

■ Advanced Sales Analysis Using SQL

■ Project Overview

This project focuses on performing an advanced sales analysis using structured query language (SQL). The goal was to uncover actionable insights about sales performance, customer segmentation, and product contribution. The analysis was conducted on three main datasets: **Fact_Sales**, **Dim_Customers**, and **Dim_Products**.

■ Objectives

- Analyze year-over-year sales growth and identify top-performing periods.
- Understand customer purchase behavior through segmentation analysis.
- Discover key product categories driving overall revenue.
- Implement advanced SQL queries using CTEs and Window Functions for deeper insights.

■ Tools & Techniques

SQL Server was used as the primary tool. Key SQL concepts applied include: **Common Table Expressions (CTEs)**, **Window Functions**, **Joins**, and **Views**. These techniques enabled multi-level data aggregation and ranking analysis.

■ SQL Highlights

Feature	Example Query
Common Table Expression (CTE)	<pre>WITH CategorySales AS (SELECT category, SUM(sales) AS total_sales FROM Fact_Sales GROUP BY category) SELECT * FROM CategorySales;</pre>
Window Function Example	<pre>SELECT year, SUM(sales) AS total_sales, RANK() OVER(ORDER BY SUM(sales) DESC) AS ranking FROM Fact_Sales GROUP BY year;</pre>

■ Key Insights & Findings

- The year **2013** recorded the highest overall sales revenue.
- The **Bikes** category contributed to more than **96%** of total sales.

- Customer segmentation identified three main groups: **VIP (56 customers)**, **Regular (3800 customers)**, and **New (14543 customers)**.
- The age group **50+** generated the highest revenue, exceeding **\$19 million**.

■ Conclusion & Future Work

This project demonstrated how SQL can be leveraged for advanced data analysis, enabling businesses to extract meaningful patterns from raw transactional data. The next step is to visualize these insights using Power BI for better interpretation and decision-making.