Customers and Products Analysis Using SQL

Data analysis has proven to be very effective in sales. This is because we can extract key performance indicators (KPIs) to make smarter decisions. This saves time, resources, and money.

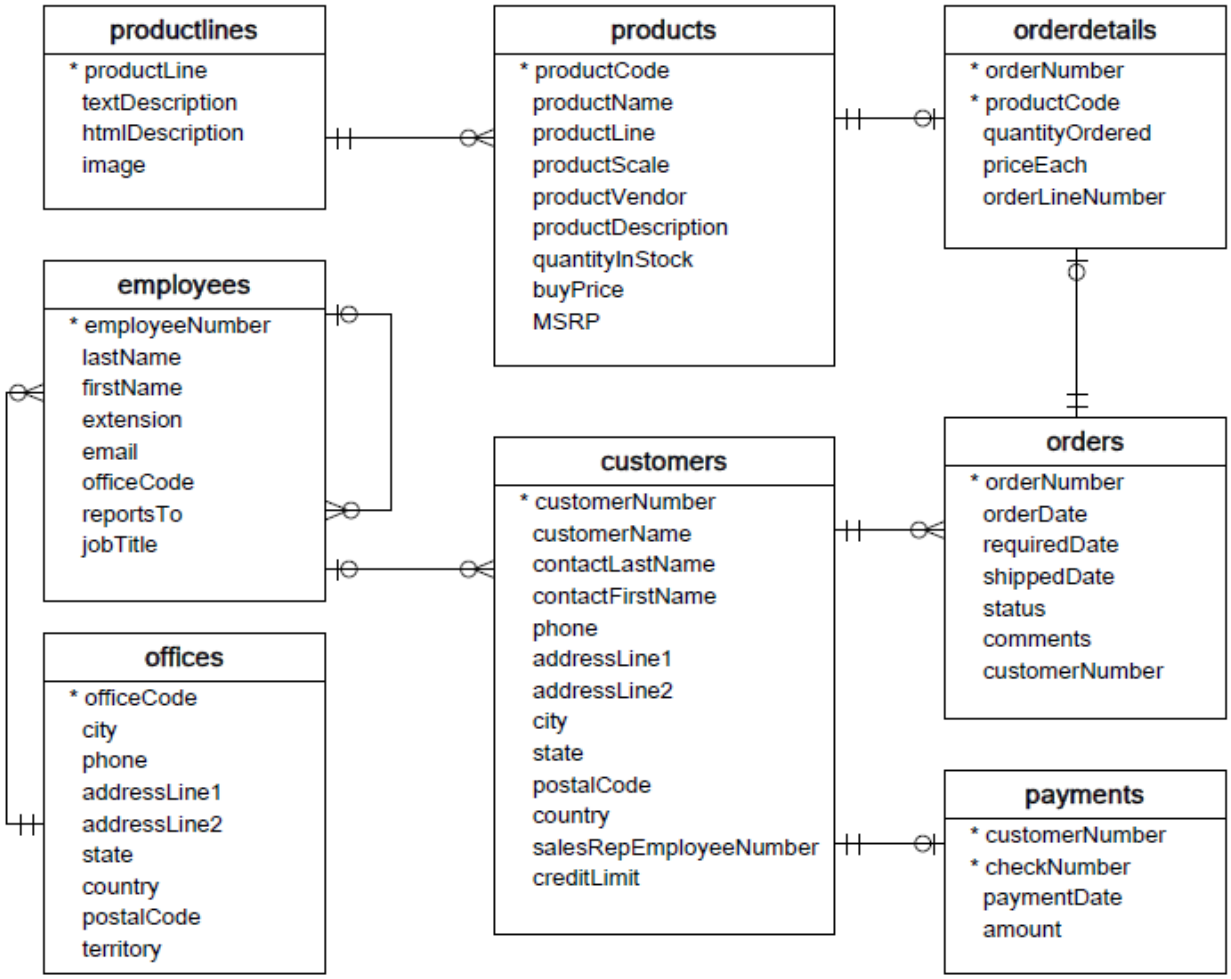
Sales data analysis can cover many aspects (sales, production, customer experience, employee efficiency); therefore, it presents many challenges. So, having a project like this in your portfolio can help demonstrate your skills. The goal of this project is to analyze data from a sales records database for scale model cars and extract information for decision-making.

Good analysis starts with questions. Below are the questions we want to answer for this project.

- Question 1: Which products should we order more of or less of?
- Question 2: How should we tailor marketing and communication strategies to customer behaviors?
- Question 3: How much can we spend on acquiring new customers?

First, we'll explore the database

The scale model cars database schema is as follows.



It contains eight tables:

- Customers: customer data
- Employees: all employee information
- Offices: sales office information
- Orders: customers' sales orders
- OrderDetails: sales order line for each sales order
- Payments: customers' payment records
- Products: a list of scale model cars

- ProductLines: a list of product line categories

Question 1: Which Products Should We Order More of or Less of?

Now that we know the database a little better, we can answer the first question: which products should we order more of or less of? This question refers to inventory reports, including low stock(i.e. product in demand) and product performance. This will optimize the supply and the user experience by preventing the best-selling products from going out-of-stock.

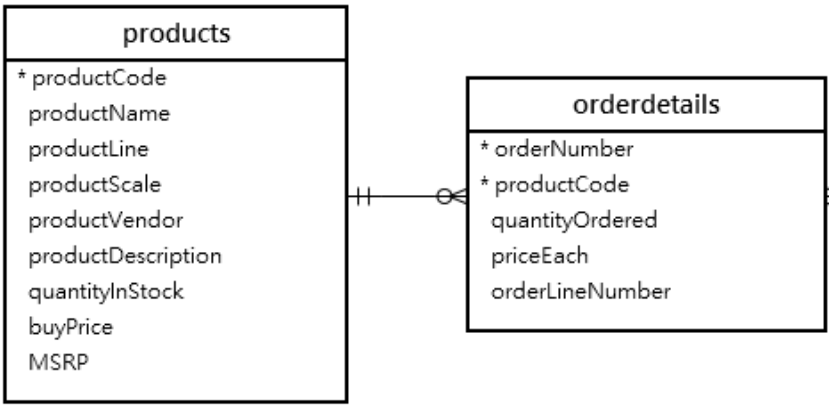
- The low stock represents the quantity of the sum of each product ordered divided by the quantity of product in stock. We can consider the ten highest rates. These will be the top ten products that are almost out-of-stock or completely out-of-stock.
- The product performance represents the sum of sales per product.
- Priority products for restocking are those with high product performance that are on the brink of being out of stock.

We'll need the following two tables to perform these calculations: namely . .

$$\text{low stock} = \frac{\text{SUM}\left(\text{quantityOrdered}\right)}{\text{quantityInStock}}$$

&

$$\text{product performance} = \text{SUM}\left(\text{quantityOrdered} \times \text{priceEach}\right).$$



Instructions

1. Write a query to compute the low stock for each product using a correlated subquery.

- Round down the result to the nearest hundredth (i.e., two digits after the decimal point).
- Select productCode, and group the rows.
- Keep only the top ten of products by low stock.

2. Write a query to compute the product performance for each product.
    - Select productCode and group the rows by it.
    - Keep only the top ten products by product performance.
3. Combine the previous queries using a Common Table Expression (CTE) to display priority products for restocking using the IN operator.

Question 2: How Should We Match Marketing and Communication Strategies to Customer Behavior?

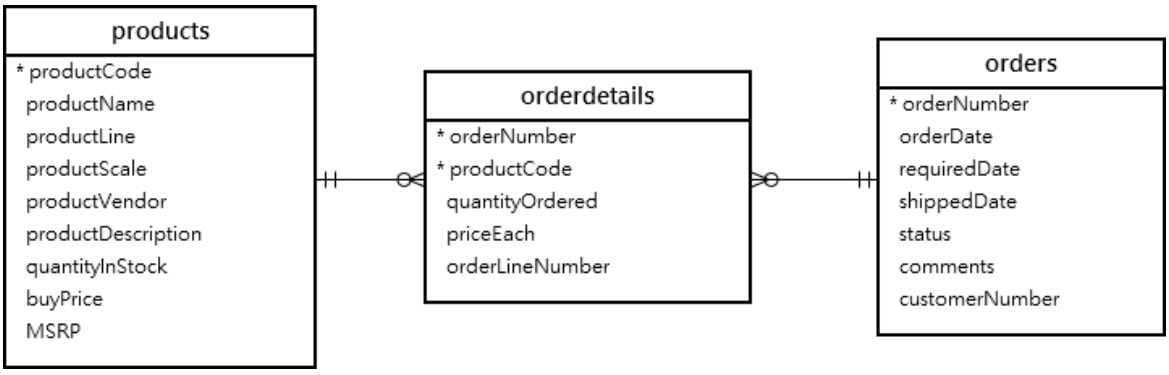
In the first part of this project, we explored products. Now we'll explore customer information by answering the second question: how should we match marketing and communication strategies to customer behaviors? This involves categorizing customers: finding the VIP (very important person) customers and those who are less engaged.

- VIP customers bring in the most profit for the store.
- Less-engaged customers bring in less profit.

For example, we could organize some events to drive loyalty for the VIPs and launch a campaign for the less engaged.

Before we begin, let's compute how much profit each customer generates.

We'll need these tables:



Instructions

1. Write a query to join the products, orders, and orderdetails tables to have customers and products information in the same place.
    - Select customerNumber.
    - Compute, for each customer, the profit, which is the sum of quantityOrdered multiplied by
        1. priceEach minus buyPrice: SUM(quantityOrdered * (priceEach - buyPrice)).

Instructions

1. Write a query to find the top five VIP customers.
    - Use the the previous query as a CTE.
    - Select the following columns: contactLastName, contactFirstName, city, and country from the customers table and the profit from the CTE.
2. Similar to the previous query, write a query to find the top five least-engaged customers.

Question 3: How Much Can We Spend on Acquiring New Customers?

Before answering this question, let's find the number of new customers arriving each month. That way we can check if it's worth spending money on acquiring new customers.

Table:

year_month	number_of_new_customers_props	new_customers_total_props
200301	100.0	100.0
200302	100.0	100.0
200303	100.0	100.0
200304	100.0	100.0
200305	100.0	100.0
200306	100.0	100.0
200307	75.0	68.3
200308	66.0	54.2

As you can see, the number of clients has been decreasing since 2003, and in 2004, we had the lowest values. The year 2005, which is present in the database as well, isn't present in the table above, this means that the store has not had any new customers since September of 2004. This means it makes sense to spend money acquiring new customers

To determine how much money we can spend acquiring new customers, we can compute the Customer Lifetime Value (LTV), which represents the average amount of money a customer generates. We can then determine how much we can spend on marketing.

Instructions

1. Write a query to compute the average of customer profits using the CTE on the query.

Conclusion

Here are the answers to our questions.

- **Question 1:** Which products should we order more of or less of?

Vintage cars and motorcycles are the priority for restocking. They sell frequently, and they are the highest-performance products.

productName	productLine
1968 Ford Mustang	Classic Cars
1911 Ford Town Car	Vintage Cars
1928 Mercedes-Benz SSK	Vintage Cars
1960 BSA Gold Star DBD34	Motorcycles
1997 BMW F650 ST	Motorcycles
1928 Ford Phaeton Deluxe	Vintage Cars
2002 Yamaha YZR M1	Motorcycles
The Mayflower	Ships
F/A 18 Hornet 1/72	Planes
Pont Yacht	Ships

Question 2: How should we match marketing and communication strategies to customer behaviors?

- VIP customers

contactLastName	contactFirstName	city	country	profit
Freyre	Diego	Madrid	Spain	326519.66
Nelson	Susan	San Rafael	USA	236769.39
Young	Jeff	NYC	USA	72370.09
Ferguson	Peter	Melbourne	Australia	70311.07
Labrune	Janine	Nantes	France	60875.30

- Least engaged customers

contactLastName	contactFirstName	city	country	profit
Young	Mary	Glendale	USA	2610.87
Taylor	Leslie	Brickhaven	USA	6586.02
Ricotti	Franco	Milan	Italy	9532.93
Schmitt	Carine	Nantes	France	10063.80
Smith	Thomas	London	UK	10868.04

Now that we have the most-important and least-committed customers, we can determine how to drive loyalty and attract more customers.

- Question 3: How much can we spend on acquiring new customers?

ltv
39039.594388

LTV tells us how much profit an average customer generates during their lifetime with our store. We can use it to predict our future profit. So, if we get ten new customers next month, we'll earn 390,395 dollars, and we can decide based on this prediction how much we can spend on acquiring new customers.