

Global Electronics Data Analysis Project

Project Overview

This project focuses on analyzing Global Electronics' customer, product, sales, and store data to derive key insights that will help enhance marketing strategies, optimize inventory management, and improve sales forecasting. The project involves data cleaning and preparation, database creation, and interactive dashboard development using Power BI.

Project Workflow

1. Data Collection

- **Source Files:**
 - CSV Files: `sales.csv`, `customers.csv`, `products.csv`, `stores.csv`, `exchange_rates.csv`

2. Data Cleaning and Preparation

- **Steps Performed:**
 - Checked for missing values and handled them appropriately.
 - Converted data types for consistency (e.g., date columns, numerical fields).
 - Ensured data integrity and accuracy before loading into the database.

3. Database Creation

- **Database:**
 - Created a MySQL database dataspark with relevant tables (`sales`, `customers`, `products`, `stores`, `exchange_rates`).
 - Imported the cleaned and pre-processed data into the respective tables.
 - Defined relationships between tables to facilitate query execution.
- **Star Schema:**
 - **Fact Table:** `sales`
 - **Dimension Tables:** `products`, `customers`, `exchange_rates`, `stores`

4. SQL Queries

- **Key Queries:**
 - Customer Analysis: Analyze customers based on gender, age, location.
 - Sales Trends Analysis: Analyze sales performance over time.
 - Product Performance: Evaluate top-selling products and profitability.
 - Store Performance: Analyze store sales and regional performance.

5. Power BI Dashboard Creation

- **Steps Performed:**
 1. **Data Import:**

- Imported data from MySQL database into Power BI.
- Ensured that relationships between tables were correctly defined in the Model view.

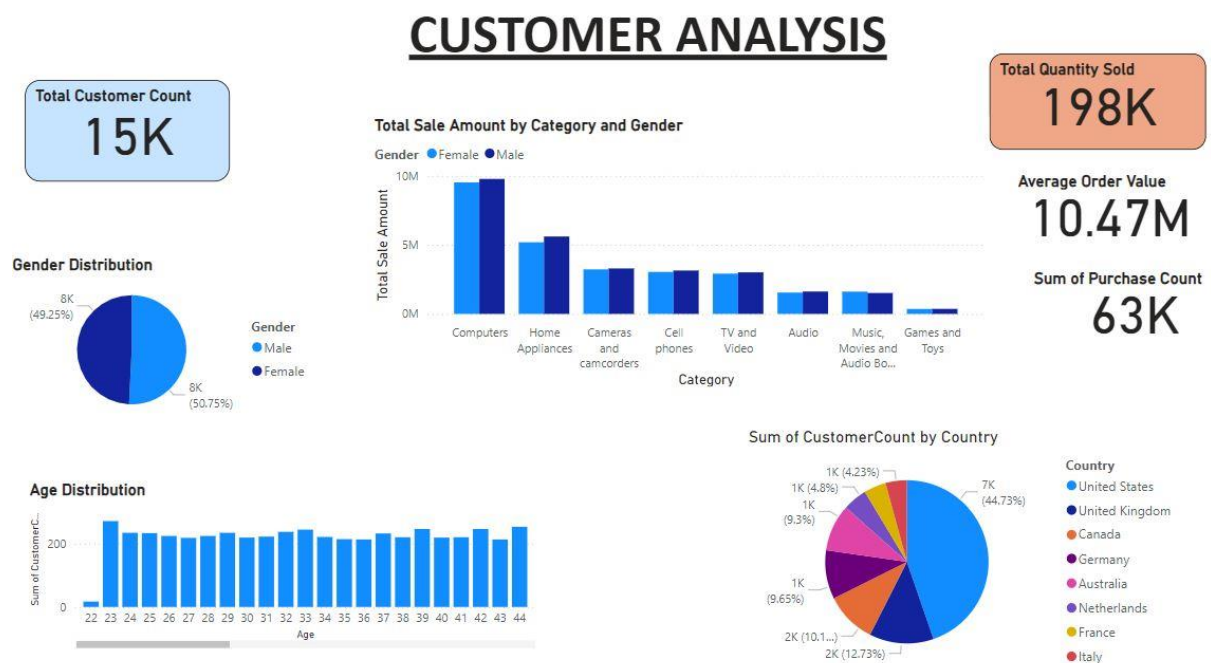
2. Visualization Creation:

- Created key visualizations such as bar charts, line charts, pie charts, and maps to represent the data.

• Example Visualizations:

- **Customer Analysis:** Pie chart showing customer distribution by country.
- **Sales Analysis:** Line chart displaying sales trends over time.
- **Product Analysis:** Pie chart for top 5 best-selling products.
- **Store Analysis:** Map visualization of sales performance by region.

Power BI Visualization

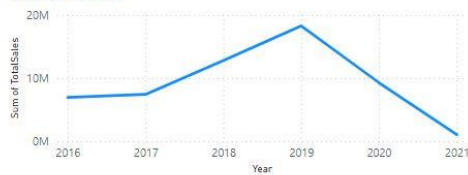


Total Sale Amount
55.76M

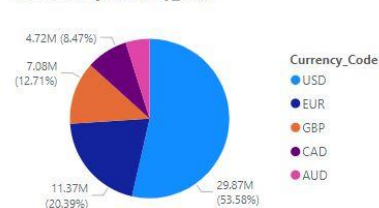
SALES ANALYSIS

Total Profit Amount
32.66M

Sales over time



TotalSales by Currency_Code



Sales per Square Meter

0.70

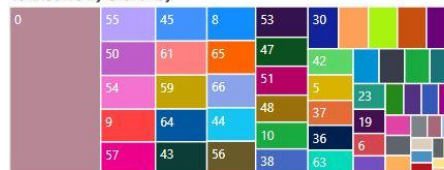
Sales per Square Meter

0.70

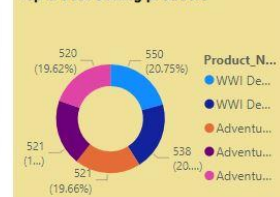
Sales by Country



TotalSales by StoreKey

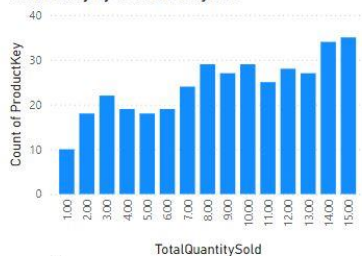


Top 5 best selling products



PRODUCT ANALYSIS

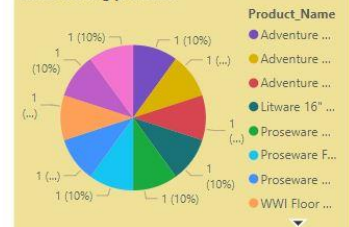
ProductKey by TotalQuantitySold



Total Sale Amount by Category



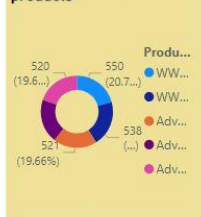
Least selling products



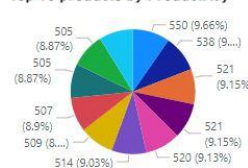
Count of ProductKey by TotalProfit



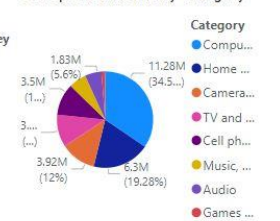
Top 5 best selling products



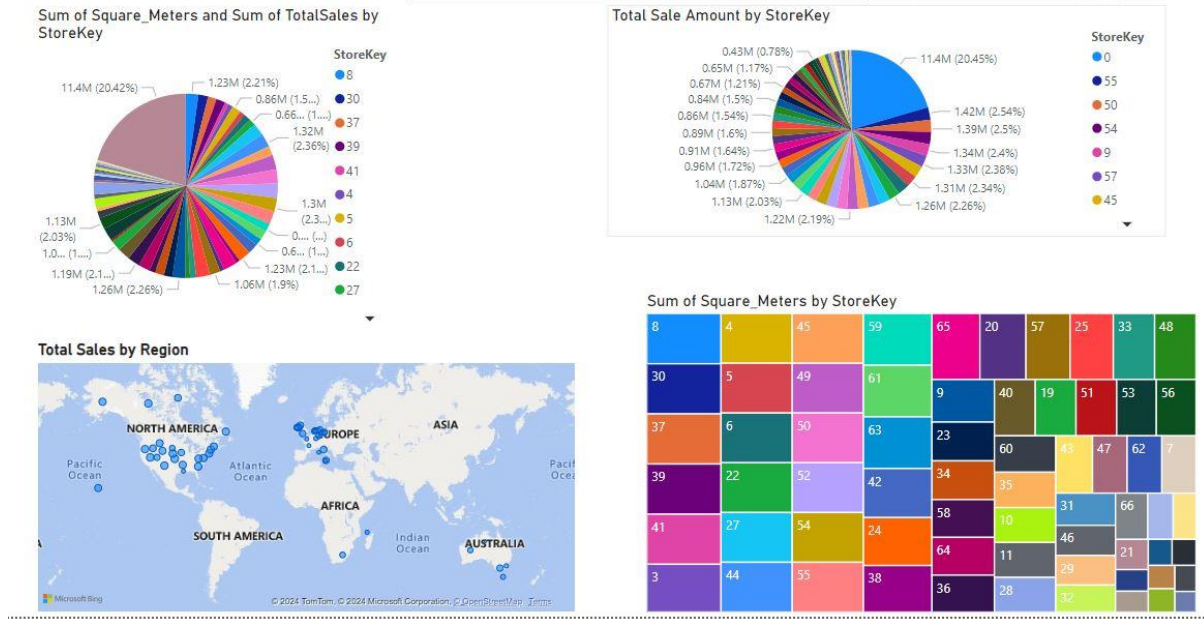
Top 10 products by ProductKey



Total profit Amount by Category



STORE ANALYSIS



Tools and Technologies Used

- **Python & Pandas:** For data cleaning and preparation.
- **MySQL:** For database management.
- **Power BI:** For creating interactive dashboards.
- **Excel:** For initial data exploration and analysis.

Installation and Setup

Prerequisites

- MySQL Workbench
- Power BI Desktop
- Python (with Pandas and MySQL)

Steps

1. Clone the Repository:

```
bash
Copy code
git clone https://github.com/Shabanabacker/globalelectronics-data-analysis.git
```

2. Set Up the MySQL Database:

- Create a new database in MySQL.
- Import the SQL scripts provided in the `sql/` folder to create the necessary tables.
- Insert the preprocessed data into the tables.

3. Power BI Setup:

- Open Power BI Desktop.
- Connect to the MySQL database and import the required tables.
- Create relationships between the tables in the Model view.
- Design visualizations in the Report view.

Repository Structure

```
bash
Copy code
globalelectronics-data-analysis/
├── data/
│   ├── raw/                # Raw data files (CSVs)
│   └── processed/          # Cleaned and preprocessed data
├── notebooks/
│   └── dataspark.ipynb     # Jupyter notebook for data cleaning and
preprocessing, sql table creation and insert data into mysql database
├── reports/
│   └── dataspark_insight.pbix # Power BI dashboard file
├── README.md
└── Global_Electronics_Data_Analysis_Project.pdf # Project Documentation
```

Conclusion

This project demonstrates how effective data analysis and visualization can uncover valuable insights that drive better business decisions. By analyzing customer demographics, sales trends, and store performance, Global Electronics can optimize their strategies and achieve sustainable growth.