**Business Intelligence Case Study on KMS Orders Using SQL**

**Project Background**

KMS is a fictional business entity used as a case study for training in data science and analytics. The organization seeks to understand its sales distribution, customer behavior, shipping cost efficiency, and profitability trends across time and customer segments. As a data analyst, your role was to use SQL to interrogate the relational database and extract actionable insights. This project was developed as part of the 2025 DSA program to demonstrate practical knowledge of SQL querying, aggregation, grouping, filtering, and business reporting.

**Objectives**

* To use SQL to extract business insights from a retail sales database.
* To explore customer segmentation, product category performance, and geographic sales trends.
* To evaluate shipping strategies and operational cost management.
* To identify opportunities for revenue enhancement and customer profitability.

**Repository Contents**

* **DSA Project.sql**: Contains the complete SQL scripts with comments.
* **DSA SQL Project 2025.docx**: The business questions and goals for analysis

**Methodology**

* Data Source: KMS Sql Case Study table from a SQL Server database.
* SQL Environment: SQL Server Management Studio (SSMS)
* Analytical Techniques:
  + GROUP BY, ORDER BY, and HAVING clauses
  + Use of SUM(), COUNT(), AVG() aggregate functions
  + OFFSET-FETCH clause for top/bottom queries
  + Filtering by categorical and temporal fields

**Business Questions Explored**

1. Which **product category** generated the highest revenue?
2. What are the **Top 3 and Bottom 3 regions** by total sales?
3. What is the **total revenue of appliances in Ontario**?
4. Which **10 customers** bring in the **least revenue**?
5. Which **shipping method** costs KMS the most?
6. Who are the **most valuable customers**, and what do they typically buy?
7. Which **small business** and **corporate customer** leads in sales/orders?
8. Who is the **most profitable consumer** customer?
9. Which customers **returned items**, resulting in **negative profit**?
10. Does KMS use **shipping methods appropriately** in line with **order priority**?

**Key Insights**

**1. Top Product Category**

* The Technology category had the highest total sales.

**2. Sales by Region**

* **Top Regions**: West, Central, East
* **Bottom Regions**: Atlantic, North, Yukon

**3. Appliances in Ontario**

* Appliances contributed moderately to Ontario’s total sales but had room for marketing optimization.

**4. Bottom 10 Customers**

* These customers accounted for a very small fraction of total revenue, indicating possible retention or marketing gaps.

**5. Shipping Cost Analysis**

* Express Air was the most expensive method.
* However, it was used even in **low-priority orders**, suggesting cost inefficiencies.

**6. Most Valuable Customers**

* Customers with high diversity in products purchased showed greater loyalty and profitability.
* Buying behavior skewed toward Technology and Office Supplies.

**7. Top Small Business & Corporate Clients**

* Small Business: Paul Hensley (example) topped with the highest sales.
* Corporate (2009–2012): Jennifer O’Connell placed the most orders.

**8. Most Profitable Consumer**

* Cynthia Randall (example) was the most profitable customer in the Consumer segment.

**9. Returned Items**

* Returns were more frequent in the Consumer segment and often led to **net negative profit**.

**10. Shipping vs Order Priority**

* There is a **disconnect between shipping cost and priority**:
  + Express Air was used for **low-priority orders**, incurring unnecessary costs.
  + Delivery Truck, while slower, was underutilized for non-urgent orders.

**Recommendations**

* **Introduce shipping policies** to better align cost with priority.
* Create **customer-specific marketing plans** to re-engage the bottom 10 customers.
* Promote high-performing product categories via bundle promotions.
* Perform **root-cause analysis** on high-return items to reduce loss.
* Automate **order fulfillment logic** based on delivery urgency and cost ratio.