Data Visualization: Empowering Business with Effective Insights

A **Tata Group Data Visualization Virtual Internship** offered through Forage

Presenting to you by:

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April 2025.

About the Company

The company is an **online retail store** that has shown strong business performance in recent times. As it looks ahead, the **leadership team**—including the **CEO and CMO**—is seeking **data-driven insights** to understand the **key factors contributing to revenue growth**. Their focus is on evaluating the business from both **operational and marketing perspectives**, with an emphasis on identifying **high-performing areas**, understanding **customer demographics**, and uncovering **opportunities for strategic expansion**. The company values informed decision-making and aims to leverage analytics to shape its growth strategy for the coming year.

A Dataset consists of retail transactions from 2011 is made available to analyze and find insights

Understanding Business Performance for Strategic Growth

Content:

The online retail store aims to evaluate current business performance to:

- Identify **key revenue drivers** and **high-performing areas**.

- Gain insights through both **operational** and **marketing** perspectives.

- Analyze customer **demographic data** to uncover growth opportunities.

- Make **data-driven decisions** for future **strategic expansion**.

The goal is to present actionable insights that support leadership-level decision-making for continued success.

Anticipating Leadership Questions

Content:

As a consultant, my first task was to anticipate the kinds of questions the **CEO** and **CMO** would ask based on the dataset provided.

These questions helped shape the analytical approach and ensure alignment with leadership priorities.

CEO Oriented Questions:

1. What are the top 3 countries contributing the highest revenue?
2. Which products have generated the maximum sales value?
3. How has monthly revenue trended over the past year?
4. Which customers made the highest value purchases?

CMO Oriented Questions:

1. Which products are most frequently bought by the customers?
2. What time of year does customers purchase the most?
3. Which country has the highest customer base?
4. What is the average quantity per purchase for popular products?

Creating effective visuals for strategic insights

Content:

In this task, I acted as a **data visualization consultant** for the senior leadership of the online retail store.

My responsibilities included:

- Understanding the **specific analytical needs** of the CEO and CMO.

- Reviewing business scenarios and identifying **key performance metrics**.

- Selecting the **most appropriate visualizations** (charts, graphs, dashboards) that clearly communicate the insights.

- Ensuring that the visuals are simple, accurate, and aligned with **strategic business decisions**.

The focus was on delivering **clear, actionable visual insights** that would support **operational evaluation, marketing analysis**, and guide **future growth decisions**.

Delivering visual insights for strategic decision making

Content:

As part of the Tata Forage Data Visualization Internship, I worked on delivering targeted insights for both the CEO and CMO of an online retail store.

The goal was to provide **data-driven visuals** to support the company's **expansion strategy** and **performance evaluation**.

Key Steps Taken:

Requirement Gathering from the CEO and CMO to understand their business goals

Data Cleaning using logic checks:

- Removed records with **negative quantities** and **unit prices below $0**

Created Visuals in Tableau for four business questions:

- **Q1 (CEO)** – Time Series Analysis of Monthly Revenue in 2011 (to detect trends & seasonality)
- **Q2 (CMO)** – Top 10 Revenue-Generating Countries (excluding UK) with Quantity Sold
- **Q3 (CMO)** – Top 10 Customers by Revenue (descending order to highlight top buyers)
- **Q4 (CEO)** – Country-wise Product Demand (excluding UK) in a single-page view for expansion insights
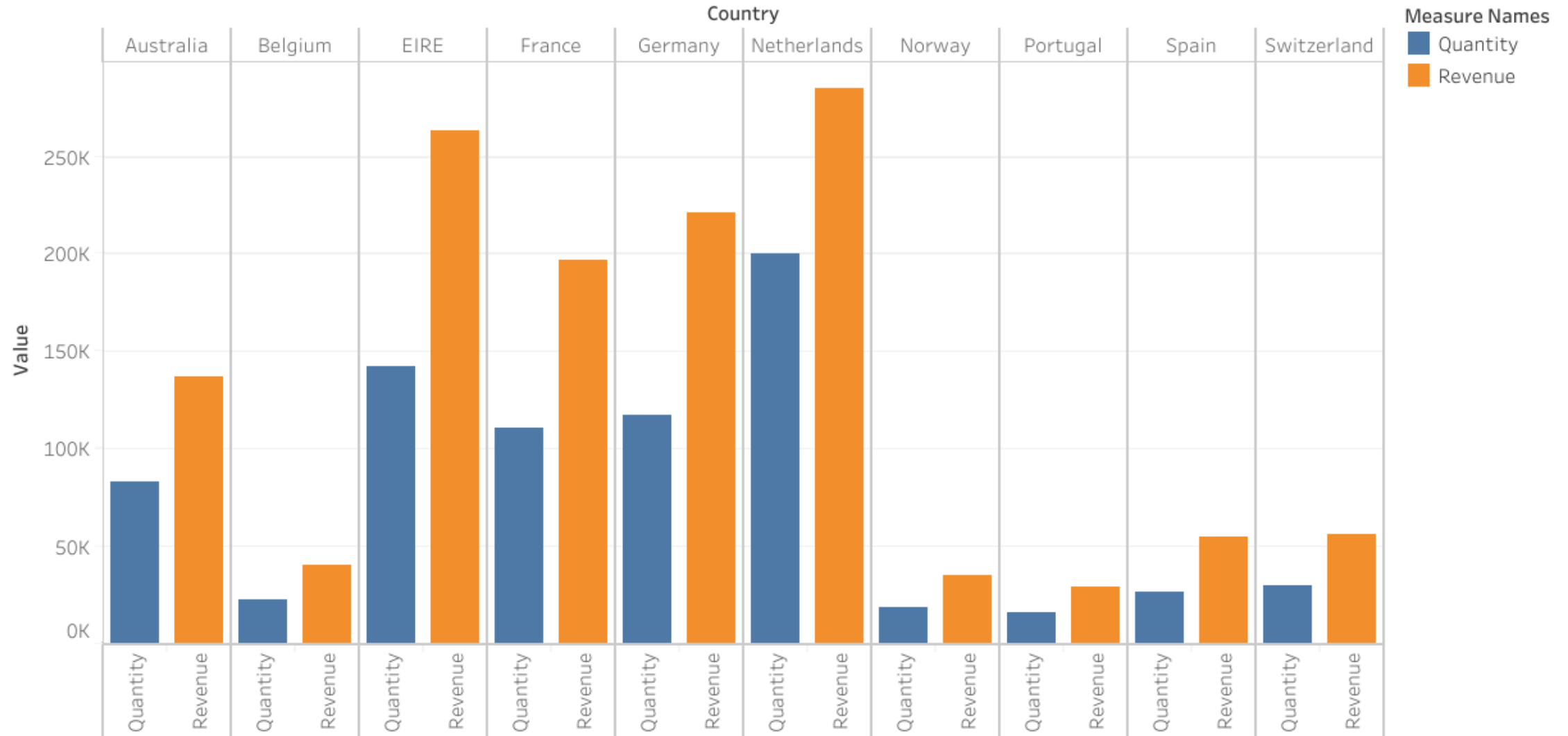
The visuals are as follows:

Time Series Analysis of Monthly Revenue in 2011

Revenue for the year 2011
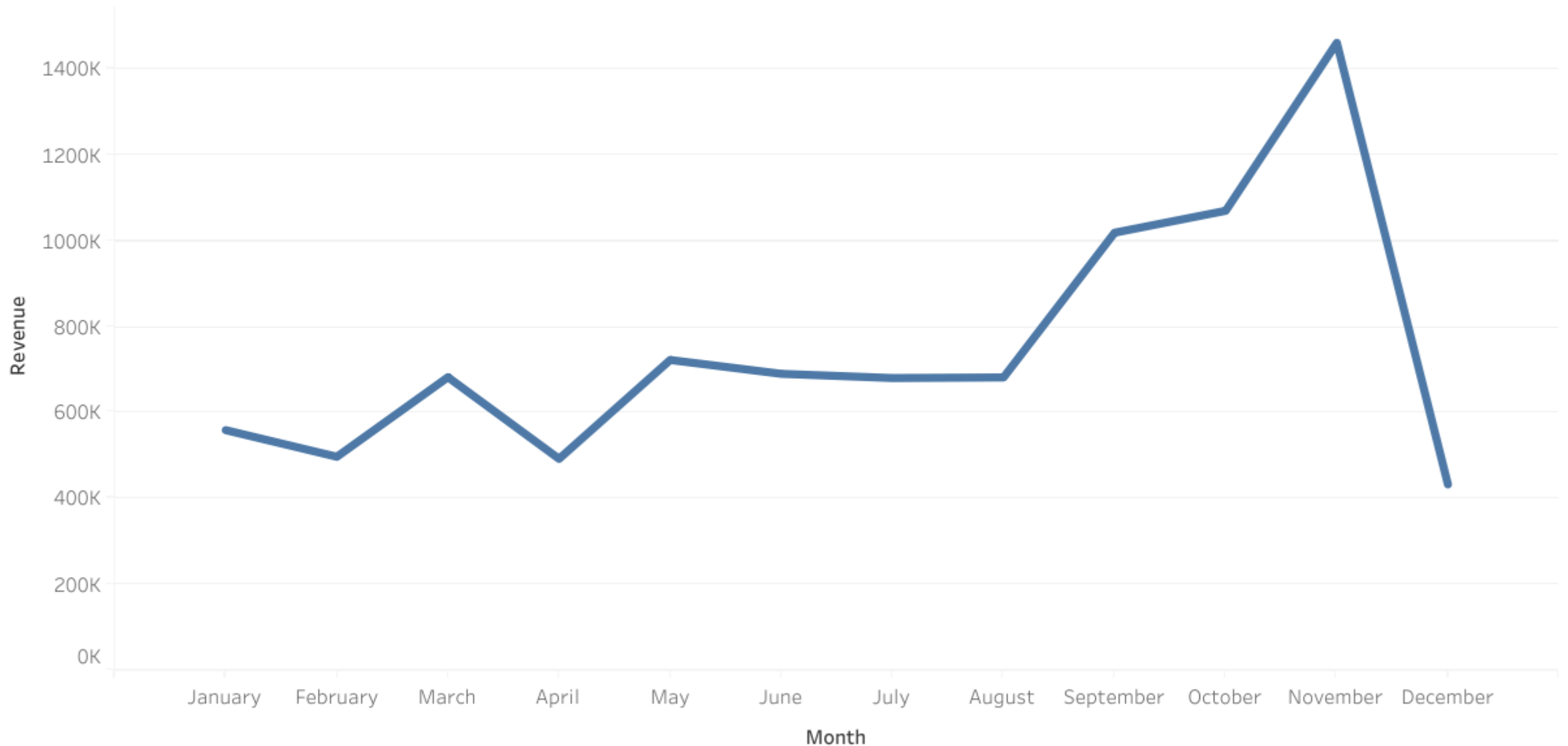
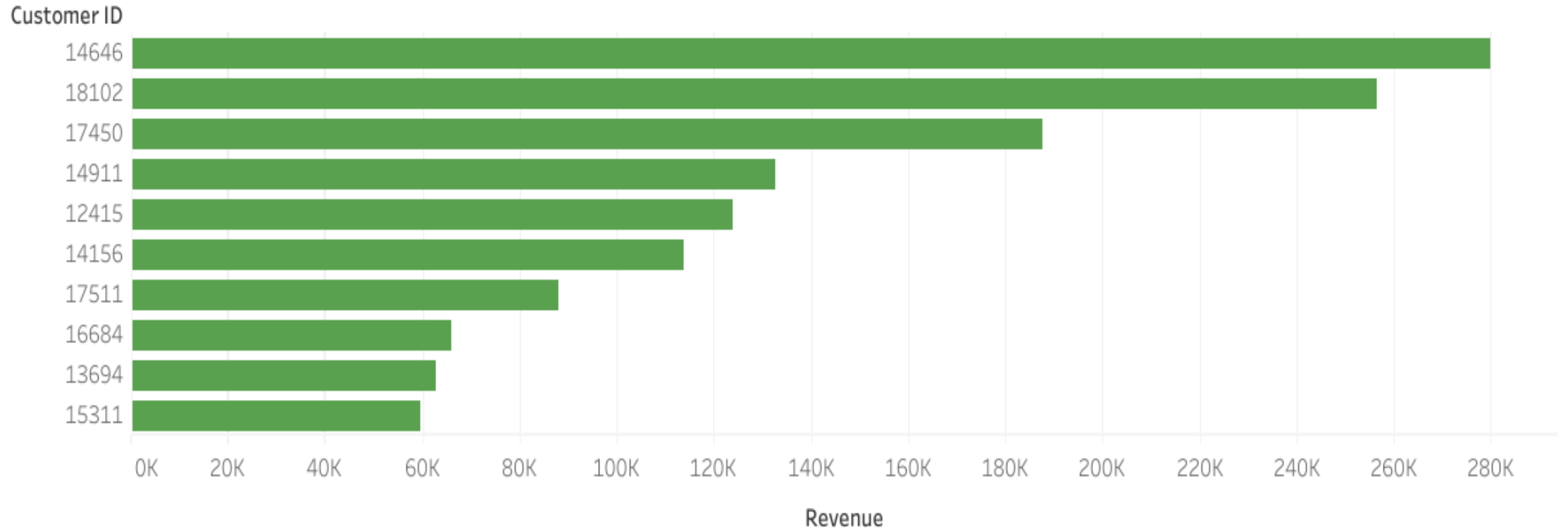# Top 10 Revenue-Generating Countries (excluding UK) with Quantity Sold

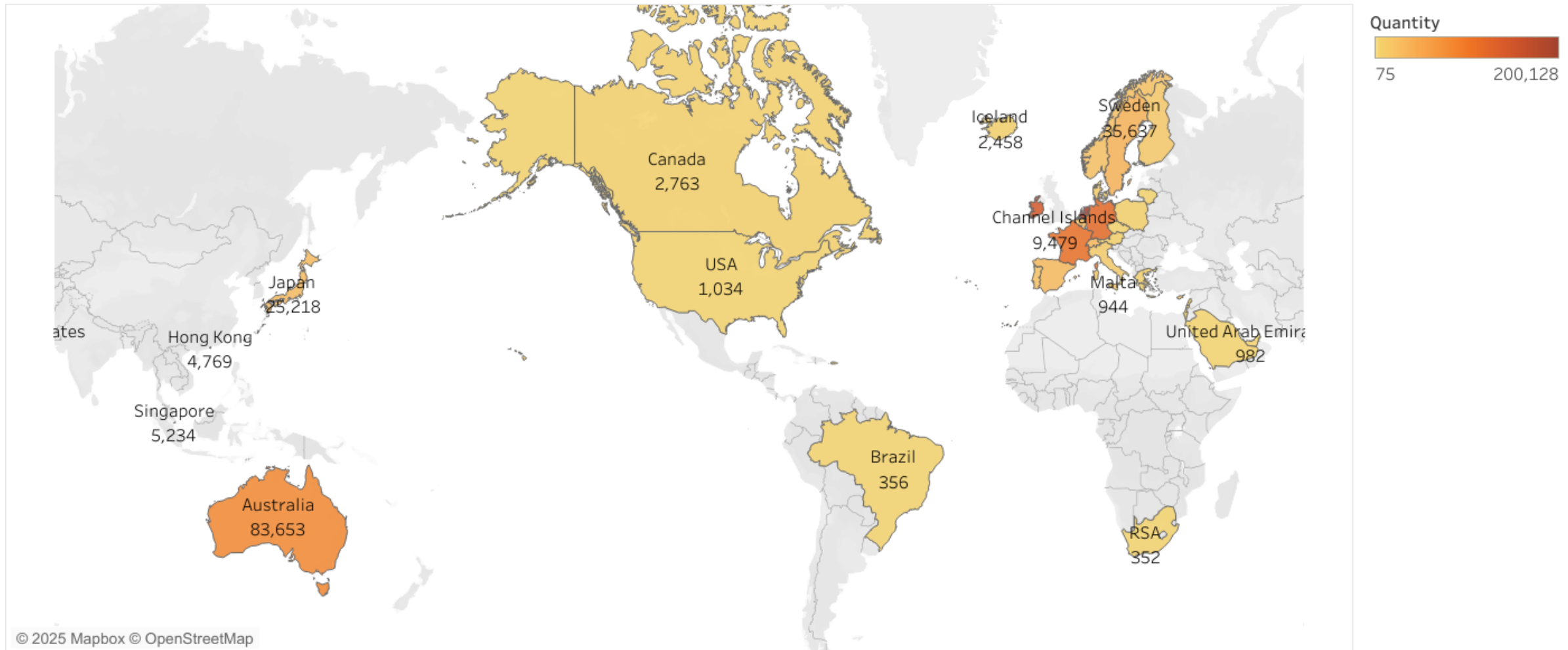Top 10 Countries generating highest Revenue along with Quantity sold

Top 10 Customers by Revenue (descending order to highlight top buyers)

Top 10 Customers by Revenue

Country-wise Product Demand (excluding UK) in a single-page view for expansion insights

Demand for the Products based on different Regions

Quantity
75   200,128

Iceland 2,458
Sweden 35,637
Canada 2,763
Channel Islands 9,479
Japan 25,218
USA 1,034
Malta 944
Hong Kong 4,769
United Arab Emira 982
Singapore 5,234
Brazil 356
Australia 83,653
RSA 352

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Executive level Insights from Data Visualizations

Q1 – Monthly Revenue Trends (2011)

- Revenue fluctuated monthly, showing **clear seasonality**.

- **Peak revenue months** likely align with **festive or holiday seasons**.

- A noticeable **spike in Q4** suggests increased year-end demand, important for future forecasting and inventory planning.

Q2 – Top 10 Countries by Revenue (Excluding UK)

- Countries such as **Netherlands, Germany, France, and Australia** emerge as **top performers** outside the UK.

- High revenue aligns with **higher quantities sold**, indicating **strong market engagement**.

- These countries are **key candidates** for expansion and targeted marketing campaigns.

Q3 – Top 10 Customers by Revenue

- A few customers contribute to a **large share of revenue** (Pareto Principle).

- Ensuring **customer retention strategies** for these high-value customers is critical.

- These customers could be ideal targets for **loyalty programs** and **personalized engagement**.

Q4 – Global Demand by Country (Excluding UK)

- **Demand is widely spread**, but **specific regions (e.g., Germany, France, Netherlands)** show concentrated high demand.

- Visual clarity without needing interaction helps **identify strategic markets instantly**.

- These regions offer **clear opportunities for expansion**, both logistically and operationally.

Recommendations based on Data Insights

1. Leverage Seasonality for Revenue Growth

- Plan **targeted marketing campaigns** during high-revenue months (e.g., Q4).

- Optimize **inventory and supply chain** to meet seasonal spikes in demand.

2. Expand into High-Potential International Markets

- Focus on **top-performing countries** like Germany, France, Netherlands, and Australia.

- Consider **localized marketing strategies** and explore **regional partnerships**.

3. Retain High-Value Customers

- Launch **exclusive loyalty programs** and offer **priority support** to top 10 customers.

- Use personalized offers to **maximize customer lifetime value**.

4. Data-Driven Expansion Planning

- Use **country-level demand data** to guide geographic expansion.

- Prioritize regions with **consistent product demand and revenue contribution**.

5. Maintain Data Quality for Ongoing Reporting

- Regularly apply **data validation rules** to remove anomalies like negative values.

- Establish a **standardized data governance process** across systems.

Key Learnings- Tableau Experience

1. Data Cleaning & Preparation is Crucial

- Learned how to **filter out bad data** (e.g., negative quantities, invalid prices) using Tableau's **data transformation** features.

- Understood the importance of **clean inputs for accurate outputs**.

2. Selecting the Right Visual Matters

- Gained experience in choosing **appropriate charts** (e.g., bar charts, line graphs, maps) based on business needs.

- Learned how **visual choice impacts stakeholder understanding** and decision-making.

3. Effective Dashboard Design

- Learned how to create **clear, single-view dashboards** without requiring scrolling or interaction.

- Focused on visuals that allow **quick insight extraction** for executives.

4. Customizing Filters & Interactivity

- Explored Tableau's ability to apply **country filters, customer segments, and time series breakdowns**.

- Understood how to make dashboards more **user-friendly and flexible**.

5. Communicating Business Insights Visually

- Strengthened ability to **translate raw data into actionable business insights**.

- Practiced aligning visuals with **CEO/CMO perspectives** to support strategic goals.

Sahaja Reddy Sathi

Data Visualisation: Empowering Business with Effective Insights

Certificate of Completion

April 26th, 2025

Over the period of April 2025, Sahaja Reddy Sathi has completed practical tasks in:

Framing the Business Scenario
Choosing the Right Visuals
Creating Effective Visuals
Communicating Insights and Analysis

Tom Brunskill
CEO, Co-Founder of
Forage

Thank You