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# ECOM CASE STUDY

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## **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](#)

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## 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. 💰