

# ***Empower Your Business Decisions with Data Insights at Global Electronics***



# Agenda/Overview

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# 1. Introduction

**1.1 Objective:** The purpose of this analysis is to understand the key drivers of sales, customer behavior, product performance, and store distribution.

**1.2 Data Overview:** The dataset consists of **62,884 records** related to sales, customers, products, and stores.

**1.3 Tools Used:**

## 1 SQLite

Reliable data storage and SQL query powerhouse

## 2

## Pandas & Matplotlib

Dynamic data analysis and captivating visualizations

## 3

## Power BI/Tableau

Unlock stunning insights with these data visualization tools

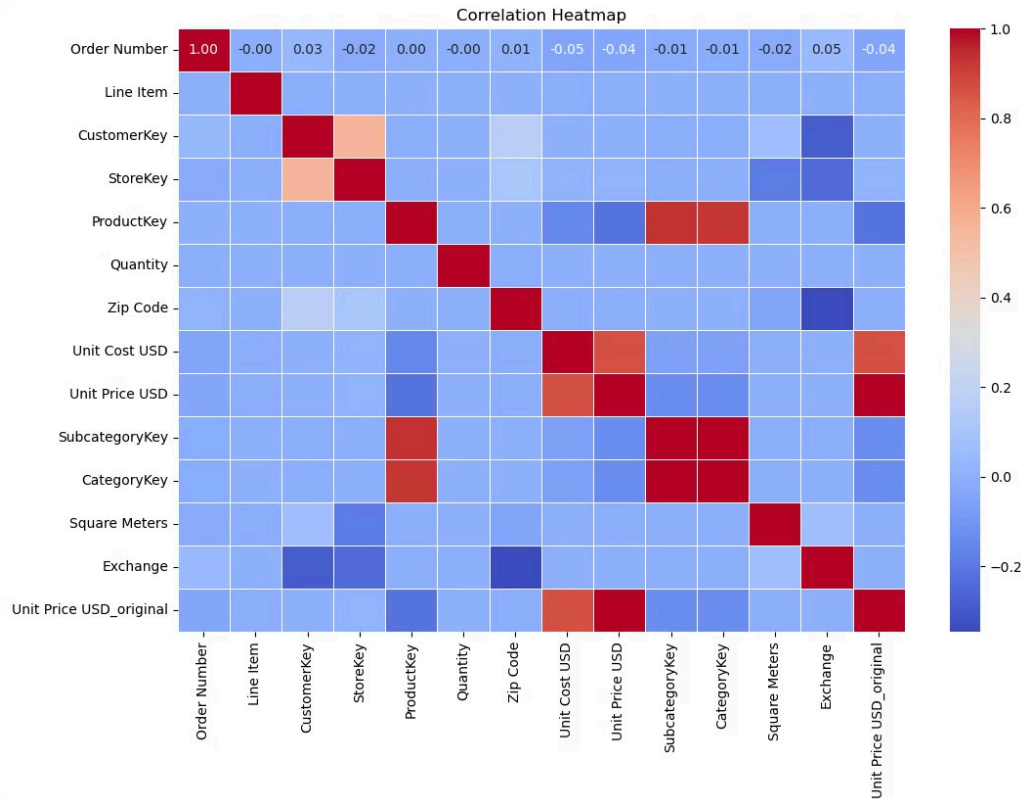
## 2.Data Preparation

- **2.1 Data Cleaning:** The dataset was cleaned by **handling missing values**, converting date columns to **datetime** format, adjusting **data types** for numerical and categorical consistency, and applying **categorical encoding** to text-based columns.
- **2.2 Merging Datasets:** **Sales** data was merged with **customer**, **product**, and **store** information to analyze customer behavior, product popularity, and store performance.
- **2.3 Outlier Detection:** **Outliers** were detected using **Tukey's method**, revealing **184 outliers in Square Meters** and **5940 outliers in Unit Price**.
- **2.4 Handling Outliers:** I used **Capping method** to handle the outliers in Square meters and Unit price

# 3.Exploratory Data Analysis (EDA)

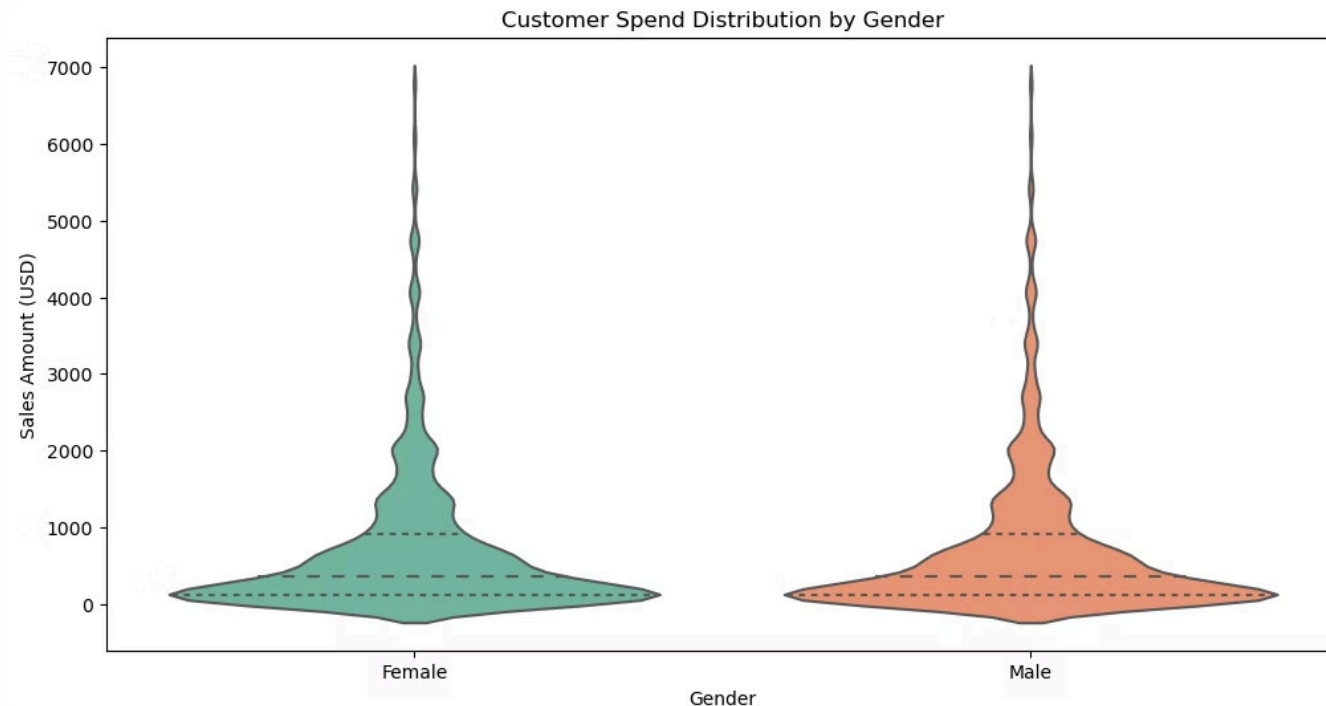
Key activities in EDA include

*The goal of EDA is to understand the data's underlying patterns, detect anomalies, test hypotheses, and check assumptions. It helps identify relationships, trends, and areas that require further analysis.*



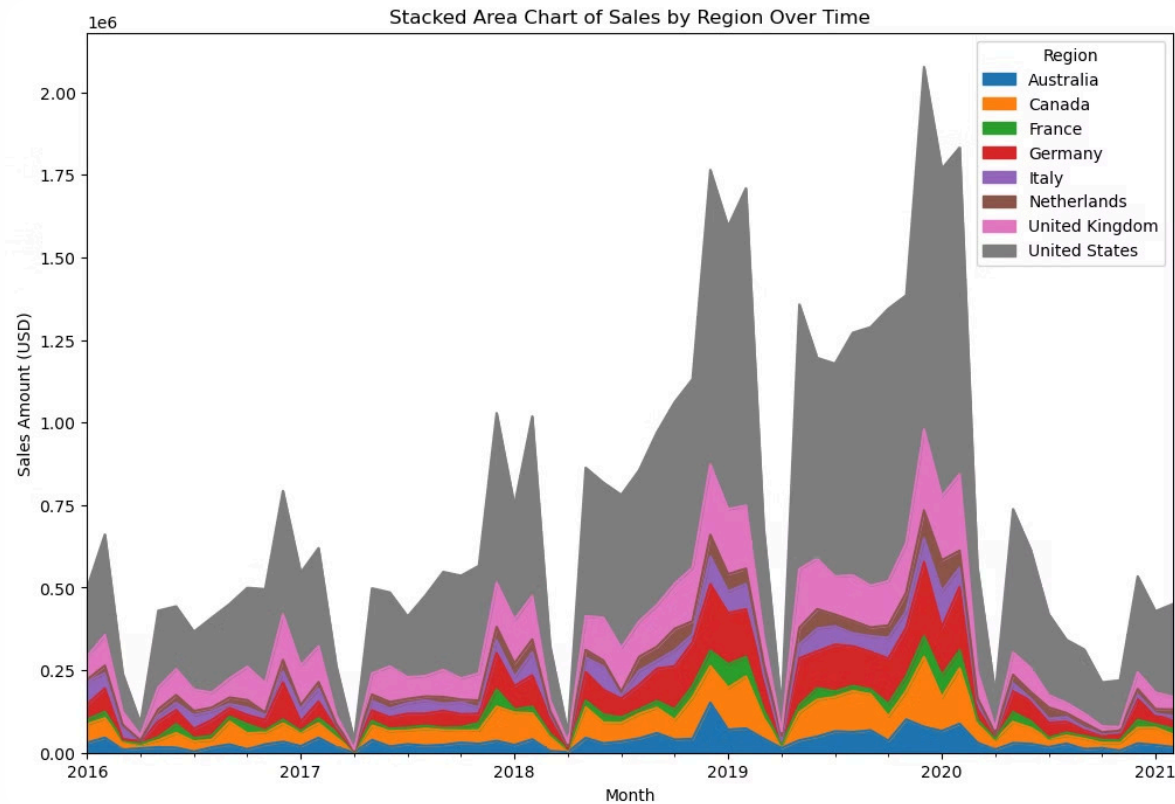
# 3.1 Customer Spend Distribution with Violin Plot

- **Purpose:** This plot shows the distribution of customer spending, helping to identify the spread of spending amounts and the concentration of customers in different spending brackets.
- **insights:** A violin plot can show the distribution of customer spend across different categories, such as age groups, gender, or location.



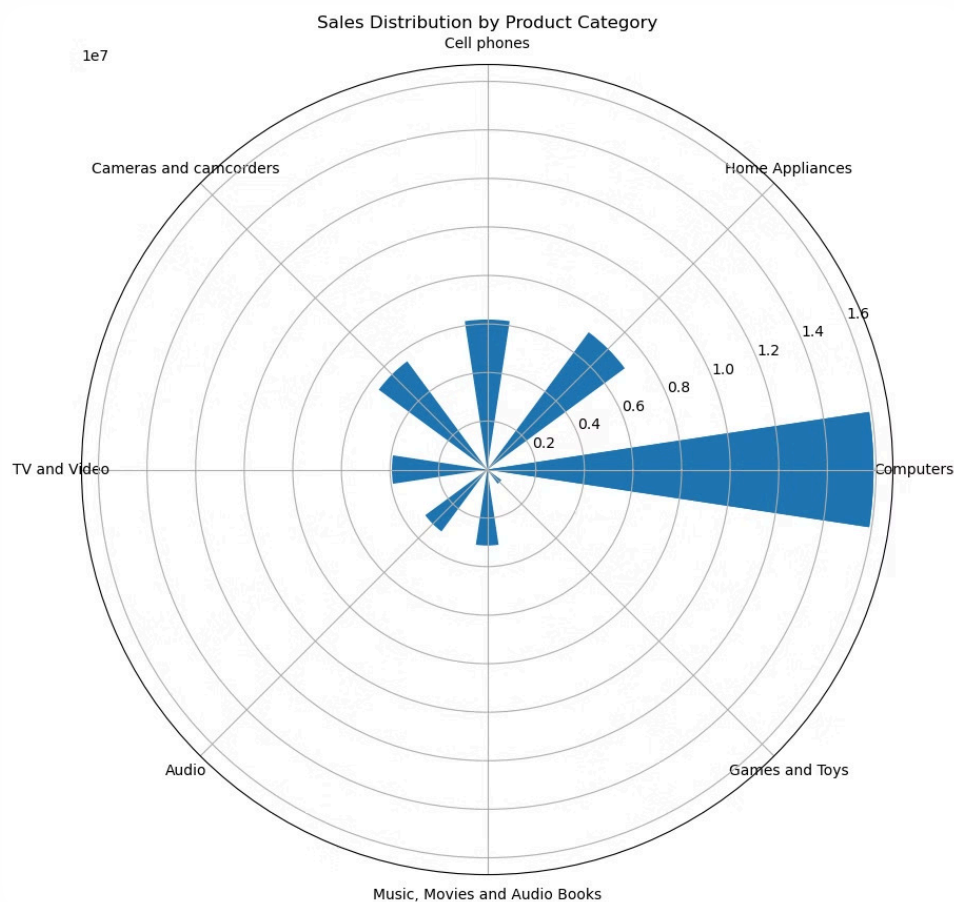
## 3.2 Stacked Area Chart of Sales by Region Over Time

- **Purpose:** The chart visualizes how sales vary by region over time, allowing us to track trends and identify seasonal patterns or regional performance differences.
- **Insights:** generate the most revenue, highlighting top-performing categories.



### 3.3 Circular Bar Plot of Product Category Sales

- **Purpose:** This plot provides a clear, circular view of the sales distribution across different product categories, making it easy to identify which categories perform the best.
- **Insights:** The circular bar plot visually represents the sales distribution by product category, highlighting that **Computer products** have the **highest demand** and perform the best in terms of sales.

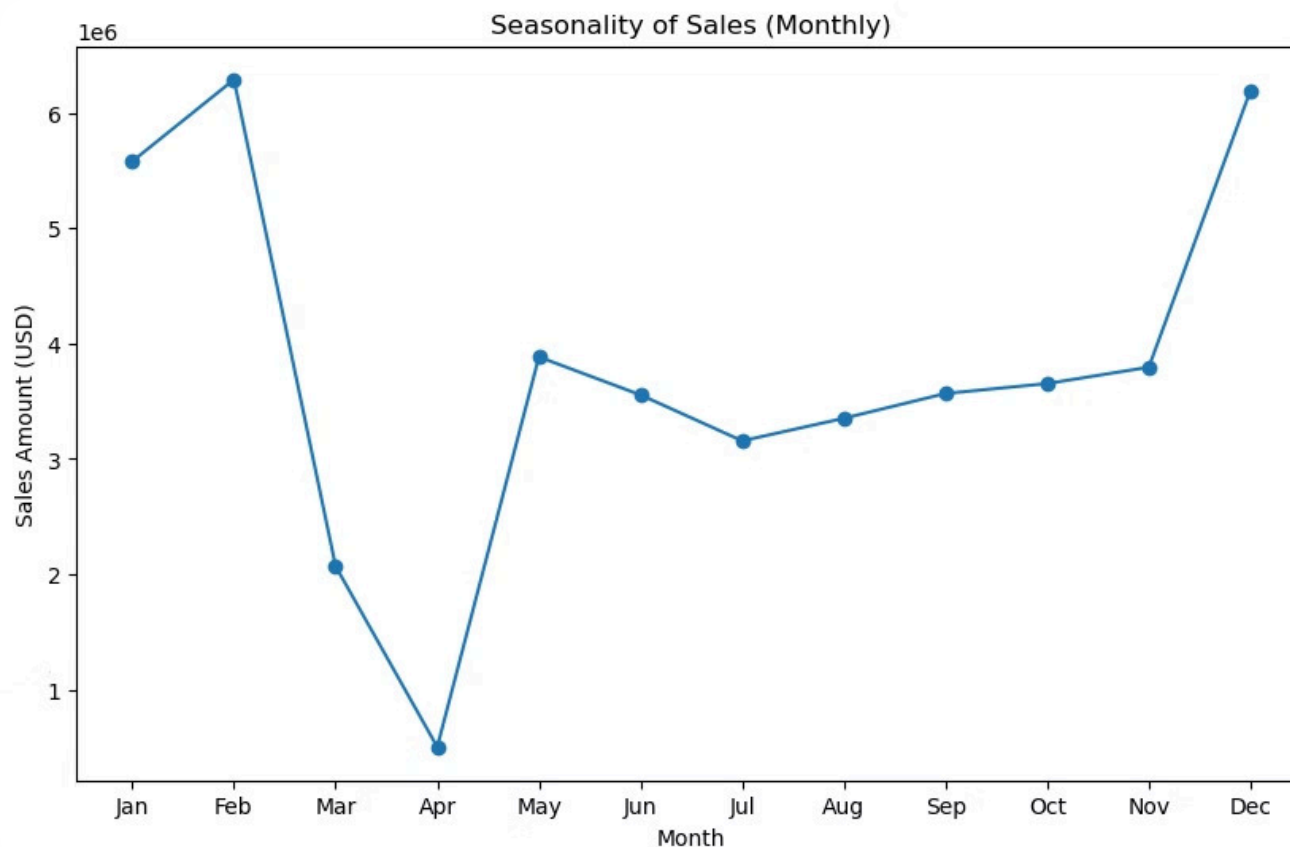




## 3.4 Seasonality of Sales

**Purpose:** The purpose of this plot is to analyze the seasonal variations in sales by plotting sales data over time, such as monthly or quarterly, to identify trends and patterns that recur at specific times of the year.

**Insights:** The seasonality plot highlights periods of high and low sales throughout the year, allowing businesses to identify peak sales periods (such as holidays or end-of-year spikes) and slow periods. This helps in planning promotions, inventory, and resource allocation more effectively.



# 4.SQL Queries for Data Extraction and Analysis



## Customer Purchase Distribution

**SQL Query:**  
SELECT CustomerKey, COUNT(OrderNumber) AS PurchaseCount FROM Sales GROUP BY CustomerKey

**Use Case:** Identify the most frequent buyers and analyze customer behavior.

## Top-Selling Products

**SQL Query:**  
SELECT ProductKey, SUM(Quantity) AS TotalSales FROM Sales GROUP BY ProductKey ORDER BY TotalSales DESC LIMIT 10

**Use Case:** Discover the best-performing products based on sales volume.

## Sales by Region

**SQL Query:**  
SELECT Region, SUM(SalesAmount) AS TotalSales FROM Sales GROUP BY Region

**Use Case:** Analyze sales performance by region to identify geographical strengths.

## Average Basket Size (Number of Products per Order)

**SQL Query:**  
SELECT OrderNumber, COUNT(ProductKey) AS BasketSize FROM Sales GROUP BY OrderNumber

**Use Case:** Understand the average number of products per order, which can inform marketing strategies.



## Discounted vs. Non-Discounted Sales Performance

**SQL Query:**  
SELECT DiscountFlag, SUM(SalesAmount) AS TotalSales FROM Sales GROUP BY DiscountFlag

**Use Case:** Compare sales performance between discounted and non-discounted products.

## Store Performance

**SQL Query:**  
SELECT StoreKey, SUM(SalesAmount) AS TotalSales FROM Sales GROUP BY StoreKey

**Use Case:** Evaluate the performance of individual stores and identify areas for improvement.

## Product Category Performance

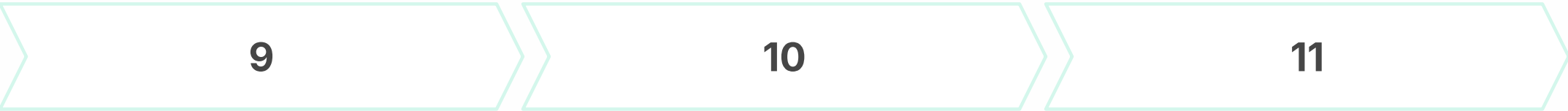
**SQL Query:**  
SELECT Category, SUM(SalesAmount) AS TotalSales FROM Sales JOIN Products ON Sales.ProductKey = Products.ProductKey GROUP BY Category

**Use Case:** Analyze the sales contribution by each product category.

## Customer Age Distribution

**SQL Query:**  
SELECT FLOOR(DATEDIFF(CURDATE(), Birthday)/365) AS AgeRange, COUNT(CustomerKey) AS CustomerCount FROM Customers GROUP BY AgeRange

**Use Case:** Segment customers based on age groups to target marketing efforts effectively.



## Product Return Rate

**SQL Query:**  
SELECT ProductKey, COUNT(DISTINCT OrderNumber) AS TotalReturns FROM Returns GROUP BY ProductKey

**Use Case:** Identify products with a high return rate and assess product quality or satisfaction issues.

## Customer Retention

**SQL Query:**  
SELECT CustomerKey, COUNT(DISTINCT OrderNumber) AS RepeatPurchases FROM Sales GROUP BY CustomerKey HAVING COUNT(DISTINCT OrderNumber) > 1

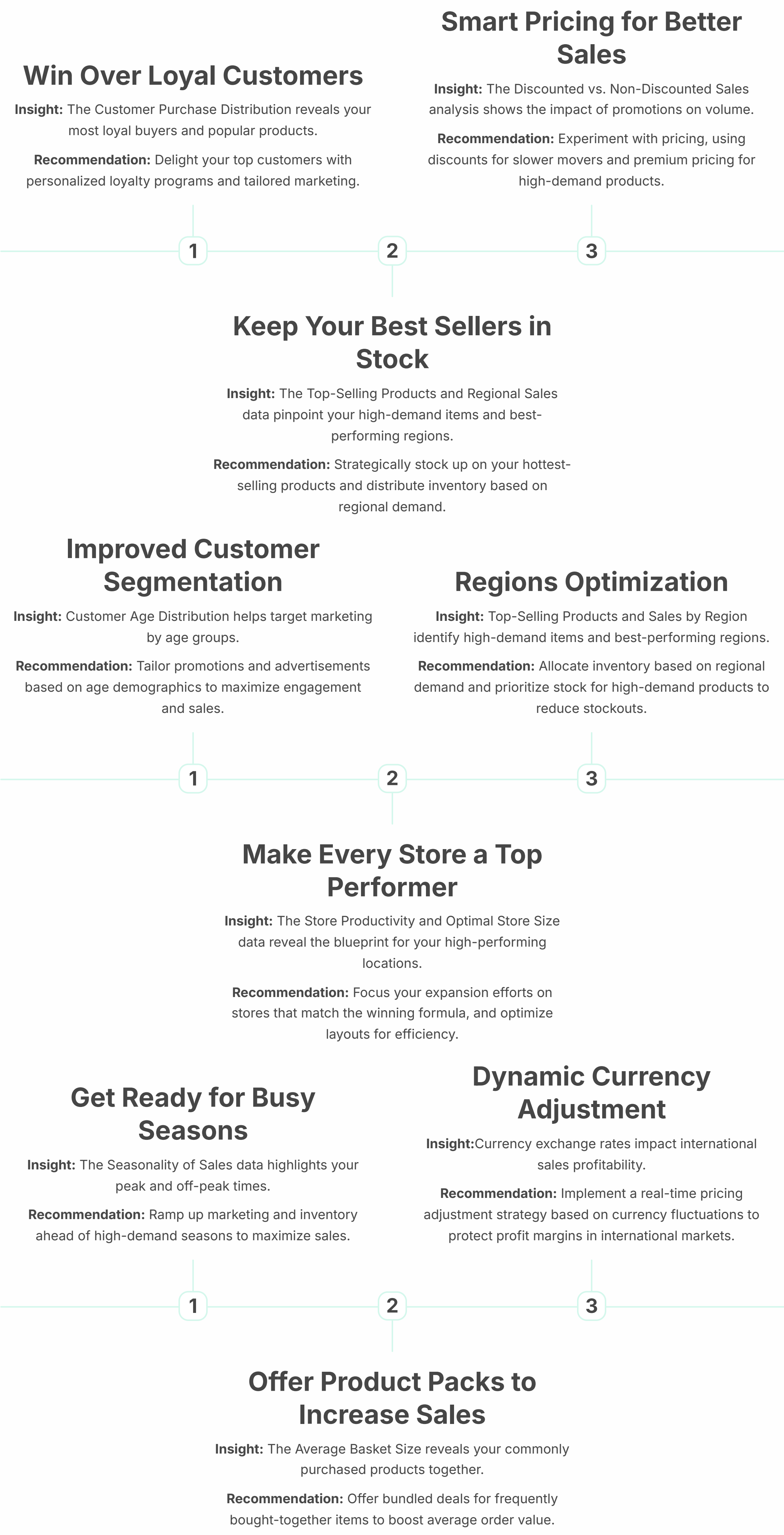
**Use Case:** Identify repeat customers to measure customer retention and loyalty.

## Relationship Between Store Size and Total Sales

**SQL Query:**  
SELECT StoreSize, SUM(SalesAmount) AS TotalSales FROM Sales JOIN Stores ON Sales.StoreKey = Stores.StoreKey GROUP BY StoreSize

**Use Case:** Analyze how store size correlates with sales performance to plan for future expansions.

# 5. Recommendations for Enhanced Performance



## 6. Conclusion

Our analysis of Global Electronics' sales, customer behavior, and product performance reveals valuable insights that can drive smarter business decisions. By targeting high-demand products, optimizing store performance, and refining marketing strategies, we can effectively enhance customer satisfaction and sales. Implementing these data-driven recommendations—like creating product packs, adjusting pricing, and preparing for seasonal demand—positions us to increase profitability, streamline operations, and deliver greater value to our customers.

Thank you for your attention, and let's discuss how we can start implementing these strategies for maximum impact!

Connect with me :

