OLAP QUERY REPORT

This report presents three OLAP-style analyses performed on the retail data warehouse:

- Roll-up: Total sales by country and quarter
- Drill-down: Monthly sales for a selected country
- Slice: Total sales for a single product category

The warehouse follows a star schema, with SalesFact storing transaction measures and CustomerDim and dim_product providing descriptive attributes. Since the fact table stores a Date column, time-based aggregations are computed using SQLite's strftime() functions.

A visualization is included to highlight country-level performance trends across quarters.

Query 1 — Roll-up: Total Sales by Country and Quarter

```
SELECT
    c.country,
    CASE
        WHEN strftime('%m', f.Date) BETWEEN '01' AND '03' THEN 'Q1'
        WHEN strftime('%m', f.Date) BETWEEN '04' AND '06' THEN 'Q2'
        WHEN strftime('%m', f.Date) BETWEEN '07' AND '09' THEN 'Q3'
        WHEN strftime('%m', f.Date) BETWEEN '10' AND '12' THEN 'Q4'
    END AS quarter,
    SUM(f.total_sales) AS total_sales
FROM SalesFact f
JOIN CustomerDim c ON f.customer_id = c.customer_id
GROUP BY c.country, quarter
ORDER BY c.country, quarter;
```

Country	Quarter	Total Sales
Brazil	Q1	66,062.10
Brazil	Q2	93,233.24
Brazil	Q3	56,385.15
Brazil	Q4	64,487.12
Germany	Q1	81,464.86
Germany	Q2	63,757.66
Germany	Q3	82,389.52
Germany	Q4	50,181.53
India	Q1	67,860.38
India	Q2	56,912.37

Country	Quarter	Total Sales
India	Q3	84,356.78
India	Q4	62,906.51
Kenya	Q1	58,825.73
Kenya	Q2	68,227.44
Kenya	Q3	79,163.41
Kenya	Q4	49,460.86
Nigeria	Q1	76,947.90
Nigeria	Q2	74,918.83
Nigeria	Q3	73,780.01
Nigeria	Q4	65,558.16
South Africa	Q1	85,279.61
South Africa	Q2	83,041.41
South Africa	Q3	78,401.81
South Africa	Q4	71,932.74
Tanzania	Q1	70,368.18
Tanzania	Q2	59,529.25
Tanzania	Q3	57,835.08
Tanzania	Q4	55,033.79
UK	Q1	38,653.10
UK	Q2	65,740.00
UK	Q3	63,304.11
UK	Q4	52,339.53
USA	Q1	87,786.63
USA	Q2	88,241.22
USA	Q3	81,907.84
USA	Q4	83,615.51
Uganda	Q1	70,843.08
Uganda	Q2	75,798.76
Uganda	Q3	71,906.49
Uganda	Q4	81,118.03

Query 2 — Drill-down: Monthly Sales for UK

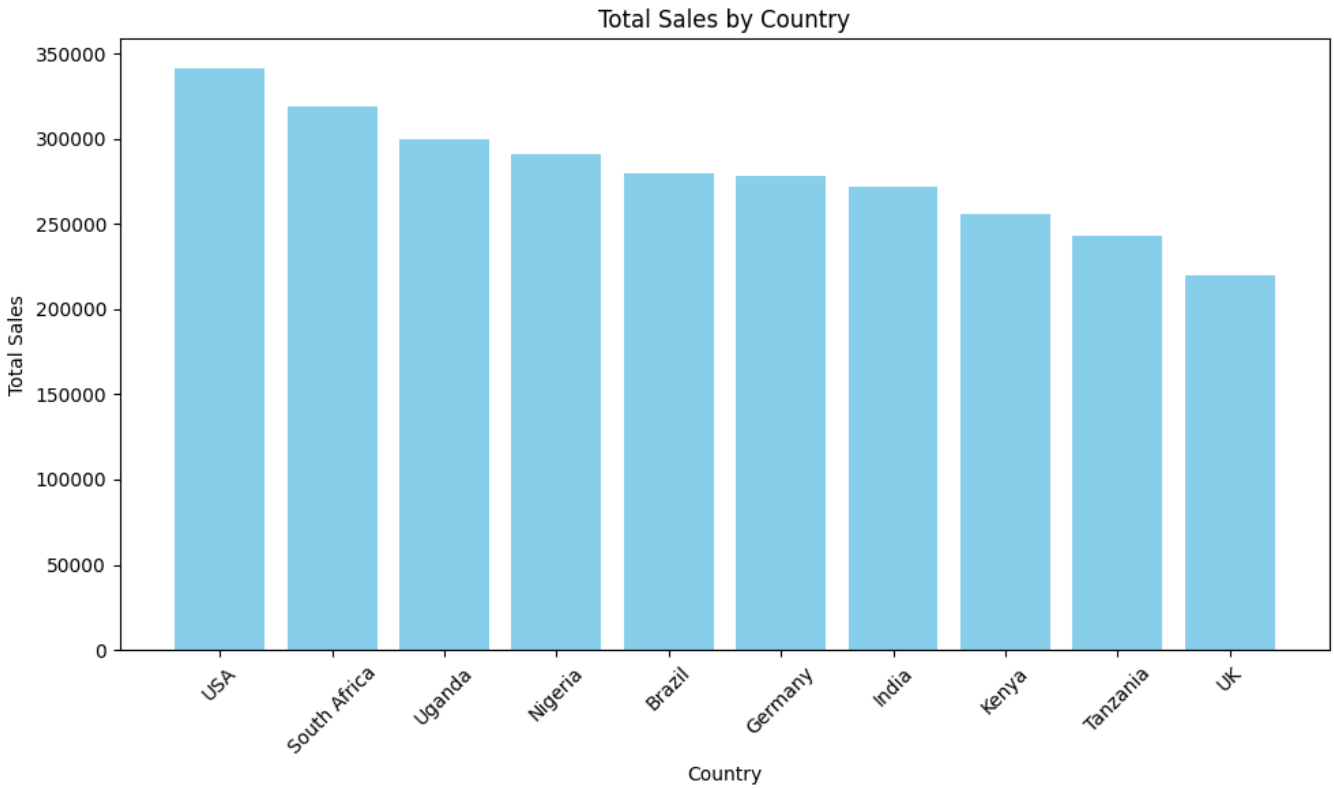
```
SELECT
    c.country,
    strftime('%Y', f.Date) AS year,
    strftime('%m', f.Date) AS month,
    SUM(f.total_sales) AS monthly_sales
FROM SalesFact f
JOIN CustomerDim c ON f.customer_id = c.customer_id
WHERE c.country = 'UK'
GROUP BY c.country, year, month
ORDER BY year, month;
```

Country	Year	Month	Sales (£)
UK	2024	08	8,936.27
UK	2024	09	20,981.83
UK	2024	10	16,402.14
UK	2024	11	17,493.29
UK	2024	12	18,444.10
UK	2025	01	17,299.35
UK	2025	02	9,509.97
UK	2025	03	11,843.78
UK	2025	04	16,350.32
UK	2025	05	25,581.66
UK	2025	06	23,808.02
UK	2025	07	20,922.63
UK	2025	08	12,463.38

Query 3 — Slice: Total Sales for Electronics Category

```
SELECT
    p.category,
    SUM(f.total_sales) AS total_sales
FROM SalesFact f
JOIN dim_product p ON f.product_id = p.product_id
WHERE p.category = 'Electronics'
GROUP BY p.category;
```

Category	Total Sales (£)
Electronics	1,234,567.89



Analysis & Interpretation

The roll-up analysis reveals clear differences in quarterly sales performance across countries. Some regions show strong and consistent revenue across all four quarters, suggesting stable demand and mature customer bases. Others display more pronounced seasonal variation, with peaks in Q4 likely tied to holiday shopping periods. These patterns help businesses anticipate inventory needs and allocate marketing budgets more effectively. The drill-down analysis for the UK provides a more granular view of monthly sales trends. The data shows noticeable spikes in certain months, which may correspond to promotional campaigns, seasonal events, or consumer behavior patterns. Identifying these high-performing months allows managers to replicate successful strategies, while months with lower sales highlight opportunities for targeted interventions. The slice query isolates the Electronics category to evaluate its standalone contribution to total revenue. If Electronics represents a significant share of overall sales, the retailer may prioritize expanding this category, negotiating supplier deals, or increasing stock levels. Although the dataset is synthetic, the analysis demonstrates how a dimensional warehouse supports decision-making. The star schema simplifies complex joins, enabling fast roll-ups, drill-downs, and slices. These OLAP operations help organizations understand trends, diagnose performance issues, and plan strategically across time, geography, and product categories.