eCommerce Business Intelligence & Data Modelling

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SUMMARY

Transformed 540K+ raw eCommerce transactions into a clean, dimensional model using PostgreSQL. Developed a Power BI dashboard surfacing key insights on product performance, customer retention, return behaviour, and growth markets — enabling strategic decisions on pricing, inventory, and marketing.

KEY BUSINESS QUESTIONS & INSIGHTS

| Business Question	Strategic Insight
Which products and categories drive the most revenue and profit?	20% of products account for 80% of revenue, with Home Decor leading category sales. High-return categories like Kitchen & Party Supplies need pricing or quality review.
Where are return rates highest, and which patterns emerge?	Returns are concentrated in specific categories and regions, indicating potential quality issues or mismatched customer expectations.
What are the profiles of high-value, at-risk, and low-engagement customers?	High-value customers generate one-third of revenue; however, nearly 50% of new customers churn within 3 months, highlighting a retention challenge.
Which markets show the strongest growth potential?	France and Germany exhibit strong customer loyalty and growth signals, while the UK market is more saturated.
How do customer cohorts behave over time post-acquisition?	Cohort analysis reveals key churn points within the first 3 months, suggesting critical windows for engagement efforts.

DATA MODEL
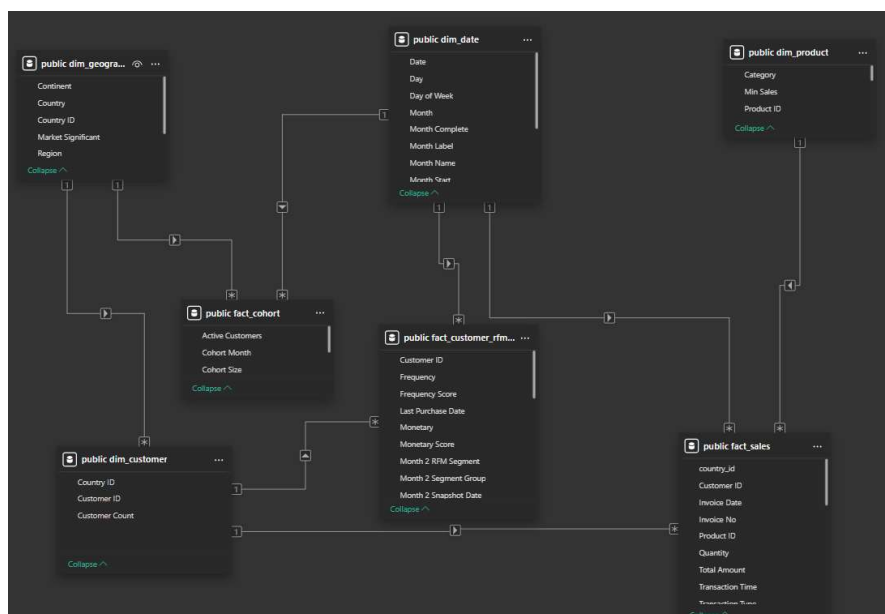
Figure 1. Star Schema powering the Power BI report — includes fact tables for sales, cohorts, RFM, and supporting dimension tables.

POWER BI REPORT

Figure 2. Executive Overview dashboard — highlights revenue, churn, product performance, and market trends.

TOOLS & METHODS

- PostgreSQL
- Power BI
- Excel
- DAX
- Dimensional Modelling