Project Coversheet

Full Name	Robert May
Project Title (Example – Week1, Week2, Week3, Week 4)	Week 4

Instructions:

Students must download this cover sheet**,** use it as the first page of their project, and then save the entire document as a PDF before submission**.**

Project Guidelines and Rules

1. Formatting and Submission

- Format: Use a readable font (e.g., Arial/Times New Roman), size 12, 1.5 line spacing.
- Title: Include Week and Title (Example - Week 1: Travel Ease Case Study.)
- File Format: Submit as PDF or Word file
- Page Limit: 4–5 pages, including the title and references.

2. Answer Requirements

- Word Count: Each answer should be within 100–150 words; Maximum 800–1,200 words.
- Clarity: Write concise, structured answers with key points.
- Tone: Use formal, professional language.

3. Content Rules

- Answer all questions thoroughly, referencing case study concepts.

- Use examples where possible (e.g., risk assessment techniques).
- Break complex answers into bullet points or lists.

4. Plagiarism Policy

- Submit original work; no copy-pasting.
- Cite external material in a consistent format (e.g., APA, MLA).

5. Evaluation Criteria

- Understanding: Clear grasp of business analysis principles.
- Application: Effective use of concepts like cost-benefit analysis and Agile/Waterfall.
- Clarity: Logical, well-structured responses.
- Creativity: Innovative problem-solving and examples.
- Completeness: Answer all questions within the word limit.

6. Deadlines and Late Submissions

- Deadline: Submit on time; trainees who fail to submit the project will miss the “Certificate of Excellence”

7. Additional Resources

- Refer to lecture notes and recommended readings.
- Contact the instructor or peers for clarifications before the deadline.

YOU CAN START YOUR PROJECT FROM HERE

1. Introduction

   This report, for TechHub Retail aims to analyse data and provide the business with key insights enabling it to make decisions for the future.

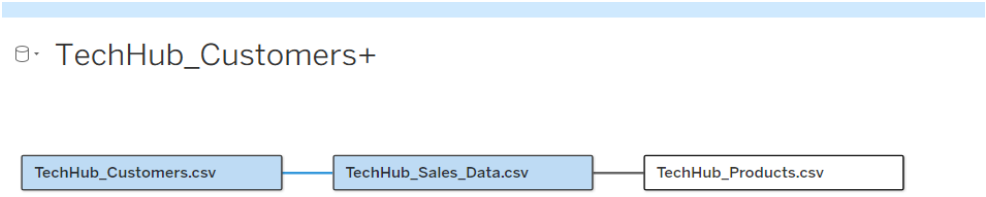
   The objectives are:

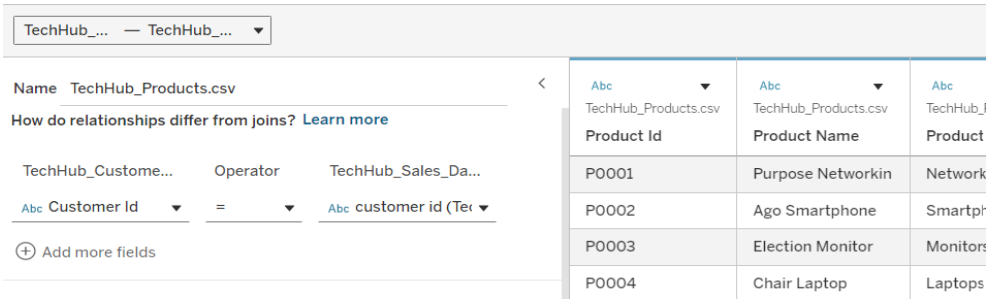
   - To Identify growth opportunities across products, regions, and customer segments
   - Analyse performance trends and seasonal patterns
   - Build predictive insights for 2025 planning
   - Create actionable recommendations for executive decision-making

The purpose and scope of the dashboard, which will be developed in Tableau, are to provide insights and answers to the questions posed.

2. Multi Dataset Integration Summary

The three datasets were connected in Tableau. Customers, followed by Product, then Sales. This gave issues when working through the analysis so it was decided that Customer and Sales tables would be joined by Customer Id, with Product table joined to Sales by Product id.





Calculated fields were created to assist with analysis:

- Profit Amount = [Revenue] - ([Cost Price] × [Quantity])
  To calculate profit.
- Profit Margin % = ([Profit Amount] / [Revenue]) × 100
  To calculate profit margin.
- Customer Tenure Days = DATEDIFF('day', [Signup Date], TODAY()).
  To see how long customers have been signed up for.
- Customer Lifetime Value = SUM([Revenue]) per customer
  To see how much revenue customers have provided
- Product Age Days = DATEDIFF('day', [Launch Date], [Order Date])
  To analyse when products are ordered – are new products more popular?
- Age Group Rank = RANK_UNIQUE(SUM([Profit Amount])) Created to find best performing age group when analysing customer segments.
- Average Order Value = SUM([Revenue]) / COUNT([Revenue])
- Growth Arrow AOV = IF [Mom Change AOV] > 0 THEN "▲" ELSEIF [Mom Change AOV] < 0 THEN "▼" ELSE "-" END. To determine monthly indicator symbol.
  - Mom Change = SUM([Revenue]) - LOOKUP(SUM([Revenue]), -1)

  Month on Month Change for Revenue graphs.

Data relationship challenges:

As mentioned, there were some issues when creating some charts. It was realised that joining with product and customer id was not appropriate, they are different.

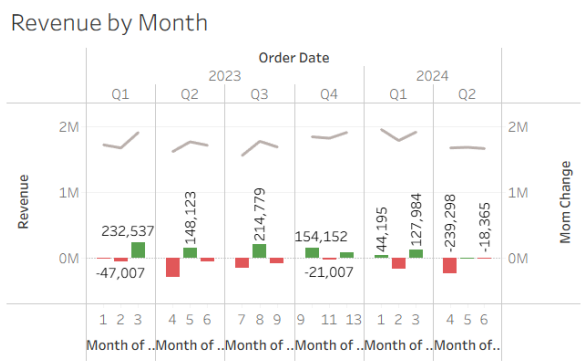
2. Dashboard Design Summary

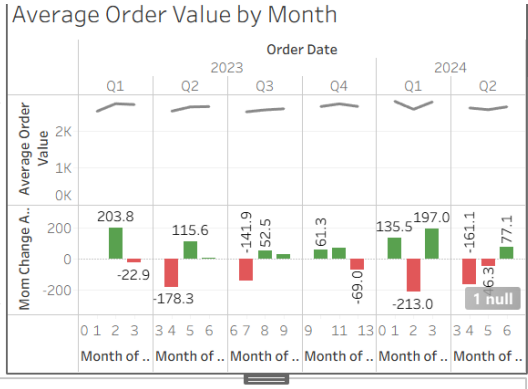
A floating arrangement was chosen, as tiled was not flexible enough. Relevant worksheets were chosen and divided into three dashboard tabs to avoid overcrowding. Signup and Order Date were added as dashboard wide filters, along with Product Category and Customer Loyalty Tier.

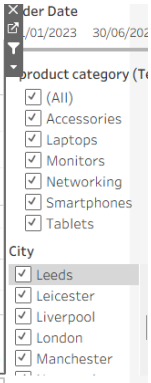
The first sheet shows Revenue by Month, Average Order Value by Month, and Customer Acquisition rate by Month, as well as Total Customers.

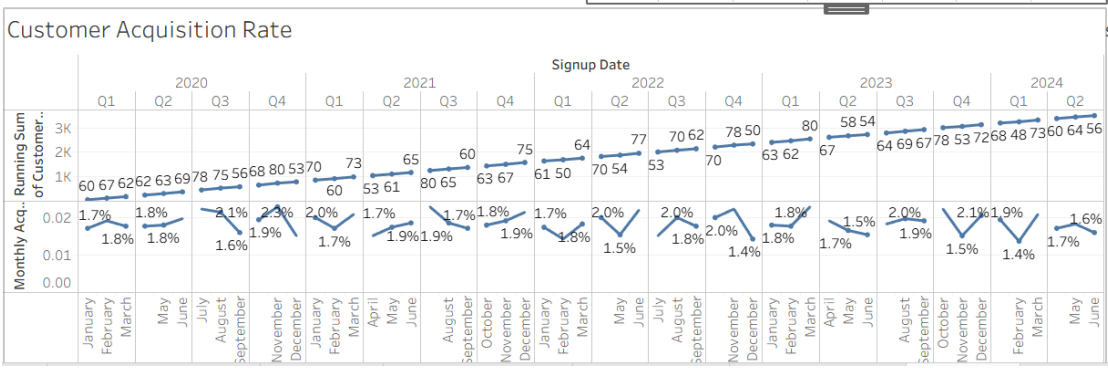
The second sheet shows Average Profit Margin, Revenue and Profit and Top Customer Segments.

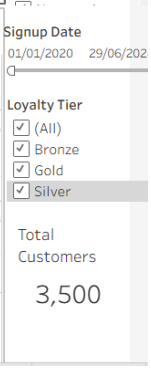
The third sheet shows a Treemap of Average Profit Margin by Product Category, a Scatter Plot of Customer Tenure vs Customer Lifetime Value, coded for loyalty tier and age group. It shows a map of Revenue by City, colour coded by Revenue. It shows a bar graph of Product and Supplier Performance, with revenue and profit margin.

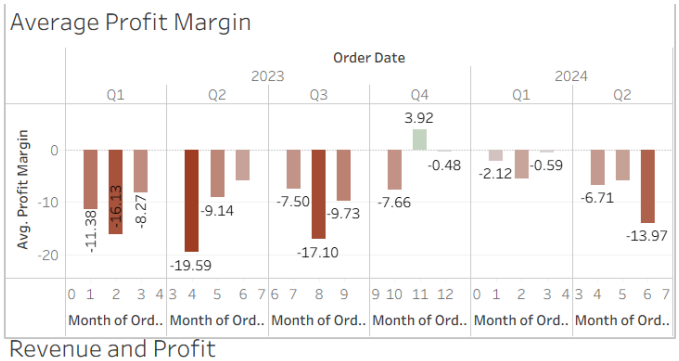

Revenue by Month
Order Date
2023
2024
Q1
Q2
Q3
Q4
Revenue
Mom Change
2M
1M
0M
232,537
-47,007
148,123
214,779
154,152
-21,007
144,195
127,984
-239,298
-18,365
Month of ..

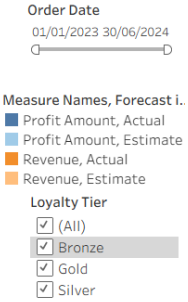

Average Order Value by Month
Order Date
2023
2024
Average Order Value
Mom Change A..
2K
1K
0K
200
0
-200
203.8
-22.9
115.6
-178.3
-141.9
52.5
61.3
-69.0
135.5
197.0
-213.0
-161.1
77.1
1 null
Month of ..

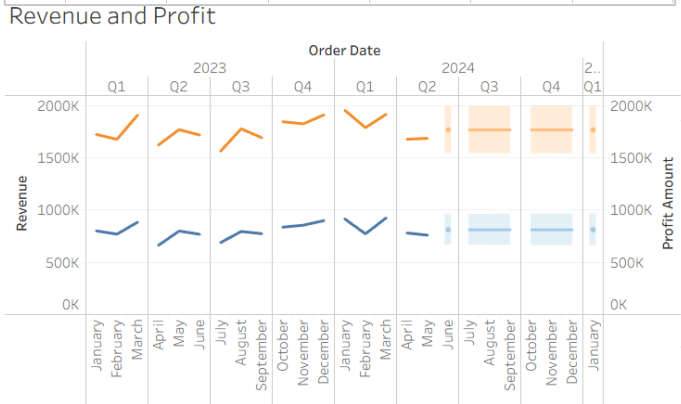

Order Date
01/01/2023 30/06/202
Product category (T
(All)
Accessories
Laptops
Monitors
Networking
Smartphones
Tablets
City
Leeds
Leicester
Liverpool
London
Manchester

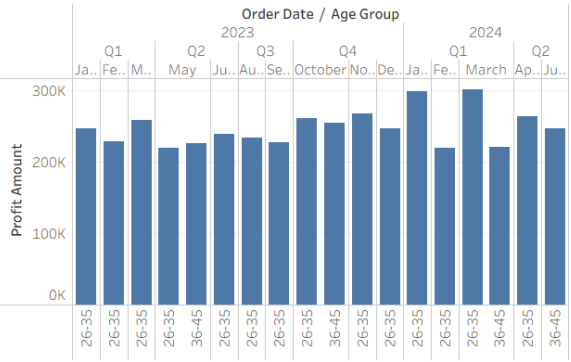

Customer Acquisition Rate
Signup Date
2020
2021
2022
2023
2024
Running Sum of Customer..
Monthly Acq..
3K
2K
1K
0.02
0.01
0.00
60 67 62
62 63 69
78 75 56
68 80 53
70 60 73
53 61 65
80 65 60
63 67 75
61 50 64
70 54 77
53 70 62
70 78 50
63 62 80
67 58 54
64 69 67
78 53 72
68 48 73
60 64 56
January
February
March
April
May
June
July
August
September
October
November
December

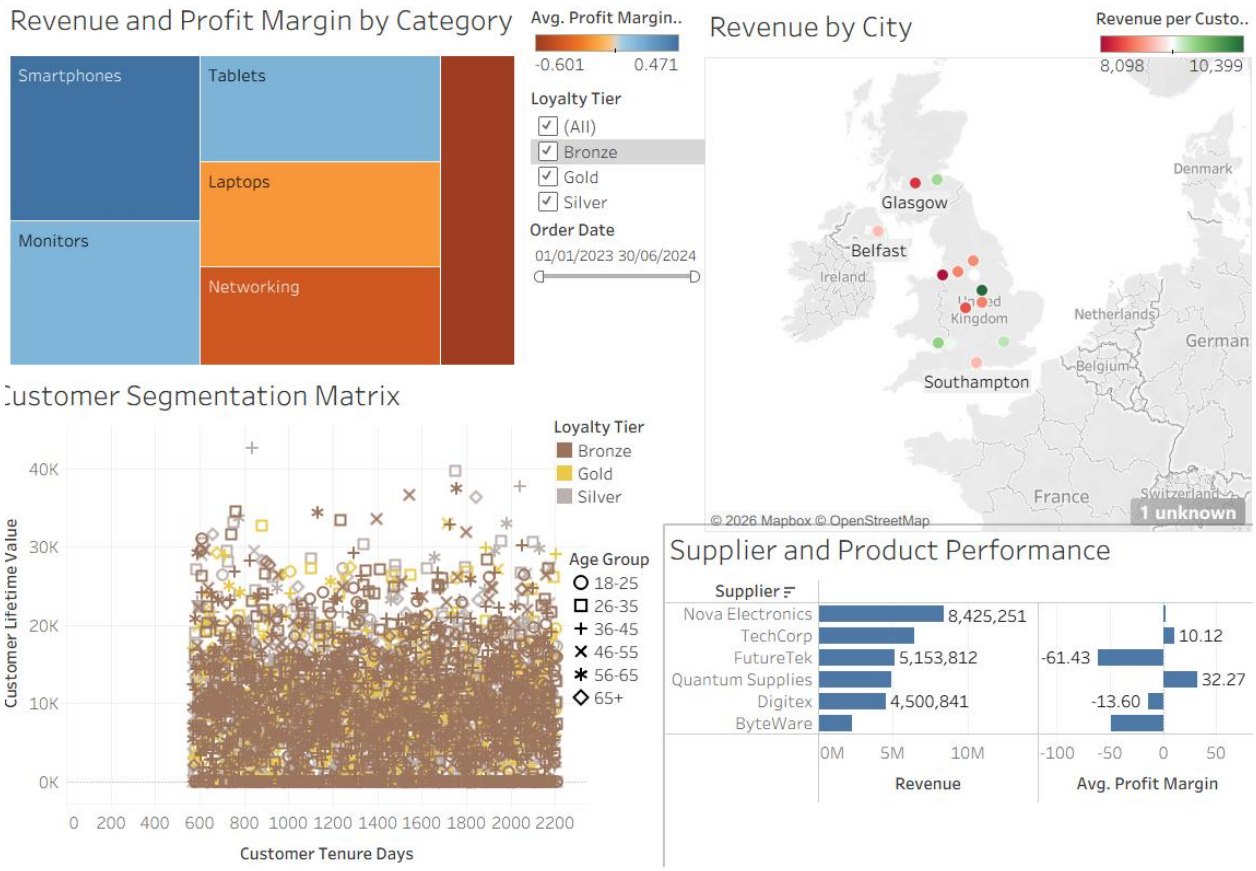

Signup Date
01/01/2020 29/06/202
Loyalty Tier
(All)
Bronze
Gold
Silver
Total Customers
3,500


Average Profit Margin
Order Date
2023
2024
Avg. Profit Margin
0
-10
-20
-11.38
-16.13
-8.27
-19.59
-9.14
-7.50
-17.10
-9.73
-7.66
3.92
-0.48
-2.12
-0.59
-6.71
-13.97
Month of Ord..


Order Date
01/01/2023 30/06/2024
Measure Names, Forecast i..
Profit Amount, Actual
Profit Amount, Estimate
Revenue, Actual
Revenue, Estimate
Loyalty Tier
(All)
Bronze
Gold
Silver


Revenue and Profit
Order Date
2023
2024
Revenue
2000K
1500K
1000K
500K
0K
January
February
March
April
May
June
July
August
September
October
November
December


Top Customer Segments
Order Date / Age Group
2023
2024
Profit Amount
300K
200K
100K
0K
26-35
36-45



3. Key Insights and Findings

Revenue and profit were higher in Q4 2023 and Q1 2024, suggesting a winter preference.

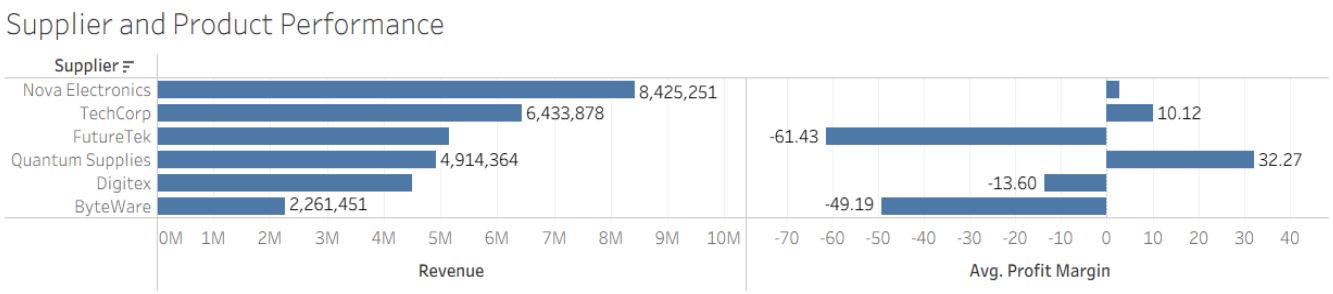
Too many products are sold at a loss with negative profit margins, and the business ran selling products at a negative average profit margin every month apart from November 2023.

Smartphone products are the most profitable for TechHub, with a profit margin of 47%.

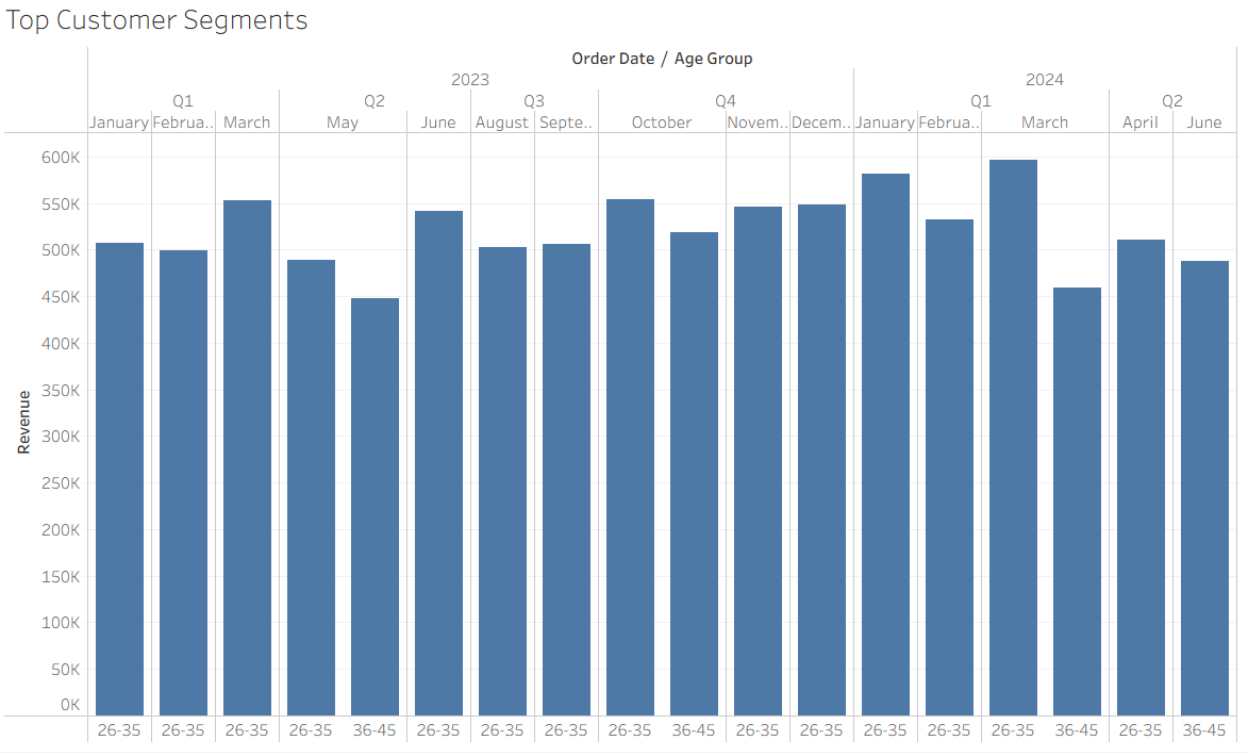
4. Business Questions

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

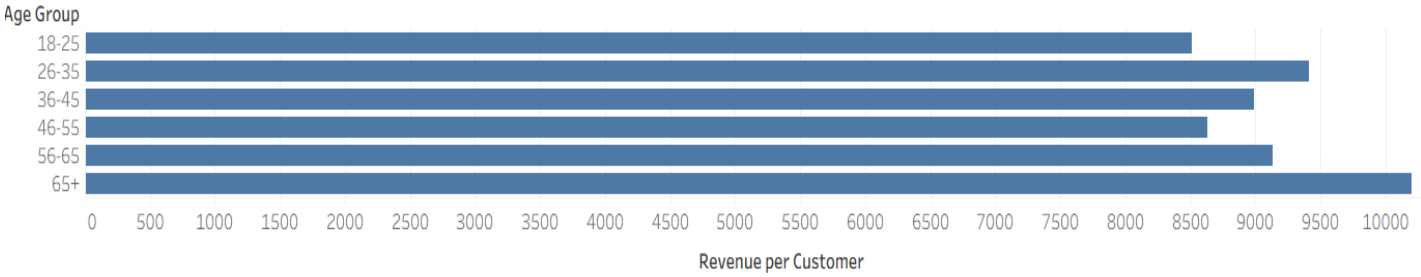
Smartphones offer the best profit margin by far, average of 47.1%. Tablets and Monitors are also profitable, with profit margins between 17 and 18%. All other categories have a negative average profit margin. Quantum Supplies has the best profit margin, over 32.3%. Tech Corp is 10.1%, and the only other profitable supplier is Nova Electronics at 2.74%.



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



Customer demographics impact purchasing behaviour a lot. When comparing amount of revenue from age groups, the 26-35 age group almost always comes out on top each month, with a few from the 36-45 age group. However, in terms of revenue per customer, it's actually the 65+ group that delivers the most.



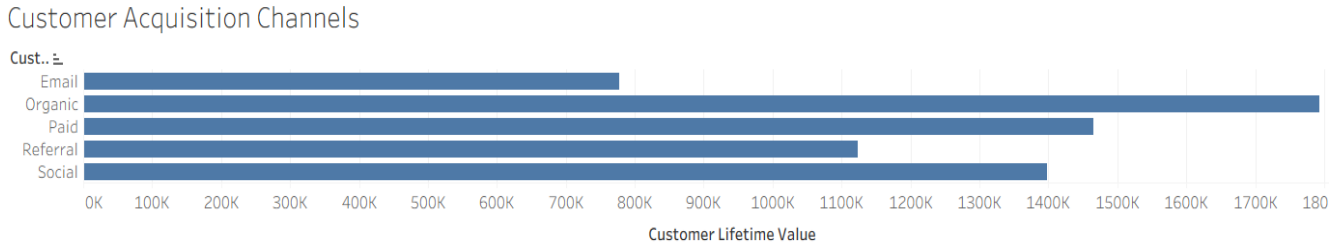
In terms of location, different cities have different average revenue per customer, with Liverpool having the lowest and Nottingham the highest. The amount spent is not completely as you would expect, Cardiff is second highest, but Glasgow and Birmingham are low down. For loyalty tier, Bronze members spend the most per customer, followed by silver and gold, but they are very close, roughly £2,600 each.

What seasonal patterns exist across different product categories and regions?

Many product categories have steady order patterns. Accessories though had a huge dip in September and a peak at month 12 (Christmas). Laptops were high in month 3 in both years. Monitors peaked at Christmas. Networking was higher through 2024. Smartphones were quite steady and Tablets peaked in December and Jan (winter).

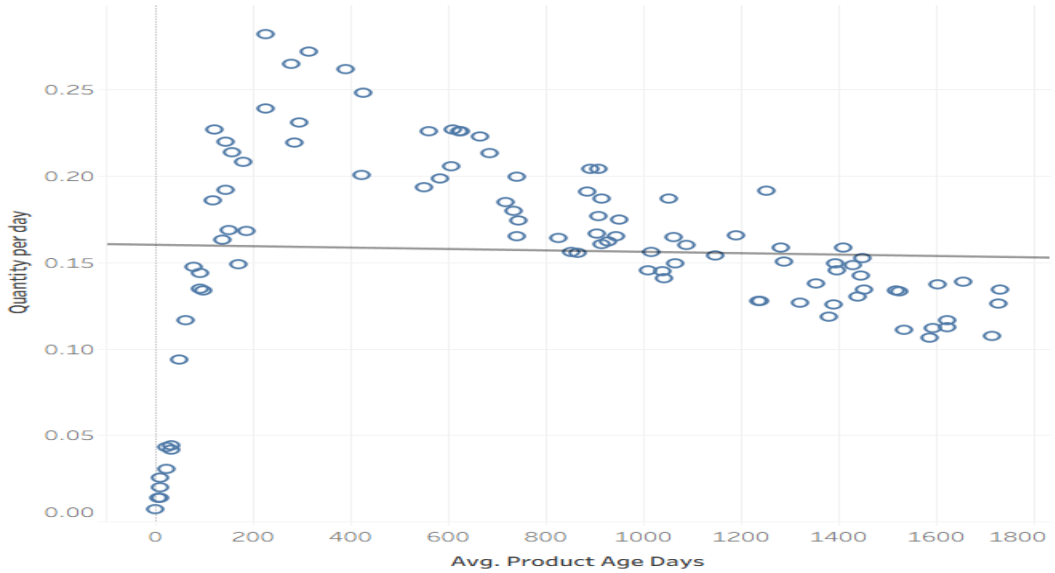
In terms of location, Bristol peaked in winter 2023/4. Edinburgh's orders were highest in month 1 and 12 in 2023. Leeds had a huge revenue spike in March 2023. London had higher orders in the first half of 2023. Manchester's order spiked in Oct 2023 and Jan 24 Newcastle's were high in Winter. Nottingham's orders spiked at the same time as Manchester's. There weren't consistently obvious seasonal trends for individual product categories, although there tended to be higher orders in Winter. For total revenue, there is more in Q4 and Q1.

Which customer acquisition channels deliver the highest lifetime value customers? Organic delivers the highest, followed by paid.



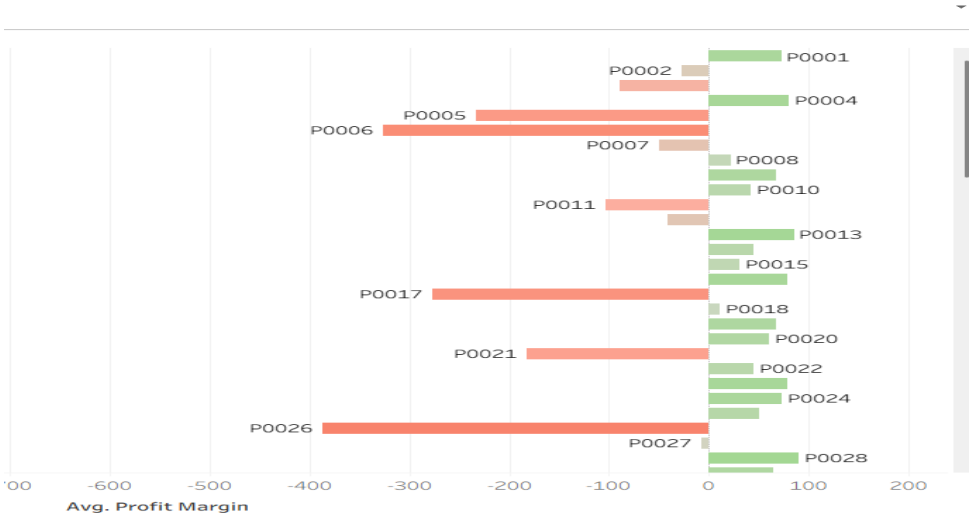
How does product age (time since launch) correlate with sales performance?

Product age negatively affects sales performance. Quantity per day reduces with product age. There were negative product age values which were discounted here. Apart from some variability with new products, the overall trend is negative.



5. Strategic Recommendations

- Look to increase smartphone products, as these have by far the highest profit margin (47%). Tablets and Monitors are also profitable. Aim to have additional profitable smartphone products by April 2025. This should increase company profits.
- Discontinue products with negative profit margins, or increase price. Perhaps some with very low negative profit margins can remain. Product 67 has a -1200 Profit Margin and needs to be addressed. Aim to discontinue these by March and get the best price for the remaining stock.



- Age 65+ delivers the highest Revenue per Customer. Focus marketing on this group more to increase revenue. Aim to have a 20% increase in members by March 2025.

6. Critical Reflection

I think this dashboard provides some insight for executives. It's better when able to click than just viewed. However, this is my first time using Tableau, and I found it very time consuming to add and customise some features. I'm aware it could look better, but I'm not sure I am able to spend the time making it so. I think it's a good first effort in the time I have had to do this, which is only starting it on Friday. I would like to have really spent more time looking at the data, perhaps I spent a little too much time using Chatgpt which certainly isn't the best for this and was very time consuming.

7. Data Issues

It was noted there are some orders where the order date is before the launch date. This could be bad data, or perhaps pre-orders were taken before the product was officially launched. Either way, these need investigating with the sales team.

References:

Uptrail (2026). Week 4 recording.
Chatgpt (2026)
Uptrail (2025). Week 4 – Dashboards, BI tools and AI in Analytics.pdf
'Tableau (2026). 'Where to clean data'.
https://public.tableau.com/app/search/vizzes/where%20to%20clean%20data
Tableau (2026). 'Connect to Data'. https://public.tableau.com/app/learn/how-to-videos