

# Online Retail Analytics



- Samruddhi Pawar

## Introduction

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The **Tata Group** is an Indian multinational conglomerate headquartered in Mumbai. Established in 1868, it is India's largest conglomerate, with products and services in over 150 countries, and operations in 100 countries across six continents.

As the boundaries between physical and virtual workplaces continue to blur, adapting to a digital internship is both a challenge and an opportunity. I anticipate gaining not only industry-specific knowledge but also honing my remote collaboration skills, an invaluable asset in today's professional landscape. Tata Group's commitment to mentorship and learning aligns seamlessly with my aspirations for continuous personal and professional development.

### Task1: Framing Business Scenarios

In my role as the hired consultant, I drafted a set of questions that were deemed important and relevant to both the CEO and CMO. This set consisted of four questions for each business leader, taking into account their distinct perspectives on business decisions. The objective was to address inquiries that each leader was likely to pose and to provide insightful answers.

I also reviewed the data to figure out how well the online store did before. The goal was to help plan for the past year and guide the things the company did to grow. The idea was to give the leaders good information so they could make smart choices and keep the company doing well.

#### a) Questions for the CEO (Operations Perspective):

1. What is the trend in revenue and profitability over the past year, and how does it correlate with the quantity of products sold and the unit price?
2. Can you provide an overview of our top-selling products (StockCode) and their contribution to our overall revenue?
3. How have our sales and customer acquisition rates varied across different countries, and are there opportunities for international expansion?
4. What is the overall customer satisfaction level, and how do returns or quantity issues affect it? Are there any patterns in returns that need attention?

#### b) Questions for the CMO (Marketing Perspective):

1. Which marketing campaigns have been the most successful in terms of driving sales, and what specific StockCodes or product categories benefited the most?
2. How can we leverage customer demographics and past purchase history to target personalized marketing campaigns effectively?
3. Can you provide insights into the impact of seasonality on our sales, and how can marketing strategies be adjusted to capitalize on seasonal trends?

4. Are there correlations between the timing of invoices (InvoiceDate) and sales trends, and if so, how can we optimize our marketing efforts accordingly?

### **Task2: Choosing the Right Visuals.**

I was given the second task, which involves carefully reading and understanding questions related to business requirements. The objective is to comprehend the perspectives of the CEO and CMO, and subsequently, create the perfect visual representation that aligns with their expectations in each scenario.

It's essential to select the most appropriate visual format from various chart types available, keeping in mind the effective presentation of information. Resources were provided to guide the selection process based on different business scenarios.

### **Task3: Creating Effective Visuals:**

Following a recent meeting, the CEO and CMO outlined their requirements and tasked me with providing insightful analysis and visuals to inform their strategic decision-making. Their primary focus is on leveraging data to formulate a comprehensive expansion strategy for the online retail store. Specifically, they are keen on understanding trends and dissecting revenue distribution across various categories.

Upon understanding their needs, the initial step involved meticulous data quality assurance to ensure integrity and reliability. Subsequently, the process moved to the creation of visual representations, utilizing either Tableau or Power BI, with an emphasis on consistency in outcomes. The goal is to give the executive leaders insights so they can make good decisions and make the online store grow.

### **Data Collection.**

Dataset was provided by TATA company.

### **Data Cleanup.**

I used Excel to clean my data.

To ensure that unit prices do not fall below \$0, I opted for the data filtering method. I selected the "UnitPrice" column, went to the "Data" tab in the Excel ribbon, and clicked on the "Filter" button. This added filter drop-down arrows to the column header. After clicking the filter drop-down arrow in the "UnitPrice" column, I selected "Number Filters," then chose "Greater Than or Equal To." I entered "0" as the filter value and clicked "OK." This filtered the data to display only unit prices that are greater than or equal to \$0.

### **Visualizing Data using Tableau.**

Tableau is a powerful tool for creating data visualizations. Here's a step-by-step guide to creating visuals for each of the four questions in Tableau:

## Step 1: Creating a Calculated Field

I opened the Tableau workbook. In the “Data” pane on the left, I right-clicked on my data source and selected “Create Calculated Field.” In the calculation editor that appeared, I created a new calculated field and named it “Revenue.” I then entered the formula to calculate revenue in the calculation editor. Revenue is typically calculated as the product of the “Quantity” and “UnitPrice.” The formula should be:

`SUM([Quantity] * [UnitPrice]).`

The formula above multiplies the "Quantity" and "UnitPrice" for each row and sums up the results to calculate revenue.

## Question 1: Time Series Revenue for 2011

### Creating the Time Series Chart

After creating the “Revenue” calculated field, I proceeded to create the time series chart:

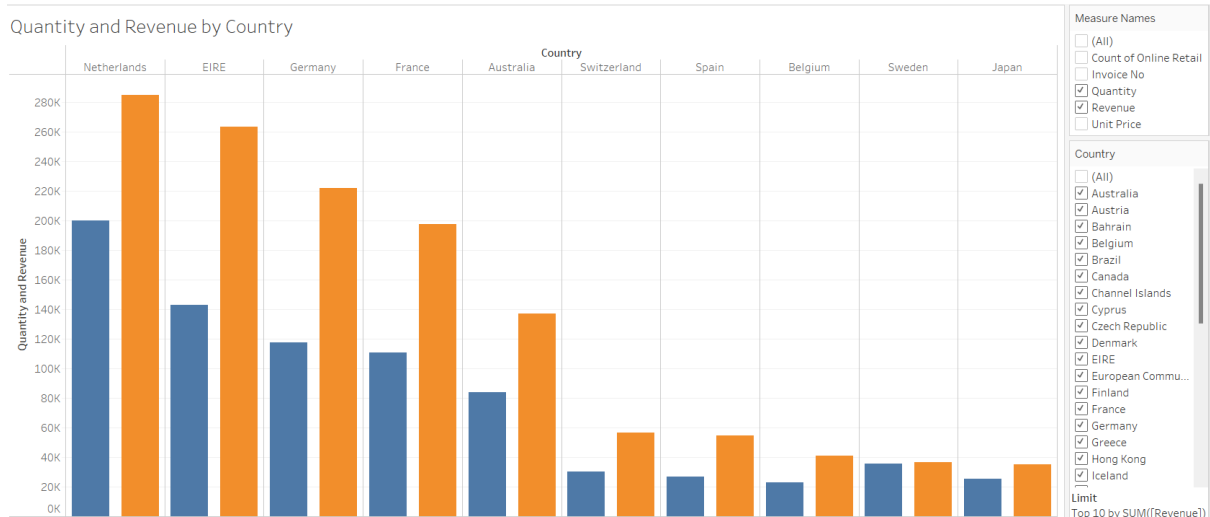
I dragged the “InvoiceDate” field to the Columns shelf. I then right-clicked on “InvoiceDate,” selected “Month,” and dragged it to the Columns shelf. This step ensures that the data is displayed at a monthly level.

Next, I dragged the “Revenue” calculated field to the Rows shelf. You should see a time series chart with revenue data for each month in 2011.



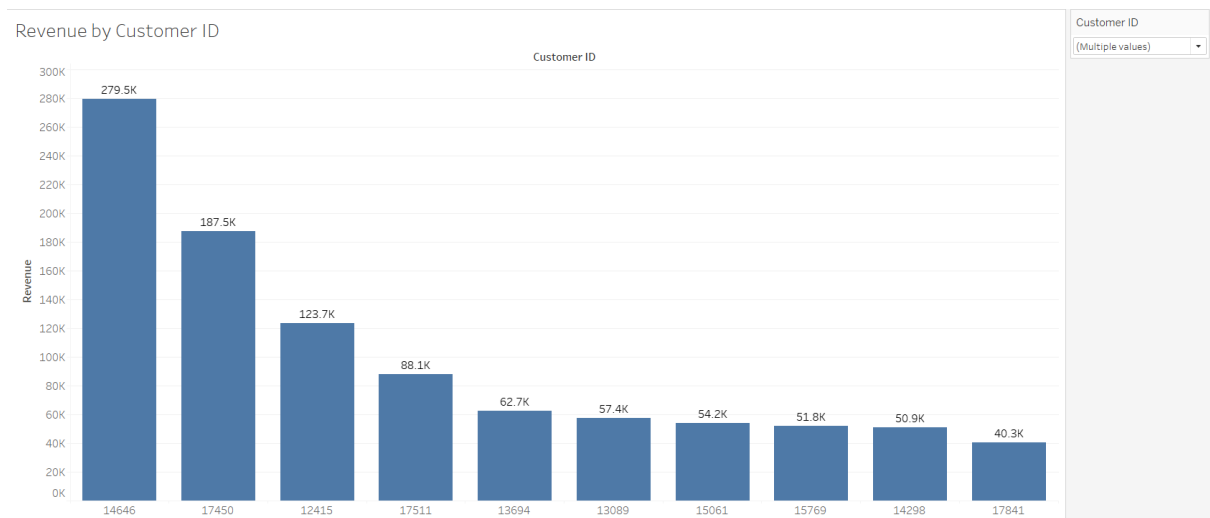
## Question 2: Top 10 Revenue-Generating Countries (Excluding the UK)

I created a new worksheet. I dragged the “Country” field to the Rows shelf and the “Revenue” field to the Columns shelf. I applied a filter to exclude the United Kingdom. Additionally, I dragged the “Quantity Sold” field to the Label shelf to display quantity along with revenue. I sorted the chart in descending order of revenue and limited it to the top 10 countries. Lastly, I customized the chart, adding titles and labels as needed.



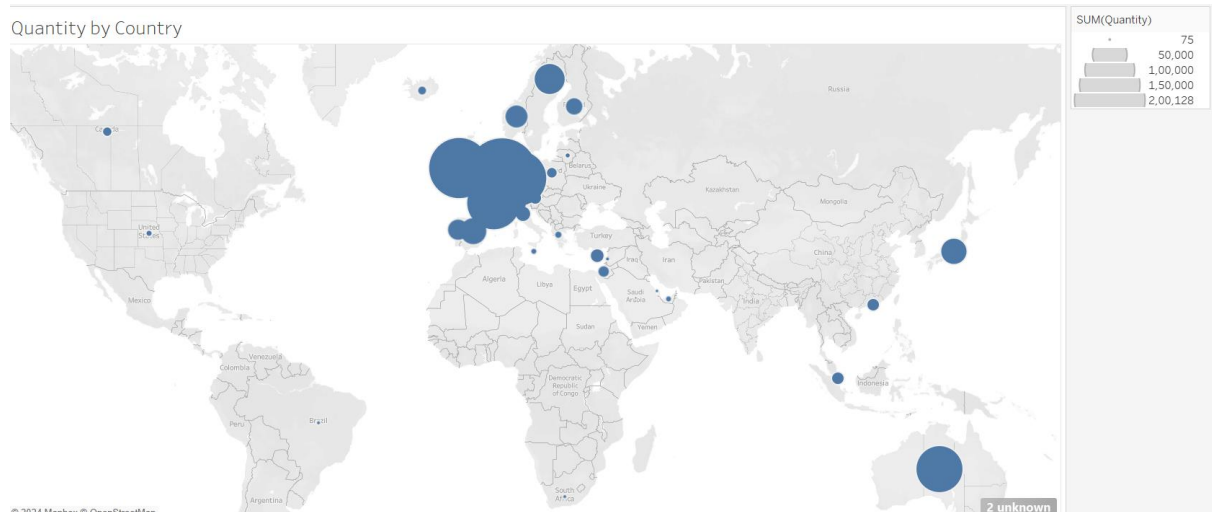
### Question 3: Top 10 Customers by Revenue

I created a new worksheet. dragged the “CustomerID” field to the Rows shelf and the “Revenue” field to the Columns shelf. I sorted the chart in descending order of revenue to display the top 10 customers. Finally, I customized the chart, adding titles and labels as needed.



### Question 4: Demand for Products by Region

I created a new worksheet. I created a map by dragging a geographic dimension (e.g., “Country”) to the Rows shelf. I dragged the “Demand” field to the Color shelf to represent the demand with colors. I applied a filter to exclude the United Kingdom. Lastly, I customized the map, added a legend and provided a title.



## Insights

### 1. Overall Growth:

The year 2011, sees a steady increase in revenue, culminating in a substantial growth of 65.9% from January to December.

### 2. Seasonal Trends:

- The highest revenue month is December with \$1,269,000, which is approximately 19.5% higher than the second-highest month, November (\$1,160,000).
- The lowest revenue month is February with \$451,000, contributes only 6.9% to the total yearly revenue. showing a decrease of about 31% compared to the highest revenue month.

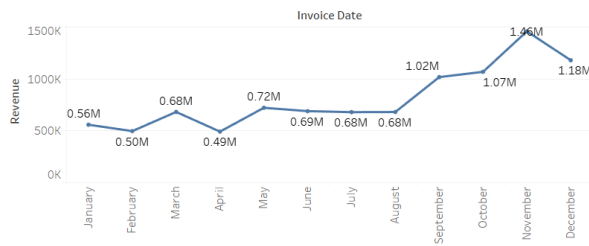
### 3. High-Performing Months:

- The top three revenue-generating months (October, November, and December) collectively contribute about 43.7% of the total yearly revenue.
- December alone contributes approximately 19.7% to the total yearly revenue.

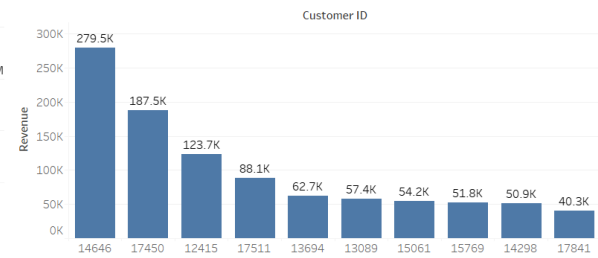
### 4. Monthly Fluctuations:

- While overall revenue increases consistently throughout the year, June and July show minimal fluctuations, indicating relative stability during the summer months.

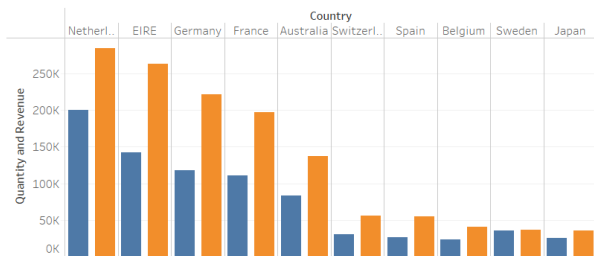
Revenue by Month



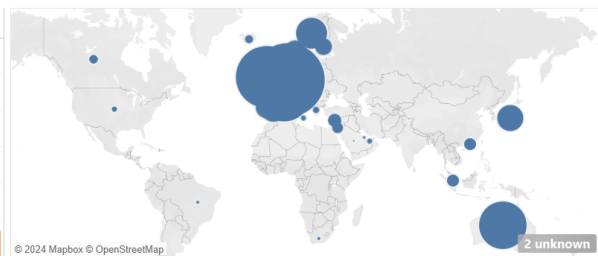
Revenue by Customer ID



Quantity and Revenue by Country



Quantity by Country



## Conclusion and Recommendation

- Capitalizing on Peak Months:** Leverage the high-performing months, especially October, November, and December, by implementing targeted marketing campaigns and promotions to maximize sales during these periods.
- Addressing Low-Performing Months:** For the traditionally low-performing month of February, consider implementing specific strategies such as promotional events or discounts to stimulate sales and counteract the seasonal dip.
- Enhancing Summer Strategies:** Given the marginal fluctuations in revenue during June and July, explore strategies to boost summer sales. This could involve seasonal promotions or introducing new products to capture customer interest.
- Customer Engagement Strategies:** Develop customer engagement strategies, loyalty programs, or exclusive offers to sustain and potentially boost revenue during traditionally low-performing months.
- Pricing Strategy Optimization:** Explore opportunities to optimize pricing strategies, especially in markets where revenue is higher relative to quantity, like Eire.
- Explore Emerging Markets:** Investigate and invest in potential growth markets, especially in regions like Spain and Portugal, where there is room for market development.