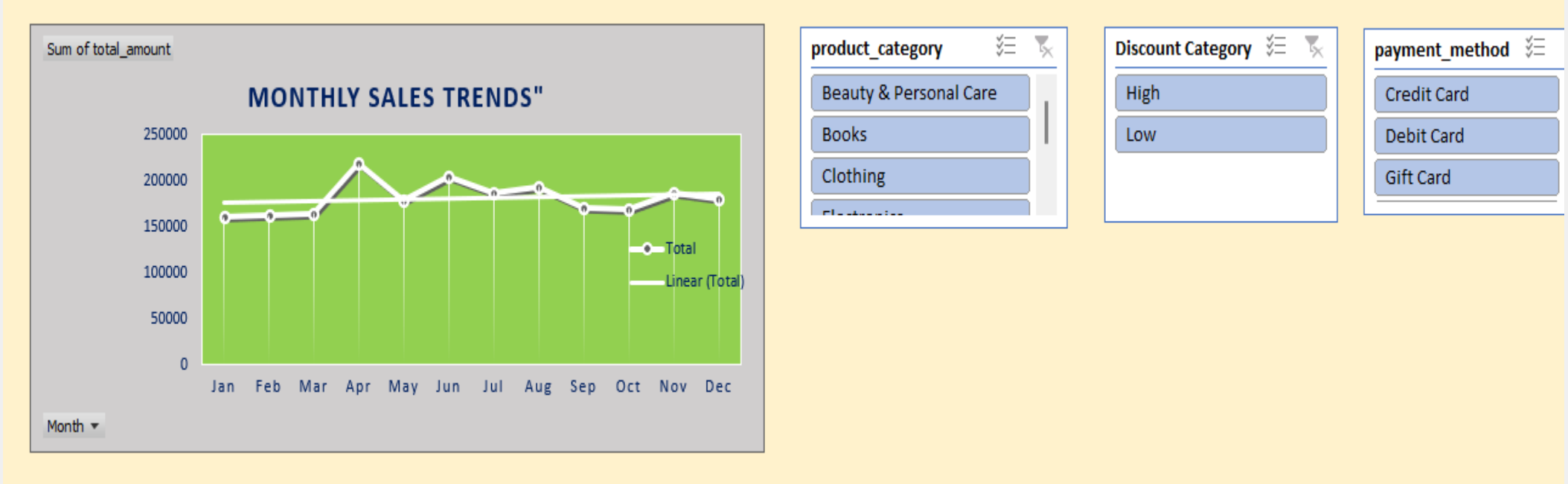






3.Bottom Section:

- "Includes a Line Chart for Monthly Sales Trends and a Bar Chart for Top Products with slicers for filtering data by product category,discount category,payment methods."
  Visualization:



Conclusion and Insights

Summary of Findings:

- "Sales by region indicate that Region A is the strongest performer."
- "Product X is the highest contributor to sales among product categories."
- "There are noticeable seasonal trends in monthly sales."

Recommendations:

- "Focus marketing efforts on high-performing regions and products."
- "Explore strategies to boost sales in lower-performing regions."
- "Plan inventory and promotions around peak sales periods identified."