Data Exploration with SQL: Sales, Customers, and Product Performance Analysis

Implementing SQL

MYSKILL | MINI PORTFOLIO

Background.

In business, data utilization is essential to understand customers, optimize product stock, and improve operational efficiency. Transaction data analysis and customer service can help companies make better decisions.

This portfolio features SQL-based analytics to extract business insights from customer, order, product, and support ticket data.

Case Study

This case study focuses on several points:

- Identify key customers based on the total order amount.
- Analyze product performance, including products that have never been ordered.
- Evaluate customer service efficiency through the number of support tickets resolved.
- Perhitungan total pendapatan dan rata-rata harga produk untuk strategi bisnis yang lebih baik.

Dataset Information

The datasets used in this case consist of several different tables: products, customers, orders, order details, employees, and support tickets.

Products data	
column	description
product_name	a unique ID for each product (primary key)
category	the electronic category for each product
price	price of product (USD)
stock_quantity	the amount of the available product stock
discount	discount given for each product (%)

Dataset Information

customers data	
column	description
customer_id	a unique ID for each customer (primary key)
first_name	first name of customer
last_name	last name of customer
email	customer's email
phone	customer's phone number
address	customer's address

Dataset Information

orders data	
column	description
order_id	a unique ID for each order (primary key)
customer_id	ID of customers who placed the order (Foreign key, refer to customer.customer_id)
order_date	date the order was created
total_amount	total order amount in USD

Dataset Information

order details data	
column	description
order_id	ID of the order (Foreign key, refer to orders.order_id)
product_id	ID of the product ordered (Foreign key, refer to products.product_id)
quantity	the amount of product ordered
unit_price	Price per unit of product at the time of purchase

Dataset Information

employees data	
column	description
employee_id	a unique ID of each employee (primary key)
first_name	the first name of employee
last_name	the last name of employee
email	employee's email
phone	employee's phone number
hire_date	employee hiring date
department	Department where the employee works

Dataset Information

support ticket data	
column	description
ticket_id	a unique ID for each ticket support (primary key)
customer_id	ID of customer who report the problem (Foreign key, refer to customer.customer_id)
employee_id	ID of employee who handling the ticket (Foreign key, refer to employees.employee_id)
issue	the description of customer's problem
status	status of ticket (open = unfinished, resolved = finished)
created_at	time the ticket was created
resolved_at	time the ticket was resolved

SQL Exercises

Question 1

Identify the top 3 customers by total order amount

Answer

```sql
select
c.first_name,
c.last_name,
sum(o.total_amount) as total_order_amount
from Customers as c
join orders as o ON o.customer_id = c.customer_id
group by c.customer_id
order by total_order_amount desc
LIMIT 3;
```

first_name	last_name	total_order_amount
John	Doe	3535.00
Jane	Smith	1135.00
Michael	Brown	300.00

SQL Exercises

Question 2

Find the average order amount for each customer

Answer

```
select
c.first_name,
c.last_name,
avg(total_amount) as average_order
from Customers as c
join orders as o ON c.customer_id = o.customer_id
group by c.customer_id
order by average_order desc;
```

first_name	last_name	average_order
John	Doe	1767.500000
Jane	Smith	567.500000
Michael	Brown	300.000000
Sarah	Davis	165.000000
Emily	Johnson	25.000000

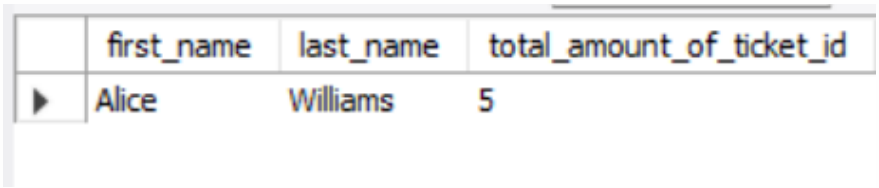
SQL Exercises

Question 3

Find all employees who have completed more than 4 support tickets

Answer

```
select
e.first_name,
e.last_name,
count(s.ticket_id) as total_amount_of_ticket_id
from employees as e
join SupportTickets as s ON e.employee_id = s.employee_id
where s.status = 'resolved'
group by e.employee_id
having total_amount_of_ticket_id>4;
```



	first_name	last_name	total_amount_of_ticket_id
▶	Alice	Williams	5

SQL Exercises

Question 4

Find all products that have never been ordered

Answer

```
select
p.product_name
from products as p
left join orderdetalis as od ON od.product_id = p.product_id
where od.order_id is null;
```

	product_name
▶	Wireless Earphones

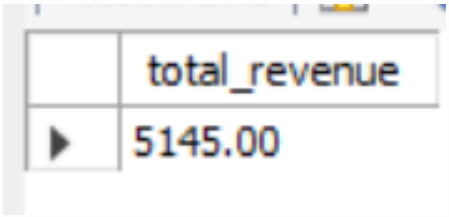
SQL Exercises

Question 5

Calculate the total revenue generated from product sales

Answer

```
select
sum(quantity * unit_price) as total_revenue
from orderdetalis;
```



	total_revenue
▶	5145.00

SQL Exercises

Question 6

Find the average price of products for each category and find categories with an average price of more than $500

Answer

```sql
with cte_avg_price as (
select category,
    product_name,
    avg(price) as average_price
from products
group by category, product_name
)
select * from cte_avg_price
where average_price > 500
order by average_price desc;
```

	category	product_name	average_price
▶	Laptop	Gaming Laptop	2000.000000
	Laptop	Laptop Pro 15	1500.000000
	Smartphone	Smartphone X	800.000000

SQL Exercises

Question 7

Find customers who have made at least one order totaling more than $1000

Answer

```
select * from customers
where customer_id in
(select customer_id
from orders
where total_amount > 1000);
```

customer_id	first_name	last_name	email	phone	address
1	John	Doe	john.doe@example.com	123-456-7890	123 Elm Street
NULL	NULL	NULL	NULL	NULL	NULL

Insights from SQL Exercises

1. The customers with the highest total number of orders belong to John Doe, Jane Smith, and Michael Brown.
2. Based on the results, customers have varying average order amounts, with John Doe having the highest average order amount, 1767.5, and Emily Johnson having the lowest average, 25.
3. Only one employee, Alice Williams, has completed more than 4 support tickets, for a total of 5 support tickets.
4. Based on the search results, it turns out that there is 1 product that customers, namely wireless earphones, have never ordered.
5. The total revenue generated from product sales so far has reached $5145.
6. Product categories that have an average price above $500 are laptops and smartphones. there are 2 products from the laptop category, namely gaming laptops and pro 15 laptops, while in the smartphone category there is only 1 product, namely smartphone x.
7. Customers on behalf of John Doe are customers who spend more than $1000 in one purchase. companies can create strategies by providing benefits such as shopping vouchers to retain these customers.

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