

Project Coversheet

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Date of Submission	3/8/2025
Project Week	Week 4

Project Guidelines and Rules

1. Submission Format

- **Document Style:**
 - Use a clean, readable font such as *Arial* or *Times New Roman*, size 12.
 - Set line spacing to **1.5** for readability.
- **File Naming:**
 - Use the following naming format:
Week X – [Project Title] – [Your Full Name Used During Registration]
Example: Week 1 – Customer Sign-Up Behaviour – Mark Robb
- **File Types:**
 - Submit your report as a **PDF**.
 - If your project includes code or analysis, attach the **.ipynb notebook** as well.

2. Writing Requirements

- Use formal, professional language.
- Structure your content using headings, bullet points, or numbered lists.

3. Content Expectations

- Answer **all** parts of each question or task.

- Reference tools, frameworks, or ideas covered in the programme and case studies.
- Support your points with practical or real-world examples where relevant.
- Go beyond surface-level responses. Analyse problems, evaluate solutions, and demonstrate depth of understanding.

4. Academic Integrity & Referencing

- All submissions must be your own. Plagiarism is strictly prohibited.
- If you refer to any external materials (e.g., articles, studies, books), cite them using a consistent referencing style such as APA or MLA.
- Include a references section at the end where necessary.

5. Evaluation Criteria

Your work will be evaluated on the following:

- Clarity: Are your answers well-organised and easy to understand?
- Completeness: Have you answered all parts of the task?
- Creativity: Have you demonstrated original thinking and thoughtful examples?
- Application: Have you effectively used programme concepts and tools?
- Professionalism: Is your presentation, language, and formatting appropriate?

6. Deadlines and Extensions

- Submit your work by the stated deadline.
- If you are unable to meet a deadline due to genuine circumstances (e.g., illness or emergency), request an extension **before the deadline** by emailing: support@uptrail.co.uk
Include your full name, week number, and reason for extension.

7. Technical Support

- If you face technical issues with submission or file access, contact our support team promptly at support@uptrail.co.uk.

8. Completion and Certification

- Certificate of Completion will be awarded to participants who submit at least two projects.
- Certificate of Excellence will be awarded to those who:
 - Submit all four weekly projects, and
 - Meet the required standard and quality in each.
- If any project does not meet expectations, you may be asked to revise and resubmit it before receiving your certificate.

1. Introduction

This report presents a visual summary of TechHub Retail's performance, a UK-based online electronics retailer. As a member of their executive team, I conducted the following analysis using Tableau Public to support decision-making for 2025, presented in a dashboard.

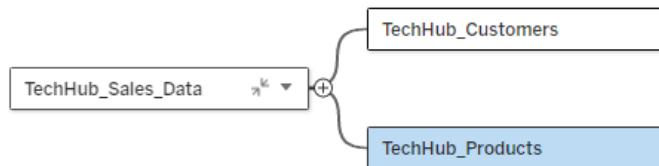
The datasets provided to support the review include:

- TechHub_Sales_Data.csv: Contains sales records
- TechHub_Customers.csv: Includes customer profile information
- TechHub_Products.csv: Provides product-level details

The report aims to integrate data across sales, customer profiles, and product catalogues to identify growth opportunities across products, regions, and customer segments, analyse seasonal and performance trends and build predictive insights.

2. Multi-Dataset Integration Summary

Data Source relationships view:



Joins Performed:

- Joined Sales to Customers via customer_id
- Joined Sales to Products via product_id

Calculated Fields Created:

- **Profit Amount:** Calculated by subtracting the total cost of the products sold from the total revenue made.
Measures actual earnings from sales which helps identify the most profitable products or orders and informs pricing, cost control, and product strategy.

- **Profit Margin %:** Shows what percentage of the revenue is profit.
Assesses profitability and efficiency which helps compare profitability across products, regions, or customer segments.
- **Customer Tenure Days:** Calculates how many days a customer has been with the business, since the signed-up date.
Useful when analysing customer loyalty and retention.
- **Customer LTV:** Total revenue generated by a customer over their entire time with the company.

Determines how much to spend to acquire or retain customers and identifies high-value customers for loyalty or upsell campaigns.
- **Product Age Days:** Number of days passed since a product was launched until it was ordered.
Helps evaluate the lifespan and performance of products over time.
- **Customer Acquisition Rate:** The number of new customers who signed up this month.
Monitors how effective marketing efforts are at bringing in new customers, and can be compared month-over-month to assess acquisition trends.

Challenges and Resolutions:

- **Missing geographic data:** 51 values had unknown regions. These were excluded or flagged in visualisations.
- **Date formatting issues:** Resolved by converting all date fields to proper Date type and creating date hierarchies.

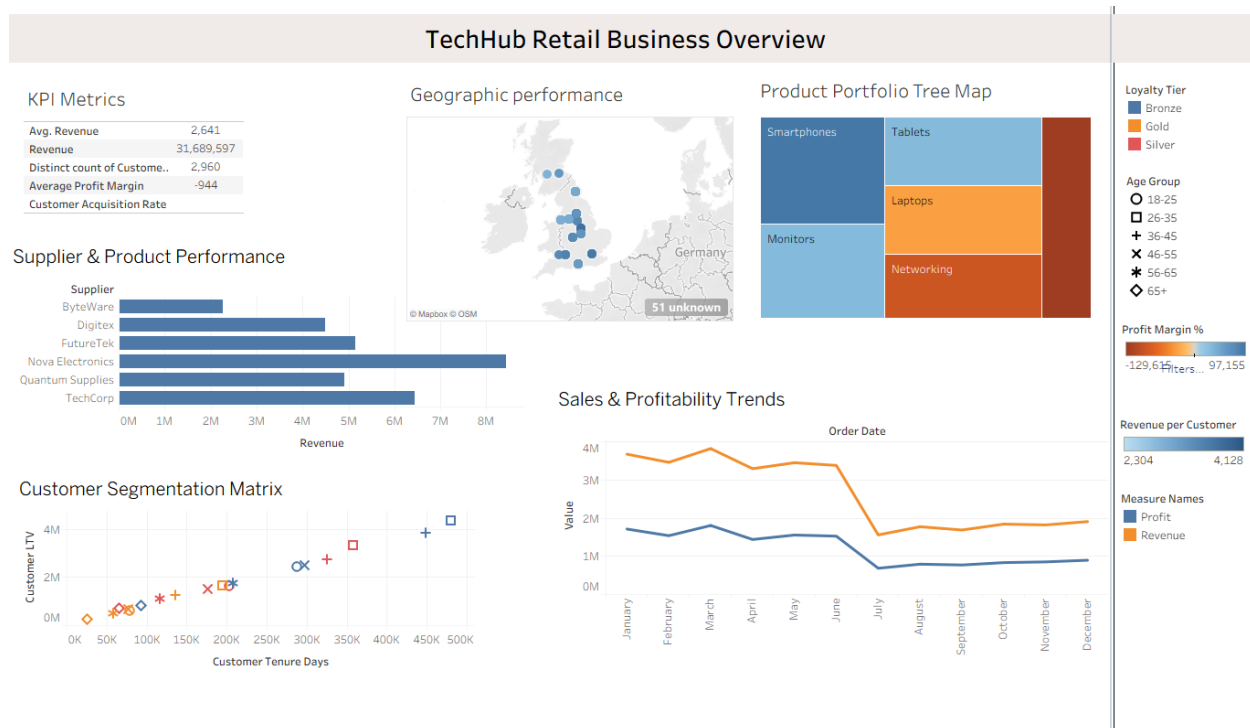
3. Dashboard Design Summary

Layout & Visualisations:

- **Top Left:** KPI Metrics card (Revenue, Avg. Order Value, Customers, Profit Margin, Acquisition Rate)
- **Centre:** Geographic Map, Product Tree Map
- **Bottom Left:** Supplier & Product Performance
- **Bottom Centre:** Customer Segmentation Matrix
- **Bottom Right:** Sales & Profit Trends

Interactive Features:

- Global date range filter
- Product category multi-select filter
- Loyalty tier selector (Bronze, Silver, Gold)
- Drill-down hierarchy for region → city in geographic map



4. Key Insights & Findings

- **Revenue & Profit Trends:** Revenue peaked in March and experienced a dip in July, as we can see from the Sales & Profitability Trends line graph, while profit margins remained stable.
- **Customer Segmentation:** Higher LTV is positively correlated with longer customer tenure as shown in the Customer Segmentation Matrix from the dashboard above.
- **Geographic Patterns:** England and specifically central UK cities seem to perform better in revenue per customer as presented in the Geographic performance map.

- **Product Portfolio:** Laptops and Networking have high revenue but variable profit margins. Smartphones are more consistent with high performance in both fields. These results are illustrated in the Product Portfolio Tree Map.
- **Supplier Revenue:** Nova Electronics leads with more than 8M supplier revenue as shown in the Supplier & Product Performance bar chart.

5. Business Questions Answered

I. Which product categories and suppliers offer the best profit margins for 2025 focus?

Smartphones and Monitor categories show balanced revenue and profit margins. Suppliers like Nova Electronics and FutureTek show the highest revenue, but margin data favours ByteWare for higher profitability.

II. How do customer demographics (age, location, loyalty tier) impact purchasing behaviour?

- Bronze-tier customers yield higher LTV and profit margins.
- Age groups of 36–55 have longer tenure and more spending power.
- Regional revenue varies, with urban areas specifically central UK outperforming others.

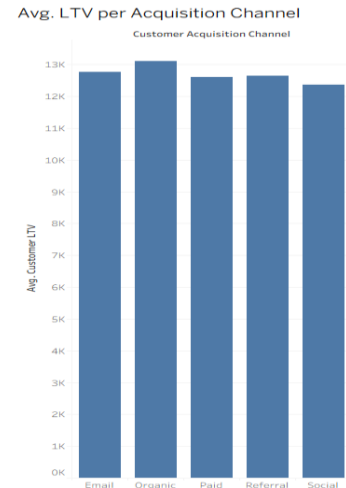
III. What seasonal patterns exist across different product categories and regions?

- Q1 shows higher revenue and sales across all products.
- Smartphones and Tablets sell best during Q1, especially in cities like London, Cardiff, Nottingham and Newcastle as seen in the graphs below.



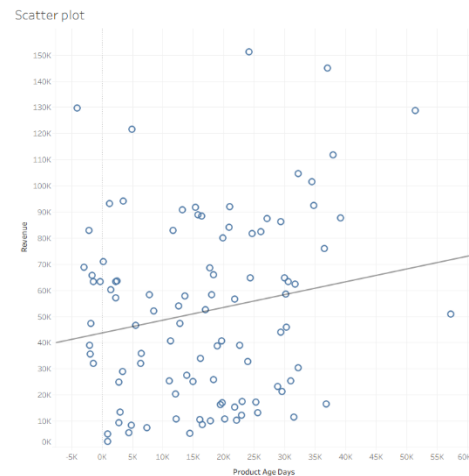
IV. Which customer acquisition channels deliver the highest lifetime value customers?

Customers acquired through the Organic and Email channels have the highest average Lifetime Value, both exceeding £13,000. This indicates these channels are the most effective at attracting long-term, high-value customers. This is presented in the bar chart to the right.



V. How does product age (time since launch) correlate with sales performance?

As we can see from the scatter plot to the right, there is no strong correlation between product age and sales performance. While there appears to be a slight upward trend the data points are widely scattered, indicating inconsistent sales performance across different product ages. This suggests that age does not play a significant role in driving sales.



6. Strategic Recommendations

Focus on expanding the Smartphones and Monitors product categories in 2025.

- The Product Tree Map shows that Smartphones consistently contribute high revenue with stable margins, making them both popular and profitable, while monitors offer a healthy profit margin with moderate but growing revenue, suggesting underexploited potential.
- A 10–15% increase is expected in total revenue in Q1–Q2 2025 while maintaining or slightly improving average profit margins.

Design loyalty and retention campaigns focused on Bronze-tier customers and those aged 36–55, including tailored offers and exclusive programs.

- The Customer Segmentation Matrix indicates that Bronze-tier and 36–55 aged customers have the highest average LTV and longer tenure.
- The recommended method could increase customer lifetime value by 15–20% and reduce churn over the first half of 2025. Also reinforces brand loyalty and upselling potential.

Prioritise Organic and Email Channels for High-LTV Growth

- Invest in high-intent keyword SEO strategies, technical site optimisation, and valuable content or collaborate with tech influencers and reviewers to improve organic traffic quality.
- Build behaviour-triggered campaigns and personalise emails based on product interest, previous purchases, and loyalty tier.
- The recommended actions are expected to improve customer acquisition ROI and increase repeat purchases and retention.

7. Critical Reflection

Dashboard Effectiveness:

- Successfully integrated sales, customer, and product datasets with the dashboard offering an overall view of the business.
- The dashboard distils complex data into clear, high-level KPIs and visualizations that support decision-making for strategy development, product portfolio expansion, and customer targeting.
- Features such as date filters that provide users the flexibility, making the dashboard self-service oriented.

Areas for Improvement:

- Could add acquisition channel and marketing data to the dashboard created to better assess ROMI or understand which acquisition strategies drive high-LTV customers.
- KPIs are presented as standalone values without reference to industry standards, historical benchmarks, or target goals. This limits the ability to contextualise performance. Thus, it is important to incorporate goal thresholds, year-over-year comparisons, or external benchmarks where appropriate.

8. Data Issues or Risks

- A small number of product categories, such as Smartphones and Laptops, dominate total sales and revenue figures. Even though they are top performers, this introduces a data imbalance that can skew broader business insights by creating bias in trend analysis. For example, if strategic decisions are made only using average metrics, there's a risk of overlooking promising but currently underrepresented categories that may be growing at a faster rate. It is therefore important to use weighted or category-normalized KPIs in dashboard views to avoid such incidence.
- The dataset includes 18 months of historical sales and customer activity, which presents challenges in interpreting true seasonal patterns. Ideally, at least 24–36 months of data are needed to accurately detect year-over-year trends. Thus, it is recommended an ongoing data collection into 2025 and beyond and the use of monthly vs. year-over-year percent change comparisons.