Retail Superstore – YTD/QTD Dashboard

Mission Statement

Contents

The Retail Superstore dataset represents 4 years of data from a US-based retail organisation focussing in office furniture and supplies.

The organisation need a high-level financial summary for their Quarterly and Annual review process.

This should cater to different end users: those who are focussed purely on overall financial performance, and those who are accountable for regional sales performance. As a result, it should facilitate year-on-year comparison and enable deep-dive into areas which may be influencing sales and profit performance across the business.

Retail Superstore – YTD/QTD Dashboard

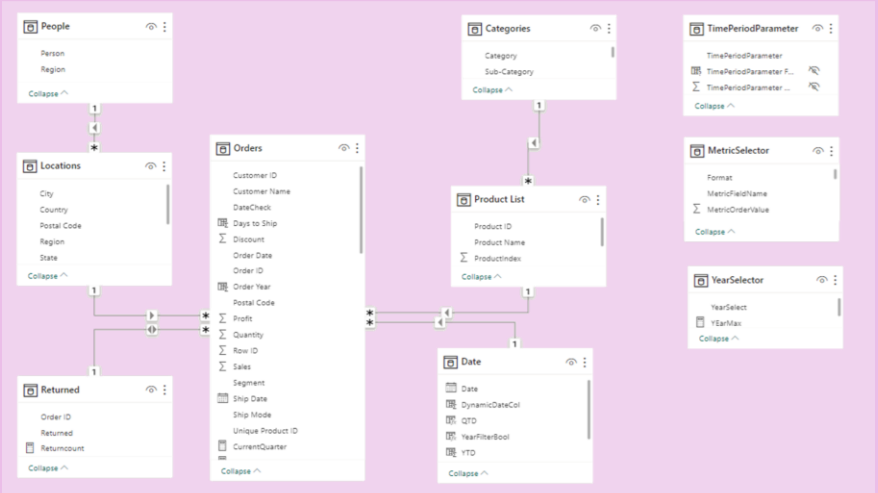
Project Lifecycle

Source
Identify opensource datasets

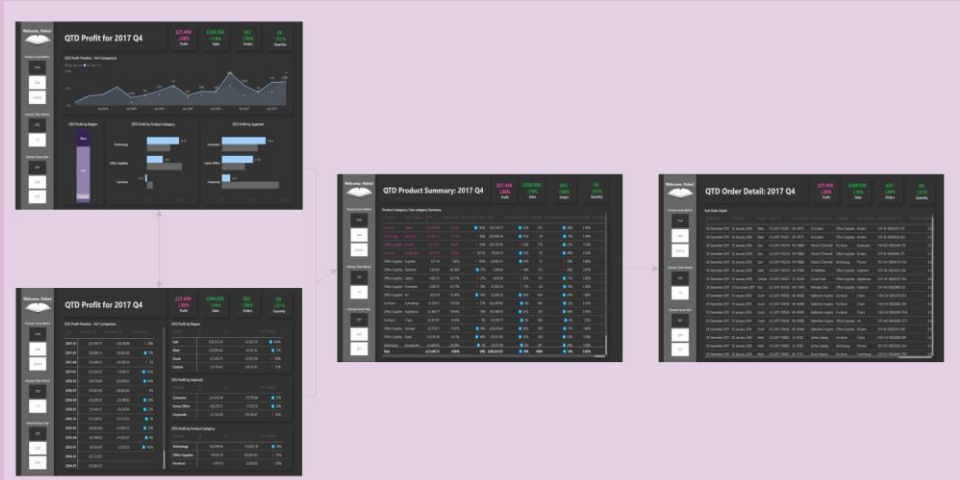
Build Data Model
Explore data quality, design target tables, perform transformations

Visualise
Build Power BI charts & interactive narrative

Raw dataset attributes at source



Data model showing STAR schema which is extracted from original 3-table dataset



User Journey showing movement through different levels of analysis, each based on user parameters

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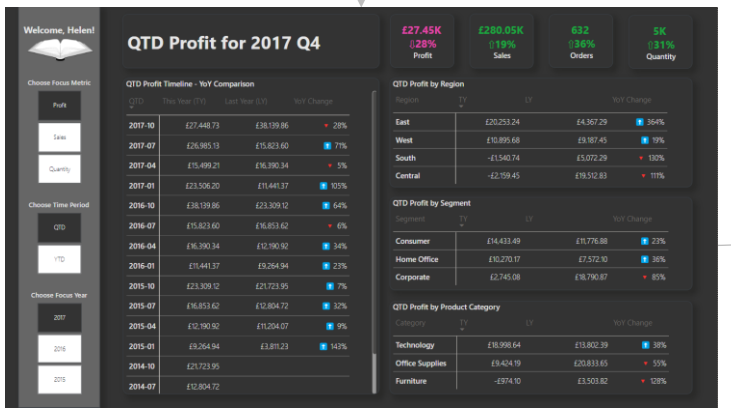
Power BI User Journey

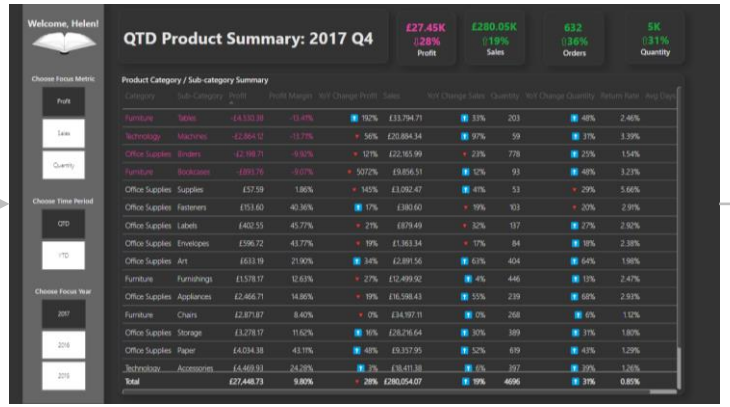
High level of detail → *Low level of detail*

KPI Summary - Graphical

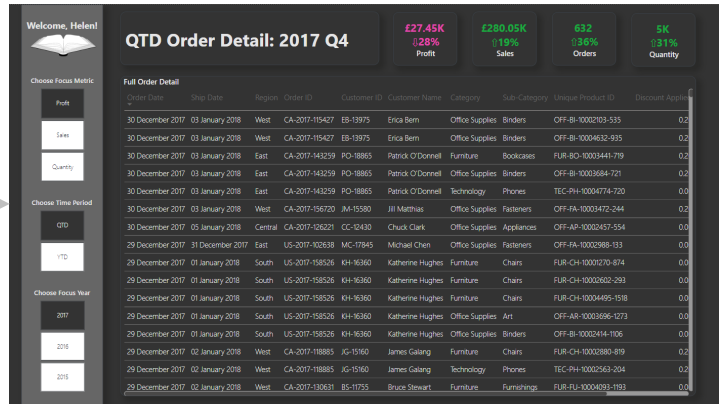
KPI Summary - Tabular



Mid-level Deep-Dive : Product



Backend Detail : Orders



Example user journey indicating transition through level of detail – useful either to an audience aiming to create a full narrative and perform end-to-end driver analysis, or as a hub to serve end users who will be focussed on one level of detail only.

Demonstrating ability to drill-through to different levels of detail, e.g. filtering lower-level pages based on one Region selected in Summary page.

In practice, a production dashboard will often have more pages than this, to enable modular deep dive across additional components (e.g. a mid-level focus on Customer segmentation as well as Product category, seen above).

The Power BI service allows packaging of contextually separate analysis into separate dashboards (e.g. of interest to users operating in different departments), whilst higher-level summary reports then pull individual charts from across these dashboards, allowing click-through to detail. This is tailored to the customer use case.

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Retail Superstore – YTD/QTD Dashboard

KPI Summary

User-Selected Metric Overview

- Ability to choose a metric of interest (Sales / Profit / Quantity of Units), To-Date roll up (YTD/QTD) and focus year (defaults to current/latest year)
- Time Period selection changes date x-axis to match aggregation level
- Hover to see YoY indicators on each chart
- Click to cross-filter (e.g Region)
- App-like modular design, including username detection and welcome
- Custom KPI indicators based on YoY change – increase (>= 5%), no change (-5% to +5%) , decrease (<= -5%)
- This Year / Last Year comparison per chart
- Dynamic titles based on user selection
- Dynamic formatting based on active metric / time period selected
- Build includes dynamic nested calculations to prevent a build-up of static calculations (important data model management)

Note – 'YoY Change' when QTD is selected results in comparing the current quarter, in this case 2017 Q4, with the same Quarter last year (2016 Q4)

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Demo - Video

If reading PDF copy – please see separate video file

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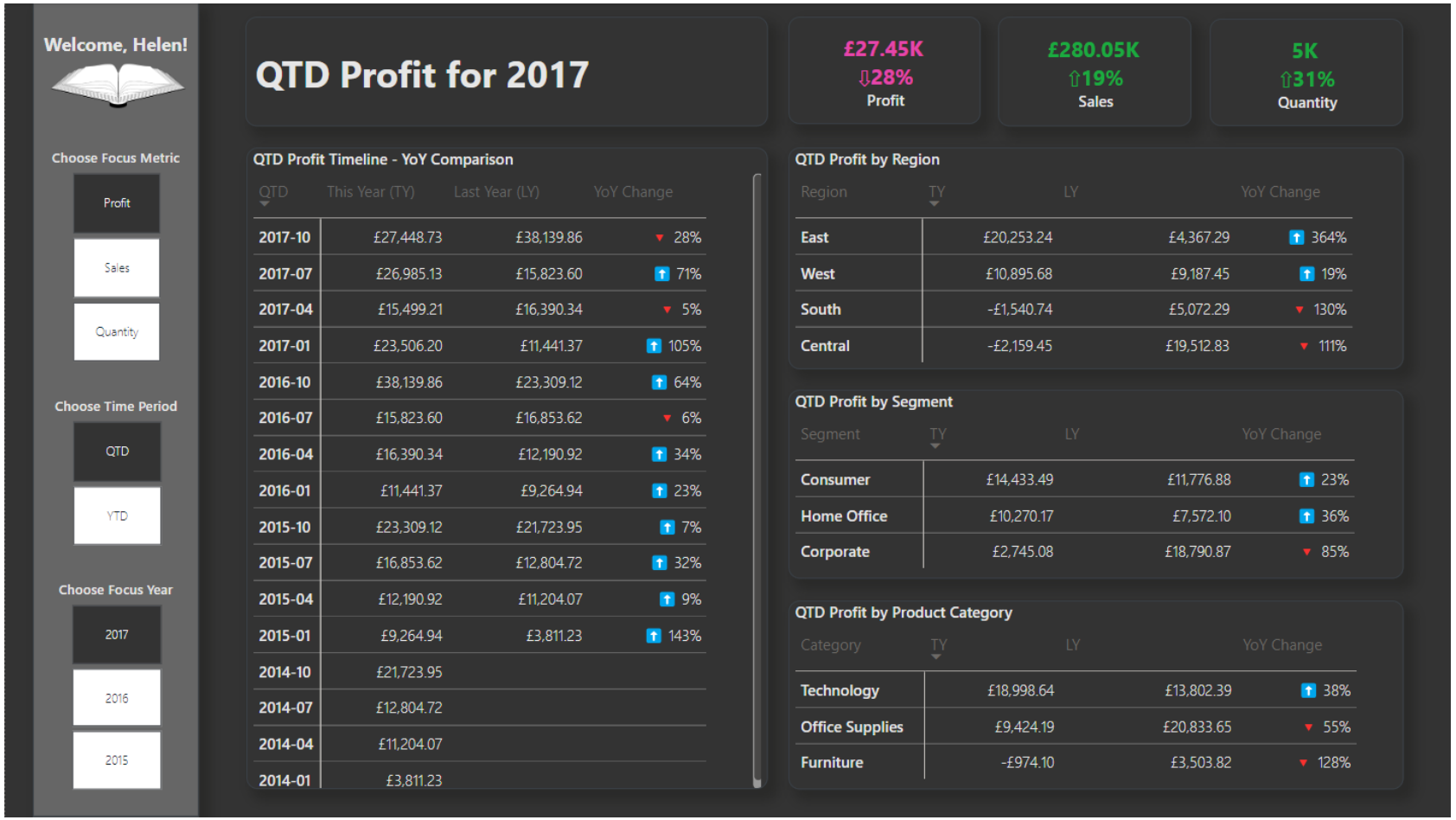
KPI Summary - Tabular

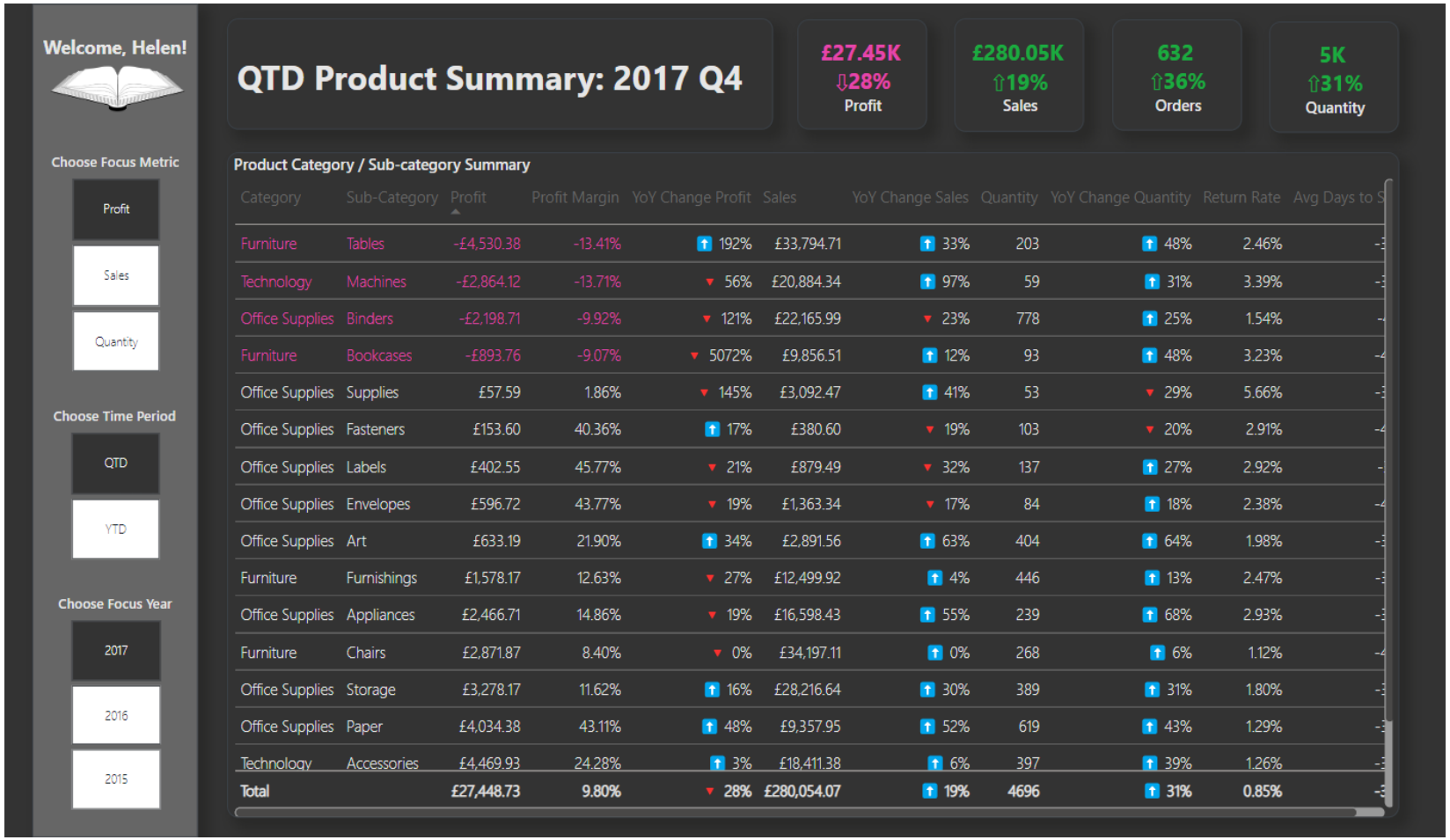


Identical content to Graphical view, with modified tabular layout. Including:

- Ability to choose a metric of interest (Sales / Profit / Quantity of Units), To-Date roll up (YTD/QTD) and focus year (defaults to current/latest year)
- Click to cross-filter (e.g Region)
- App-like modular design, including username detection and welcome
- Custom KPI card indicators based on YoY change – increase (>= 5%), no change (-5% to +5%) , decrease (<= -5%). Likewise, dynamic icons used when in tabular form
- User can sort based on dimensions (e.g. alphabetical) or given measure.
- This Year / Last Year comparison for each dimension
- Dynamic titles based on user selection
- Dynamic number formatting based on active metric / time period selected

Retail Superstore – YTD/QTD Dashboard

Product Overview



Category	Sub-Category	Profit	Profit Margin	YoY Change Profit	Sales	YoY Change Sales	Quantity	YoY Change Quantity	Return Rate	Avg Days to S
Furniture	Tables	-£4,530.38	-13.41%	↑ 192%	£33,794.71	↑ 33%	203	↑ 48%	2.46%	
Technology	Machines	-£2,864.12	-13.71%	▼ 56%	£20,884.34	↑ 97%	59	↑ 31%	3.39%	
Office Supplies	Binders	-£2,198.71	-9.92%	▼ 121%	£22,165.99	▼ 23%	778	↑ 25%	1.54%	
Furniture	Bookcases	-£893.76	-9.07%	▼ 5072%	£9,856.51	↑ 12%	93	↑ 48%	3.23%	
Office Supplies	Supplies	£57.59	1.86%	▼ 145%	£3,092.47	↑ 41%	53	▼ 29%	5.66%	
Office Supplies	Fasteners	£153.60	40.36%	↑ 17%	£380.60	▼ 19%	103	▼ 20%	2.91%	
Office Supplies	Labels	£402.55	45.77%	▼ 21%	£879.49	▼ 32%	137	↑ 27%	2.92%	
Office Supplies	Envelopes	£596.72	43.77%	▼ 19%	£1,363.34	▼ 17%	84	↑ 18%	2.38%	
Office Supplies	Art	£633.19	21.90%	↑ 34%	£2,891.56	↑ 63%	404	↑ 64%	1.98%	
Furniture	Furnishings	£1,578.17	12.63%	▼ 27%	£12,499.92	↑ 4%	446	↑ 13%	2.47%	
Office Supplies	Appliances	£2,466.71	14.86%	▼ 19%	£16,598.43	↑ 55%	239	↑ 68%	2.93%	
Furniture	Chairs	£2,871.87	8.40%	▼ 0%	£34,197.11	↑ 0%	268	↑ 6%	1.12%	
Office Supplies	Storage	£3,278.17	11.62%	↑ 16%	£28,216.64	↑ 30%	389	↑ 31%	1.80%	
Office Supplies	Paper	£4,034.38	43.11%	↑ 48%	£9,357.95	↑ 52%	619	↑ 43%	1.29%	
Technology	Accessories	£4,469.93	24.28%	↑ 3%	£18,411.38	↑ 6%	397	↑ 39%	1.26%	
Total		**£27,448.73**	**9.80%**	**▼ 28%**	**£280,054.07**	**↑ 19%**	**4696**	**↑ 31%**	**0.85%**	

Product Category / Sub-category Overview Table

- Ability to choose time period of interest (YTD / QTD). This defaults to YTD of the latest year.
- Highlights loss-incurring subcategories – e.g. for which profit is negative in either YTD/QTD as selected
- Includes indication of YoY change
- Click to cross-filter (e.g Region)
- Custom KPI card indicators based on YoY change – increase (>= 5%), no change (-5% to +5%) , decrease (<= -5%). Likewise, dynamic icons used when in tabular form
- User can sort based on dimensions (e.g. alphabetical) or given measure.
- This Year / Last Year comparison for each dimension
- Dynamic titles based on user selection
- Dynamic number formatting based on active metric / time period selected

Other mid-level deep-dive pages may include:

Customer Segment analysis (graphical), Regional-State performance, Return rate vs Product Category analysis, Up-and-Coming Products with increasing demand, etc

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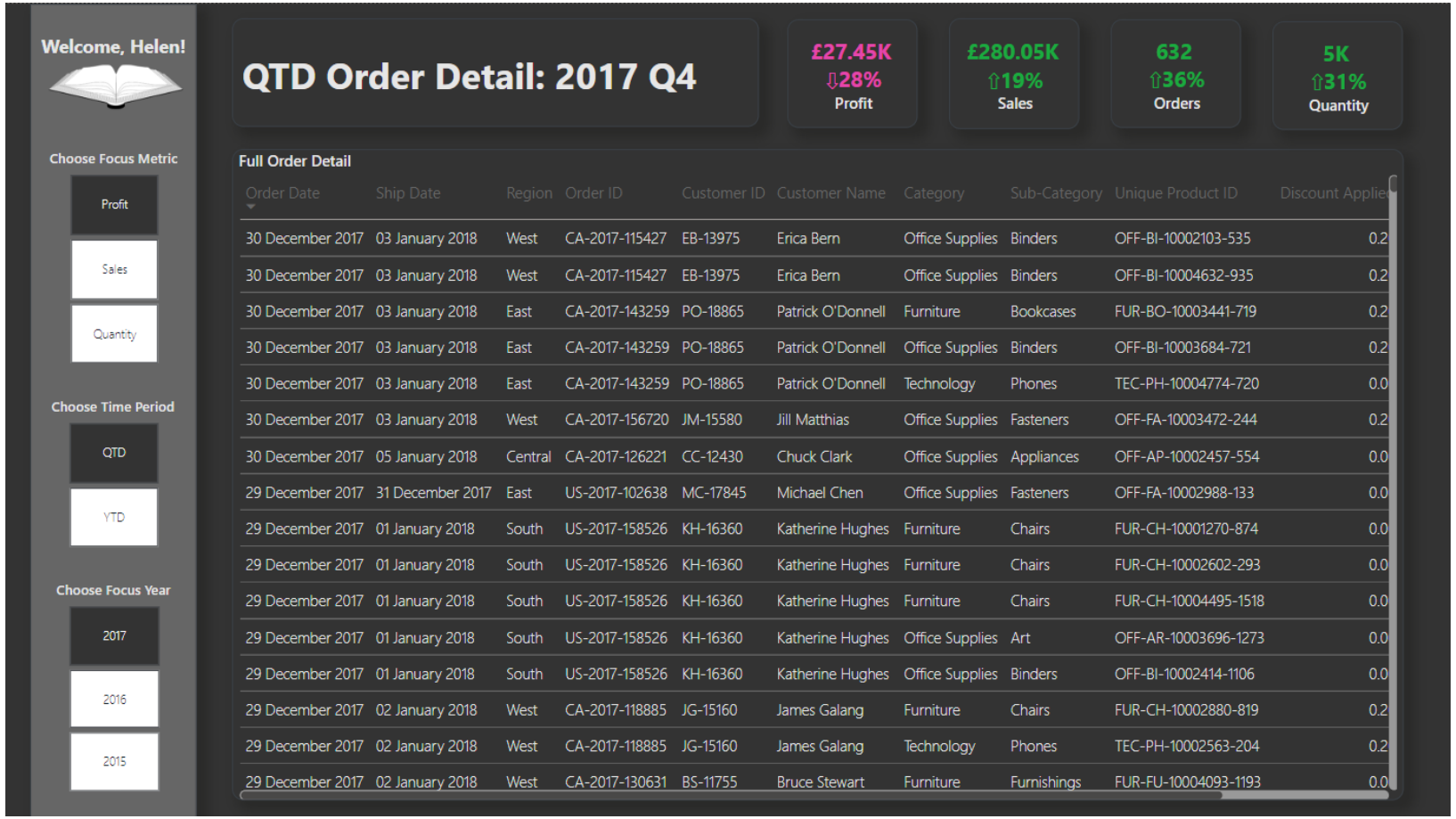
Order Detail



Full Order Details

- Level of detail only available to selected users – e.g., those responsible per Region.
- Ability to choose time period of interest (YTD / QTD). This defaults to YTD of the latest year. On this page, this controls the aggregation of KPI cards and the selection of records visible – it does not modify any aggregation of records within the table, which is at full granularity.
- Full detail allows view of days between order and shipping, discount applied, region, postal information, etc.
- Enables QA of backend data – both to identify problem transaction/orders, and to verify Power BI data model

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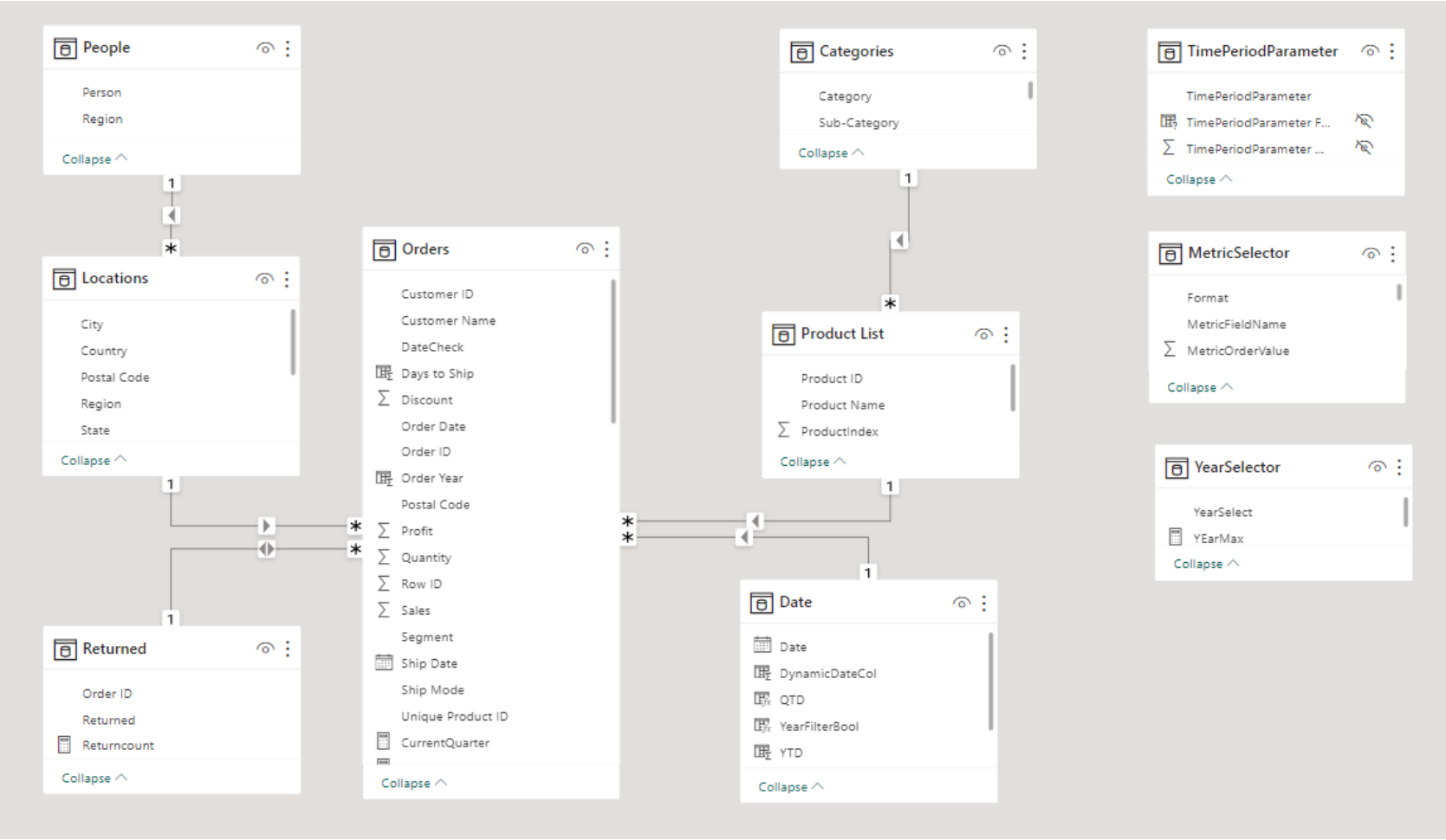
Power BI Data Model



STAR model with satellite parameter tables

- All data modelling performed within Power Query (e.g. Power BI native)
- Use of a standardised Date table (best practice for performance)
- Segmentation into semantic tables – e.g. Categories, Locations, People
- Use of unique reference keys to link tables
- Central Fact table represents base order details. Granularity of this table is one row per unique product ([Unique Product ID]) per order ([Order ID])
- Correction of some fields required to standardise values
- Satellite tables are vital to generate interactivity seen in the dashboard – e.g. time period selection and choice of different focus metrics