

[GitHub](#)

[Resume](#)

[Linktree](#)

ECOM CASE STUDY

By Ayush Kumar

Business Objective

Optimize profitability & efficiency by answering key questions

Ask

Before diving into data, Let's define the problem to be solved and fully understand **stakeholders' expectations**.

Defining the problem involves **Gap analysis**, where we look at the current state and identify its difference from the ideal state.

WHY FOLLOW THE DATA ANALYST PROCESS?

- Provides structure, minimizes **bottlenecks**.
- Ensures **clarity** and efficiency in analysis.



Let's get started...

Planning for upcoming steps before & during Analysis:

Prepare

Export Transform Load

End-to-end ETL **pipelines** developed for data extraction, transformation, and loading. Dimensional data model built for business-friendly reporting on sales, customers, and products.

Exploratory Data Analysis

Using SQL to uncover insights from an e-commerce dataset. Key steps include: **Magnitude analysis** comparing metrics across dimensions, **Ranking** to identify top/bottom performers.

Advanced Analytics & Reporting

Performing more advanced analysis on data, including part-to-whole analysis and data segmentation. Additionally, we will create a Customer 360* report and a Product Performance report that combine all key metrics and KPIs to create interactive dashboards.

Explore & Profile the Data

- Add columns like *customer_age*, *product_age*, and *last_order_date* to **enhance insights** into retention, product lifecycle, and customer segmentation.
- **Identify anomalies** and perform required transformations as done with the *create_date* attribute.

Steps Highlighted in SQL Scripts:

1. Data Verification:

- Adjusted `create_date` by 2 years for trend consistency.

```
sql                                                                    Copy
UPDATE `dim_customers` SET create_date = DATE_SUB(create_date, INTERVAL 2 YEAR);
```

2. Schema Updates:

- Added `customer_age` and `product_age` for cohort analysis.

3. Data Exploration:

- Validated delivery time consistency (all orders: 7 days).

```
sql                                                                    Copy
SELECT DATE_DIFF(shipping_date, order_date, DAY) AS delivery_time FROM fact_sales;
```

- **Dimensions:** Categories, countries, product names (non-numeric).
- **Measures:** Sales amount, quantity, price (aggregatable numeric).

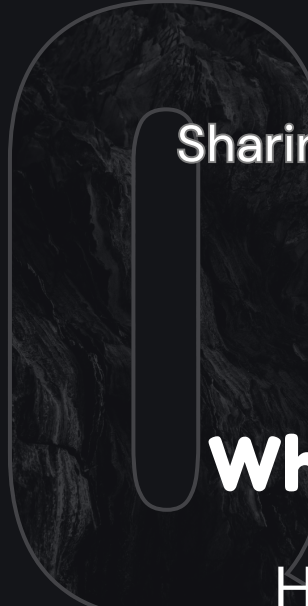
SQL Example – Unique Categories:

```
sql                                                                    Copy
SELECT DISTINCT category FROM dim_products;
-- Result: Electronics, Clothing, Furniture, Accessories
```

Segment Key Dimensions & Measures

- Segment columns in key groups as Dimensions & Measures, **Streamlining the process** of selecting the same for further analysis.
- Exploring options of creating **new Dimensions** from the latter.

And much more..



Sharing our insights by answering key questions:

[Dashboard](#)

[Share](#)

Which Products/categories generate highest revenue & why?

High-end Bike models generate the highest revenue of about **\$1.2M with 336 orders** in the year 2024 alone. This is way higher than other two categories all thanks to their huge price difference & popularity that they have gained over the years.

How different Customer segments are impacting sales?

VIP customers lead in total sales and AOV. Bike products align with this segment's AOV, suggesting dominance in bike sales.

Older customers (60+) prefer premium touring bikes like the Touring-1000, **averaging \$2.4k**, contributing to steady revenue.

What are the trends in sales over time?

Recency of **4-6 months** for customers suggests a recent influx of New customers, possibly driving sales of mid-range or newer bike models like the **Mountain-500, avg. price \$540**

Finally, Strategizing actions for the business to undertake:

Act

Gather Detailed Customer-Product Data

- Implement an efficient tracking system, linking purchases with customer segments (e.g., VIP, Regular, New) and product categories for a more robust Analysis.
- This will reveal buying patterns, enabling better targeted marketing and inventory optimization.

Prioritize High-Revenue Products and VIP Customers

- **Shift marketing**, inventory, and sales efforts toward high-end bikes (e.g., Road-150, Mountain-200) and VIP customers, who drive the most revenue.
- Introduce **loyalty programs** and campaigns that encourage customers to increase their AOV by **upselling products**. This strategy aims to boost the **company's margin segment**.

That's all. 💰