Project Title

Data Spark: Illuminating Insights for Global Electronics

Problem Statement:

Global Electronics, a leading retailer of consumer electronics, has provided you with several datasets containing information about their customers, products, sales, stores, and currency exchange rates. The company seeks to leverage this data to better understand their business and identify areas for improvement.

As part of Global Electronics' data analytics team, Provide Exploratory Data Analysis (EDA) valuable insights from the company's data. Your goal is to provide actionable recommendations that can enhance customer satisfaction, optimize operations, and drive overall business growth.

Insights using SQL and Power-BI:

Removing and adding columns as necessary in the tables and preparing the database tables for Analysis.

Solution Approach:

Data Import and Initial Analysis:
Connecting SQL Database to Power BI:
Data Modelling and Relationship Creation:
Data Cleaning and Transformation:
Dashboard Creation - Key Insights:

STEPS FOR CLEANING DATA AND EDA;

- Import data from MySQL into Power BI.
- Create or establish relationships between tables using the model tab section in Power BI.
- Remove blank rows, columns and unnecessary columns in all the tables and also remove 0, and 1 in the sales amount column using the Power Query tool.
- The date column Change data type to date format.
- Add a new column option in the ribbon section, then go to the Date option and then select the Year option. So Year column has been added
- There are various null values, errors and missing values in the columns which can be deleted using various options in Power BI

Data Visualization using Power BI dashboard:

- High revenue earned from Male customers
- Highest Revenue earned from the product WWI Desktop
- Most liked brand from the customer's perspective is Contosco brand
- Highest number of customers from North America Continent
- United states own highest stores
- Highest product ordered – Computers
- Highest revenue earned from the age group Senior citizen
- While comparing overall performance on monthly basis, December owns high order count-
  April month with less order count
- Toronto city owns high number of customers

Expected Outcome:

By implementing the above solution approach, would be able to provide the below assistance:

- Enhanced Data Analysis: The connection between the SQL database and Power BI enables real-time analysis of the sales trend. The solution provides users with the ability to explore and analyze data more effective.
- Improved Decision Making: The creation of the dashboards provide comprehensive view of the sales trend from different perspectives. This enables informed decision making, such as identifying profitable products, optimizing pricing strategies.
- Increased Efficiency: By utilizing Power BI's data transformation features, data cleaning and transformation tasks are streamlined. This saves time and effort, allowing users to focus more on analysing the data.
- Revenue Growth: With the ability to access key insights, analyze profitability, and monitor performance effectively, contributes to identifying growth opportunities and implementing effective strategies.

Data Analysis using SQL and PowerBI:

TotalRevenue by Gender

INSIGHT:	TotalRevenue by Gender Calculate the total revenue from gender
SQL Query:	SELECT c.Gender, SUM(s.Quantity * p.Unit_Price_USD) As TotalRevenue From sales_records s JOIN product_records p ON s.ProductKey = p.ProductKey JOIN customer_records c ON s.CustomerKey = c.CustomerKey GROUP BY c.Gender ORDER BY TotalRevenue DESC
INSIGHT PLOT:	55.75 M
MAXIMUM:	Sum of TotalRevenue
Recommendation:	This insights gives complete revenue performance by gender. Company should focus more on female consumers to increase the revenue. High revenue earned mostly from male customers.

Most liked Brand from Customers perspective

INSIGHT:	Calculate the highest brand sale
SQL Query:	SELECT p.Brand,p.Subcategory, (s.Quantity * p.Unit_Price_USD) AS TotalRevenue FROM sales_records s join product_records p on s.ProductKey = p.ProductKey join customer_records c on s.CustomerKey =c.CustomerKey group by p.Brand,p.Subcategory, s.Quantity, p.Unit_Price_USD order by TotalRevenue DESC;
INSIGHT PLOT:	Contosco Brand
MAXIMUM:	2.08M
Recommendation:	Most liked from customer perspective Contosco Brand, lowest level revenue from Tailspin Toys. Business should focus more on Tailspin toys and A.Datum

Store count by country

INSIGHT:	Calculate the highest store count
SQL Query:	select Country,State,count(All Square_Meters) from stores_records group by Country,State,Square_Meters;
INSIGHT PLOT:	United States
MAXIMUM:	24
Recommendation:	High level stores located in United states, Italy owns less number of stores.

Year wise Revenue trend

INSIGHT:	Revenue trend on each year
SQL Query:	select p.productKey, p.Product_Name, p.Unit_Price_USD, p.Unit_Cost_USD, s.Quantity, s.Order_Date, sum(s.Quantity * p.Unit_Price_USD) as Totalrevenue FROM product_records p inner join sales_records s on p.productKey =s.productKey group by p.productKey, p.Product_Name, p.Unit_Price_USD, p.Unit_Cost_USD, s.Quantity, s.Order_Date;
INSIGHT PLOT:	2019 – 18.3M
MAXIMUM:	18.3M
Recommendation:	Focus more on upcoming year to increase the revenue trend , discuss with business people revenue of 2019 and why its lagging upcoming year.

Top 10 City, Gender wise customer count

Top 10 City, Gender wise customer count (Interesting fact is highest revenue from United states, but customer count high on Canada.If the business focus more on Canada city we can easily achieve the equal revenue lie United States)

INSIGHT:	Based on city and Gender finding customer count
SQL Query:	SELECT City,Gender, COUNT(*) AS customer_count from customer_records AS Count group by City,Gender order by customer_count DESC;
INSIGHT PLOT:	Toronto
MAXIMUM:	104
Recommendation:	More customers buying product from Toronto city, Interesting fact is highest revenue from United states, but customer count high on Canada

Country and continent wise customer count

INSIGHT:	Based on country and Continent finding customer count
SQL Query:	select Continent,Country,State,City, Count(CustomerKey) As Customer_count from customer_records group by Continent,Country,State,City order by Customer_count DESC
INSIGHT PLOT:	North America
MAXIMUM:	6828
Recommendation:	By referering 5th plot, we recommended that we should focus more on Canada to improve revenue. Being United states and Canada both are belong to North America continent. Hence it will be easy for us to improve our marketing strategy better business growth.

Highest quantity ordered product

INSIGHT:	Calculating the sum of highest quantity ordered product category
SQL Query:	select Product_Name,Category,Unit_Cost_USD, Unit_Price_USD, Quantity,(p.Unit_Price_USD * s. Quantity) as TotalRevenue from sales_records as s join product_records as p on s.ProductKey = p.ProductKey order by TotalRevenue DESC;
INSIGHT PLOT:	Computers
MAXIMUM:	44151
Recommendation:	Being rapid growth in technology , People buying more computers, possibilities with equal proportion to achieve cellphones as well.

Top 10 Revenue product Name

INSIGHT:	Calculating the highest revenue ordered product name
SQL Query:	select p.Product_Name, Unit_Price_USD, s.Quantity, sum(p.Unit_Price_USD * s. Quantity) as TotalRevenue from sales_records s join product_records as p on s.ProductKey = p.ProductKey join customer_records c on c.CustomerKey = s.CustomerKey group by Product_Name,Unit_Price_USD, s.Quantity order by TotalRevenue DESC;
INSIGHT PLOT:	WWI Desktop Black
MAXIMUM:	505.45K
Recommendation:	Out of the top 10 maximum number of 7 highest revenue from desktop(different colours), Business should focus more on LCD tvs and Water heater as well. There are possibilities to achieve the top 10

Shopping behaviour based on Age group

INSIGHT:	finding the shopping behaviour based on Age group
SQL Query:	select p.Product_Name, Brand, c.Age,c.AgeGroup,Category from product_records as p inner join sales_records as s on p. ProductKey =s.ProductKey inner join customer_records as c on c.CustomerKey = s.CustomerKey;
INSIGHT PLOT:	Senior Citizen
MAXIMUM:	5955
Recommendation:	There was huge order from senior citizen Age group . Hence business should focus more on senior citizen age groups to increase revenue on other region.

Month wise order performance

INSIGHT:	Calculating month wise performance of ordered count
SQL Query:	select p.productKey, p.Product_Name, p.Unit_Price_USD, p.Unit_Cost_USD,s.Quantity,s.Order_Date, sum(s.Quantity * p.Unit_Price_USD) as Totalrevenue FROM product_records p inner join sales_records s on p.productKey =s.productKey group by p.productKey, p.Product_Name,p.Unit_Price_USD, p.Unit_Cost_USD,s.Quantity,s.Order_Date;
INSIGHT PLOT:	December
MAXIMUM:	8655
Recommendation:	Over all December month maximum number of order count received. Hence every year pre-planned with availability of products and ensure it has been delivered on time.

Conclusion:

- Based on over all dashboard analysis , It has been found that business should focus more on month wise revenue, During December month Customers order huge number quantity of product. Sustain the level of order for the following year, Hence product availability should be maintained.
- While checking the maximum order from the agegroup category, Senior citizen contributed more. Hence the business should focus on middle age as well to increase the order value.
- Out of top 10 , first 7 products gives high revenue from the Product - desktop, Not much difference for LCD and Water heater. If the business Improve the marketing strategy for other two products.
- Being rapid growth in technology world, there is huge demand for computers, Top level revenue from Computers. There is a equal proportion to bring the revenue of cell phones as top1.
- Interesting fact is highest revenue from United states, but customer count is high on Canada. If the business focus more on Canada city we can easily achieve the equal revenue like United States. Both U.S and Canada belongs to North America continent.