**SQL Queries:**

### **1. Customer Demographic Insights**

### **By analyzing the demographic distribution of customers, Global Electronics can better understand their customer base and tailor marketing strategies accordingly.**

### **Insight:**

### **Gender Distribution: Identify if there is a gender skew in the customer base to tailor marketing efforts.**

### **Age Distribution: Identify the predominant age groups and design age-specific marketing campaigns.**

### **Location-Based Insights: Determine the cities, states, and countries with the highest number of customers to focus expansion and marketing efforts.**

### **Query for Demographic Distribution:**

select Gender,

count(\*) as Total\_customers,

avg(Age)as Average\_Age,

city,

State\_x as State,

Country\_x as Country,

Continent

from MergedData

group by

Gender,city,State\_x,Country\_x,Continent

order by

Total\_customers desc;

### **2. Customer Purchase Patterns**

Understanding customer purchase patterns helps in identifying high-value customers and their preferred products.

**Insight:**

* **Average Order Value**: Identify customers with high average order value for potential loyalty programs.
* **Purchase Frequency**: Determine the frequency of purchases to segment customers into categories like frequent buyers, occasional buyers, etc.
* **Preferred Products**: Identify the most frequently purchased products to optimize inventory and marketing campaigns.

### **Query for Purchase Patterns:**

SELECT

Customer\_ID,

COUNT(DISTINCT `Order Number`) AS Purchase\_Frequency,

AVG(`Unit Price USD` \* Quantity) AS Average\_Order\_Value,

GROUP\_CONCAT(DISTINCT `Product Name`) AS Preferred\_Products

FROM

MergedData

GROUP BY

Customer\_ID;

### **3. Overall Sales Performance**

Analyzing sales trends over time helps in identifying seasonality and planning inventory and promotions accordingly.

**Insight:**

* **Sales Trends**: Identify peak sales periods and plan inventory and promotions around these times.
* **Seasonality**: Understand seasonal variations in sales to optimize marketing and stock levels.

**Query for Overall Sales Performance:**

SELECT

DATE\_FORMAT(`Order Date`, '%m') AS Month,

DATE\_FORMAT(`Order Date`, '%Y') AS Year,

SUM(`Unit Price USD` \* Quantity) AS Total\_Sales

FROM

MergedData

GROUP BY

Year, Month

ORDER BY

Year, Month;

### **4. Top-Performing Products**

Identifying top-performing products helps in focusing on high-revenue items and optimizing the product portfolio.

**Insight:**

* **Product Popularity**: Determine the best-selling products and focus marketing efforts on these items.
* **Revenue Generation**: Identify products that generate the most revenue to ensure they are well-stocked and promoted.

### **Query for Sales by Product:**

SELECT

'Product Name',

SUM(Quantity) AS Total\_Quantity\_Sold,

SUM(`Unit Price USD` \* Quantity) AS Total\_Revenue

FROM

MergedData

GROUP BY

`Product Name`

ORDER BY

Total\_Revenue DESC;

### **5. Store Performance**

Analyzing the performance of different stores helps in identifying high-performing locations and areas that need improvement.

**Insight:**

* **High-Performing Stores**: Identify stores with the highest sales and analyze what makes them successful.
* **Underperforming Stores**: Identify stores with low sales and explore reasons for their performance (e.g., location, size, etc.).

### **Query for Sales by Store:**

SELECT

StoreKey,

SUM(`Unit Price USD` \* Quantity) AS Total\_Sales,

AVG(`Square Meters`) AS Average\_Store\_Size

FROM

MergedData

GROUP BY

StoreKey

ORDER BY

Total\_Sales DESC;

### **6. Impact of Currency on Sales**

Understanding how different currencies impact sales helps in setting international pricing strategies.

**Insight:**

* **Currency Impact**: Identify currencies that contribute the most to sales and optimize pricing strategies accordingly.
* **Average Prices and Costs**: Analyze the average selling prices and costs in different currencies to ensure competitive pricing.

### **Query for Sales by Currency:**

SELECT

`Currency Code`,

SUM(`Unit Price USD` \* Quantity) AS Total\_Sales,

AVG(`Unit Cost USD`) AS Average\_Cost,

AVG(`Unit Price USD`) AS Average\_Price

FROM

MergedData

GROUP BY

`Currency Code`

ORDER BY

Total\_Sales DESC;

### **7. Product Profitability**

Calculating profit margins for products helps in focusing on high-margin items and optimizing pricing strategies.

**Insight:**

* **High-Profit Products**: Identify products with the highest profit margins and focus on promoting these items.
* **Low-Profit Products**: Identify products with low profit margins and explore ways to improve their profitability.

### **Query for Profitability Analysis:**

SELECT

`Product Name`,

AVG(`Unit Price USD` - `Unit Cost USD`) AS Average\_Profit\_Margin,

AVG(`Unit Price USD`) AS Average\_Selling\_Price,

AVG(`Unit Cost USD`) AS Average\_Cost

FROM

MergedData

GROUP BY

`Product Name`

ORDER BY

Average\_Profit\_Margin DESC;

### **8. Customer Segmentation**

Segmenting customers based on demographics and purchasing behavior helps in targeted marketing and personalized customer experiences.

**Insight:**

* **Age-Based Segments**: Identify key age segments and tailor marketing campaigns accordingly.
* **Spending Segments**: Identify high-spending customers and create loyalty programs to retain them.

**Query for Customer Segmentation:**

WITH Customer\_Spend AS (

SELECT

Customer\_ID,

SUM(`Unit Price USD` \* Quantity) AS Total\_Spend,

AVG(Age) AS Average\_Age

FROM

MergedData

GROUP BY

Customer\_ID

)

SELECT

CASE

WHEN Average\_Age < 25 THEN 'Under 25'

WHEN Average\_Age BETWEEN 25 AND 40 THEN '25-40'

WHEN Average\_Age BETWEEN 41 AND 60 THEN '41-60'

ELSE 'Above 60'

END AS Age\_Segment,

CASE

WHEN Total\_Spend < 100 THEN 'Low Spend'

WHEN Total\_Spend BETWEEN 100 AND 500 THEN 'Medium Spend'

ELSE 'High Spend'

END AS Spend\_Segment,

COUNT(\*) AS Number\_of\_Customers

FROM

Customer\_Spend

GROUP BY

Age\_Segment, Spend\_Segment;

### **9. Impact of Promotions on Sales**

Evaluating the impact of promotions on sales helps in understanding which promotions are most effective in driving sales.

**Insight:**

* **Effective Promotions**: Identify promotions that lead to significant sales increases and replicate them in future campaigns.
* **Promotion Periods**: Determine the best times to run promotions based on historical data.

### **Query for Promotion Impact:**

SELECT

DATE\_FORMAT(`Order Date`, '%Y-%m') AS Month,

SUM(CASE WHEN `Unit Price USD` < `Unit Cost USD` THEN `Unit Price USD` \* Quantity ELSE 0 END) AS Discounted\_Sales,

SUM(`Unit Price USD` \* Quantity) AS Total\_Sales,

(SUM(CASE WHEN `Unit Price USD` < `Unit Cost USD` THEN `Unit Price USD` \* Quantity ELSE 0 END) / SUM(`Unit Price USD` \* Quantity)) \* 100 AS Discounted\_Sales\_Percentage

FROM

MergedData

GROUP BY

Month

ORDER BY

Month;

### **10. Product Movement Status**

Identifying slow-moving products helps in optimizing inventory management and making decisions about promotions or discontinuations.

**Insight:**

* **Slow-Moving Products**: Identify products with low sales volumes and consider promotional activities to boost sales or discontinuing them to reduce inventory costs.

### **Query for Slow-Moving Products:**

SELECT

`Product Name`,

SUM(Quantity) AS Total\_Quantity\_Sold,

COUNT(DISTINCT `Order Number`) AS Total\_Orders,

CASE

WHEN SUM(Quantity) < 50 THEN 'Slow-Moving'

ELSE 'Fast-Moving'

END AS Product\_Movement\_Status

FROM

MergedData

GROUP BY

`Product Name`

HAVING

Total\_Quantity\_Sold < 50

ORDER BY

Total\_Quantity\_Sold ASC;

### **11. Customer Retention Analysis**

Analyzing customer retention rates helps in understanding customer loyalty and the effectiveness of retention strategies.

#### **Insight:**

* **Customer Loyalty**: Identify loyal customers who make repeat purchases.
* **Retention Strategies**: Assess the effectiveness of current retention strategies and identify areas for improvement.

#### **Query for Customer Retention Analysis:**

WITH CustomerOrders AS (

SELECT

CustomerKey,

MIN(`Order Date`) AS FirstPurchase,

MAX(`Order Date`) AS LastPurchase,

COUNT(DISTINCT `Order Number`) AS TotalOrders

FROM

MergedData

GROUP BY

CustomerKey

)

SELECT

CustomerKey,

FirstPurchase,

LastPurchase,

TotalOrders,

CASE

WHEN DATEDIFF(CURDATE(), LastPurchase) <= 365 THEN 'Retained'

ELSE 'Churned'

END AS CustomerStatus

FROM

CustomerOrders;

### **12. Product Affinity Analysis**

Product affinity analysis helps in understanding which products are often bought together, aiding in cross-selling and upselling strategies.

#### **Insight:**

* **Cross-Selling Opportunities**: Identify products that are frequently bought together to create targeted marketing campaigns.
* **Product Bundling**: Develop effective product bundles to increase sales.

#### **Query for Product Affinity Analysis:**

WITH OrderProducts AS (

SELECT

`Order Number`,

`Product Name`

FROM

MergedData

),

ProductPairs AS (

SELECT

a.`Product Name` AS Product\_A,

b.`Product Name` AS Product\_B

FROM

OrderProducts a

JOIN OrderProducts b ON a.`Order Number` = b.`Order Number` AND a.`Product Name` != b.`Product Name`

)

SELECT

Product\_A,

Product\_B,

COUNT(\*) AS CoPurchaseFrequency

FROM

ProductPairs

GROUP BY

Product\_A, Product\_B

ORDER BY

CoPurchaseFrequency DESC

LIMIT 10;

### **13. Customer Lifetime Value (CLV) Analysis**

Calculating Customer Lifetime Value (CLV) helps in understanding the long-term value generated by customers, aiding in customer acquisition and retention strategies.

#### **Insight:**

* **High-Value Customers**: Identify high-value customers to focus retention efforts and personalized marketing.
* **Customer Acquisition**: Optimize acquisition strategies by targeting segments with higher CLV.

#### **Query for CLV Analysis:**

WITH CustomerSpend AS (

SELECT

CustomerKey,

SUM(`Unit Price USD` \* Quantity) AS TotalSpend,

COUNT(DISTINCT `Order Number`) AS TotalOrders,

MIN(`Order Date`) AS FirstOrderDate,

MAX(`Order Date`) AS LastOrderDate

FROM

MergedData

GROUP BY

CustomerKey

)

SELECT

CustomerKey,

TotalSpend,

TotalOrders,

ROUND(TotalSpend / TotalOrders, 2) AS AverageOrderValue,

ROUND(DATEDIFF(LastOrderDate, FirstOrderDate) / (TotalOrders - 1), 2) AS PurchaseFrequency,

ROUND(TotalSpend \* (DATEDIFF(CURDATE(), FirstOrderDate) / DATEDIFF(LastOrderDate, FirstOrderDate)), 2) AS CustomerLifetimeValue

FROM

CustomerSpend

WHERE

TotalOrders > 1;

### **14. Inventory Turnover Analysis**

Inventory turnover analysis helps in understanding the efficiency of inventory management and identifying slow-moving and fast-moving products.

#### **Insight:**

* **Inventory Efficiency**: Identify slow-moving products to optimize stock levels and reduce carrying costs.
* **Product Demand**: Understand product demand trends to make informed restocking decisions.

#### **Query for Inventory Turnover Analysis:**

SELECT

`Product Name`,

SUM(Quantity) AS TotalQuantitySold,

AVG(`Unit Cost USD`) AS AverageCost,

(SUM(Quantity) / AVG(`Square Meters`)) AS InventoryTurnoverRatio

FROM

MergedData

GROUP BY

`Product Name`

ORDER BY

InventoryTurnoverRatio DESC;

### **15. Sales Seasonality Analysis**

Analyzing sales seasonality helps in understanding sales trends over different periods, which can inform marketing campaigns and inventory management.

#### **Insight:**

* **Seasonal Trends**: Identify peak sales periods and plan promotions accordingly.
* **Inventory Management**: Optimize inventory levels to meet seasonal demand and avoid stockouts or overstocking.

#### **Query for Sales Seasonality Analysis:**

SELECT

DATE\_FORMAT(`Order Date`, '%Y-%m') AS Month,

SUM(`Unit Price USD` \* Quantity) AS Total\_Sales

FROM

MergedData

GROUP BY

DATE\_FORMAT(`Order Date`, '%Y-%m')

ORDER BY

Month;