

Sales & Revenue Performance Analysis Using SQL

Business Question :

- Can transactional sales and marketing data be analysed using SQL to understand revenue drivers, conversion efficiency, and pricing impact on overall performance?

Use Cases :

- Revenue teams need visibility into whether sales growth is driven by genuine demand or promotional strategies.
- Understanding how marketing engagement translates into purchases helps optimise spend allocation.
- Identifying trends in revenue movement enables better forecasting and planning.
- Evaluating discount-led sales helps determine whether growth is sustainable or volume-driven.

Dataset Used :

- Synthetic E-commerce transactional dataset representing sales, marketing engagement, and pricing activity.
- Dataset contains customer transactions captured across regions and product categories.

Key fields used in the analysis :

- transaction_date
- category
- region
- units_sold
- revenue
- impressions
- clicks
- ad_spend
- discount_applied

Assumption :

- Dataset is synthetic and used purely for analytical demonstration.
- Revenue values represent realised sales and not accounting-adjusted revenue.
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- December data reflects partial-period activity and is not considered a full operational month.

Analytics : Four key analytical areas were evaluated to understand revenue behaviour and sales efficiency.

- **Return on Advertising Spend (ROAS)** – Measure conversion spends to revenue
- **SQL Query Used :**
 - o `SELECT`
 - o `SUM(revenue) AS total_revenue,`
 - o `SUM(ad_spend) AS total_spend,`

- $SUM(revenue) / SUM(ad_spend)$ AS roas
 - FROM sales_data;
- **Funnel Efficiency Analysis** (Impressions → Clicks → Sales) – Evaluates customer engagement and actual purchase rate
- **SQL Query Used :**
 - SELECT
 - category,
 - $SUM(impressions)$ AS impressions,
 - $SUM(clicks)$ AS clicks,
 - $SUM(units_sold)$ AS units_sold,
 - $ROUND(SUM(clicks)/SUM(impressions)*100,2)$ AS ctr_pct,
 - $ROUND(SUM(units_sold)/SUM(clicks)*100,2)$ AS conversion_pct
 - FROM sales_data
 - GROUP BY category;
- **Revenue Velocity** (M-o-M Revenue Movement) – Revenue trends over time for consistency.
- **SQL Query Used :**
 - SELECT
 - month,
 - monthly_rev,
 - $LAG(monthly_rev)$ OVER (ORDER BY month) AS prev_month,
 - $ROUND((monthly_rev - LAG(monthly_rev)) OVER (ORDER BY month))$
 - $/LAG(monthly_rev)$ OVER (ORDER BY month) * 100,2 AS mom_growth
 - FROM (
 - SELECT
 - DATE_FORMAT(transaction_date, '%Y-%m') AS month,
 - $SUM(revenue)$ AS monthly_rev
 - FROM sales_data
 - GROUP BY month
 -) t;
- **Discount Sensitivity Analysis** - Assessed whether revenue growth is driven by pricing incentives or organic demand.
- **SQL Query Used :**
 - SELECT
 - category,
 - CASE
 - WHEN discount_applied = 0 THEN 'No Discount'
 - WHEN discount_applied <= 10 THEN 'Low Discount'
 - WHEN discount_applied <= 25 THEN 'Medium Discount'
 - ELSE 'High Discount'
 - END AS discount_band,
 - $SUM(units_sold)$ AS units_sold,
 - $SUM(revenue)$ AS revenue,
 - $ROUND(SUM(revenue)/SUM(units_sold),2)$ AS revenue_per_unit
 - FROM sales_data
 - GROUP BY category, discount_band;

Findings and Interpretations :

- Marketing spend generated strong revenue returns, indicating efficient top-of-funnel performance and consistent engagement levels across categories.
- Conversion behaviour remained relatively stable across product segments, suggesting customer acquisition efforts are reaching relevant audiences rather than generating low-quality traffic.
- Revenue trends showed steady month-on-month performance with limited volatility, indicating predictable sales momentum rather than irregular spikes.
- Discount analysis revealed that while discounted transactions drove the majority of sales volume, non-discounted transactions generated higher revenue per unit, indicating underlying pricing power.

Business Implications :

- Marketing investments appear effective and can be sustained, with optimisation focused more on category allocation rather than overall spend reduction.
- Stable conversion behaviour suggests operational improvements should focus on pricing and product positioning rather than lead generation.
- Consistent revenue velocity supports reliable forecasting and planning, provided seasonal or partial-period distortions are monitored.
- The analysis demonstrates how transactional datasets can be leveraged to move beyond reporting and support data-informed revenue strategy decisions.

Conclusion :

- SQL-driven analysis enables evaluation of the complete revenue lifecycle from customer engagement to realised sales.
- Combining marketing efficiency, conversion behaviour, revenue trends, and pricing impact provides a comprehensive understanding of sales performance.
- The analysis demonstrates how transactional datasets can be leveraged to move beyond reporting and support data-informed revenue strategy decisions.
- Such analytical approaches can help organisations balance growth initiatives with revenue quality and long-term sustainability.