

Week 4 - Project: Business Intelligence Dashboard for TechHub Retail

Please write the report in the '**Project Coversheet**' and refer to the dataset provided for completing the tasks.

Deliverables

1. **Tableau Public Dashboard:** Published interactive dashboard with shareable URL
2. **PDF Report (max 1500 words):** Professional summary including key insights, dashboard screenshots, and business recommendations.

Business Scenario

You've joined the Business Intelligence Team at **TechHub Retail**, a rapidly growing UK-based online electronics retailer. With 18 months of expansion, the company lacks comprehensive analytics to guide strategic decisions for 2025 planning.

The **Chief Executive** has commissioned you to create an **executive dashboard** and present data-driven insights that will inform strategic planning decisions.

The business goals are:

- **Identify growth opportunities** across products, regions, and customer segments
- **Analyse performance trends** and seasonal patterns
- **Build predictive insights** for 2025 planning
- **Create actionable recommendations** for executive decision-making

This project will involve:

- Interactive dashboard creation using Tableau Public
- Executive-level business presentation

Dataset

TechHub_Sales_Data.csv - 18 months of sales transactions (Jan 2023 - June 2024):

Column Name	Description
order_date	Date of transaction
customer_id	Unique customer identifier
product_id	Product identifier
product_category	Electronics category (6 categories)
revenue	Sales revenue (£)
quantity	Items purchased
region	UK region
customer_acquisition_channel	Marketing channel

Dataset Size: 12,000+ transactions

TechHub_Customers.csv - Customer demographic and profile information:

Column Name	Description
customer_id	Unique customer identifier
signup_date	Customer registration date
age_group	Age demographic (18-25, 26-35, etc.)
gender	Customer gender
city	Customer city
customer_type	New or returning customer
loyalty_tier	Bronze, Silver, Gold

Dataset Size: 3,500+ unique customers

Supporting Dataset: TechHub_Products.csv - Product catalog with cost and margin information:

Column Name	Description
product_id	Product identifier
product_name	Product name
product_category	Category classification
cost_price	Product cost (£)
list_price	Retail price (£)
supplier	Product supplier
launch_date	Product launch date

Dataset Size: 300+ products

Tasks

1. Load & Transform Multiple Datasets

- **Connect all 3 datasets** to Tableau and create proper data relationships
- **Join/Blend datasets** using customer_id and product_id as linking keys
- **Data preparation tasks:**
 - Convert all date fields to proper date format and create date hierarchies
 - Check for missing values across all datasets and handle appropriately
 - Validate data relationships (ensure customer_ids and product_ids match across files)
- **Create calculated fields:** (Suggestions)
 - **Profit Amount** = [Revenue] - ([Cost Price] × [Quantity])
 - **Profit Margin %** = ([Profit Amount] / [Revenue]) × 100
 - **Customer Tenure Days** = DATEDIFF('day', [Signup Date], TODAY())
 - **Customer Lifetime Value** = SUM([Revenue]) per customer
 - **Product Age Days** = DATEDIFF('day', [Launch Date], [Order Date])
- **Create data source filters** if needed for performance optimization

2. Dashboard Creation (Tableau Public)

Build an interactive executive dashboard using **data from all 3 datasets** with 6 visualisations (Suggestions):

- **Executive KPI Dashboard:** 6 key metrics with month-over-month growth indicators
 - Total Revenue, Average Order Value, Total Customers, Customer Acquisition Rate, Average Profit Margin, Top Customer Segment
- **Sales & Profitability Trends:** Dual-axis line chart showing revenue vs. profit over time with forecasting
- **Geographic Performance:** Filled map of UK regions showing revenue per customer, with city-level drill-down capability
- **Product Portfolio Analysis:** Tree map of product categories sized by revenue, colored by profit margin
- **Customer Segmentation Matrix:** Scatter plot showing Customer Lifetime Value vs. Tenure, segmented by loyalty tier and age group
- **Supplier & Product Performance:** Horizontal bar chart of suppliers by total revenue with product count details
- **Interactive Elements:**
 - Date range filter affecting all views
 - Product category multi-select filter
 - Customer loyalty tier selector
 - Region/city drill-down hierarchy

3. Business Questions to Answer (in PDF Report)

1. Which product categories and suppliers offer the best profit margins for 2025 focus?
2. How do customer demographics (age, location, loyalty tier) impact purchasing behavior?

3. What seasonal patterns exist across different product categories and regions?
4. Which customer acquisition channels deliver the highest lifetime value customers?
5. How does product age (time since launch) correlate with sales performance?
6. What are the top 3 strategic recommendations based on integrated data analysis?

4. Optional Stretch Goals

- **Advanced Tableau Features:** Implement clustering, statistical functions, or advanced forecasting
- **External Data Integration:** Add UK demographic or economic data to enhance analysis
- **Mobile Optimisation:** Create mobile-friendly dashboard versions

Report Structure (Submit as a PDF file)

Please write your answer/full report in the '**Project Coversheet**' and submit a concise and professional PDF report.

1. Introduction

- Describe TechHub Retail's business context and analysis objectives
- State the purpose and scope of your dashboard and analysis

2. Multi-Dataset Integration Summary

- Describe how you connected and joined the 3 datasets in Tableau
- List all calculated fields created and their business purpose
- Explain any data relationship challenges and how you resolved them
- Include screenshot of Data Source relationships view

3. Dashboard Design Summary

- Briefly describe dashboard layout and key visualisations
- Explain interactive features and user navigation
- Include screenshots of main dashboard views

4. Key Insights & Findings

- Highlight major trends and patterns discovered
- Present statistical findings and correlations
- Include supporting charts or tables from dashboard

5. Business Questions Answered

- Answer the 6 business questions with evidence
- Support conclusions creatively

6. Strategic Recommendations

- Present 3-4 actionable recommendations for TechHub's 2025 strategy
- Include implementation timelines and expected impact
- Justify recommendations with data insights

7. Critical Reflection

- Evaluate the effectiveness of your dashboard for executive decision-making
- Identify areas for improvement in future BI reports

8. Data Issues or Risks

- Mention any limitations or risks (e.g., data imbalance, feature leakage)

Note: Include screenshots where required.

Submission Checklist

Before you submit, ensure you have:

- ☐ **Tableau Public URL** - Dashboard published with public access
- ☐ **PDF Report** - Following structure above, written in 'Project Coversheet'

Final Tip: Present your analysis like you're advising the TechHub Retail executive team. Focus on what the data reveals about business performance and what strategic actions the company should take for 2025 growth. Your dashboard should enable data-driven decision-making at the highest level of the organisation.