PIZZA SALE

ANALYSIS PROJECT

USING SQL

ANALYZED BY:

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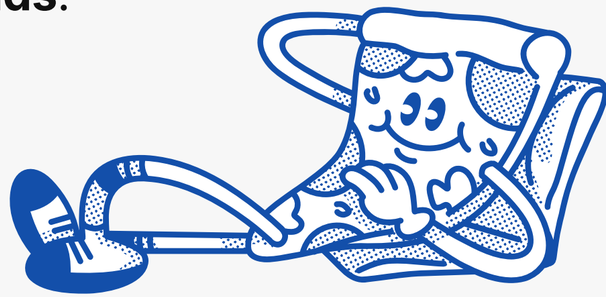
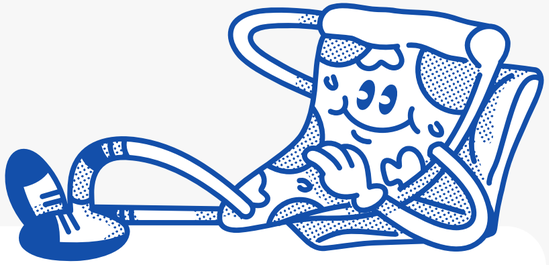
INTRODUCTION

- In this project, **we analyzed pizza sales data using SQL** to answer key business questions provided by the client.
- The **dataset consists of four relational tables**, which store information related to orders, pizzas, pizza types, and order details.
- To understand the relationship between the data, a **data model (ER Diagram) was created using Power BI**, which helped in defining proper table relationships and ensuring accurate analysis.
- **All client questions were solved using SQL queries**, applying basic and intermediate concepts **such as joins, group by, aggregate functions, and limit**.
- Each question includes a business insight to help **convert raw data into meaningful information**.
- The overall goal of this project is to support business decision-making by **providing clear insights and answers related to sales performance, customer preferences, and revenue trends**.



TABLES



DESCRIBE orders;

	Field	Type	Null	Key	Default	Extra
▶	order_id	int	NO	PRI	NULL	
	order_date	date	NO		NULL	
	order_time	time	NO		NULL	

DESCRIBE order_details;

	Field	Type	Null	Key	Default	Extra
▶	order_details_id	int	NO	PRI	NULL	
	order_id	int	NO		NULL	
	pizza_id	text	NO		NULL	
	quantity	int	NO		NULL	

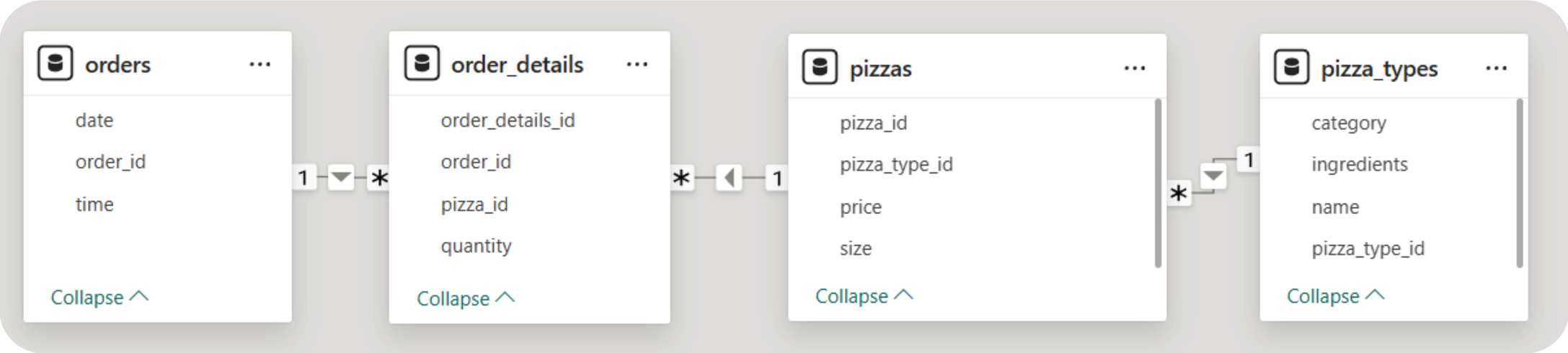
DESCRIBE pizza_types;

	Field	Type	Null	Key	Default	Extra
▶	pizza_type_id	text	YES		NULL	
	name	text	YES		NULL	
	category	text	YES		NULL	
	ingredients	text	YES		NULL	

DESCRIBE pizzas;

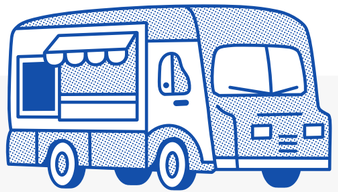
	Field	Type	Null	Key	Default	Extra
▶	pizza_id	text	YES		NULL	
	pizza_type_id	text	YES		NULL	
	size	text	YES		NULL	
	price	double	YES		NULL	

ER DIAGRAM / DATA MODEL



ER diagram created using Power BI for better understanding of table relationships.

Source : Power BI



CLIENT REQUIREMENTS

Retrieve the total number of orders placed.

Calculate the total revenue generated from pizza sales.

Identify the highest-priced pizza.

Identify the most common pizza size ordered.

List the top 5 most ordered pizza types along with their quantities.

Join the necessary tables to find the total quantity of each pizza category ordered.

Determine the distribution of orders by hour of the day.

Join relevant tables to find the category-wise distribution of pizzas.

CLIENT REQUIREMENTS

Group the orders by date and calculate the average number of pizzas ordered per day.

Determine the top 3 most ordered pizza types based on revenue.

Calculate the percentage contribution of each pizza type to total revenue.

Analyze the cumulative revenue generated over time.

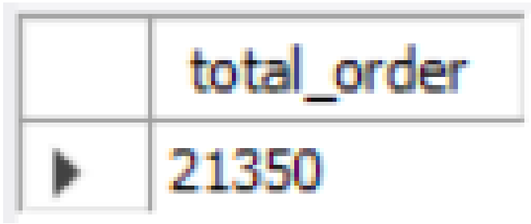
Determine the top 3 most ordered pizza types based on revenue for each pizza category.

1 - Retrieve the total number of orders placed.

CODE </>

```
SELECT
    COUNT(order_id) AS total_order
FROM
    orders;
```

OUTPUT



	total_order
▶	21350

INITIAL INSIGHT

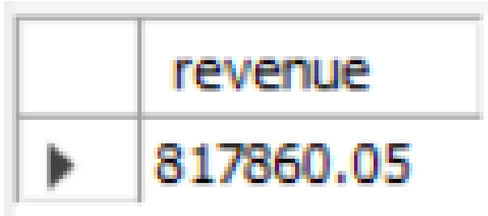
- The total number of orders indicates the overall demand for pizzas.
- A higher order count reflects strong customer engagement.

2 - Calculate the total revenue generated from pizza sales.

CODE </>

```
SELECT
    ROUND(SUM(pizzas.price * order_details.quantity),2)
    AS revenue
FROM
    pizzas
        JOIN
    order_details ON pizzas.pizza_id = order_details.pizza_id
```

OUTPUT



	revenue
▶	817860.05

INITIAL INSIGHT

- Total revenue represents the overall financial performance of the business.
- It helps management assess sales success and profitability.

3 - Identify the highest-priced pizza.

CODE </>

```
SELECT
    pizza_types.name, pizzas.price
FROM
    pizza_types
        JOIN
    pizzas ON pizza_types.pizza_type_id = pizzas.pizza_type_id
ORDER BY pizzas.price DESC
LIMIT 1
```

OUTPUT

	name	price
▶	The Greek Pizza	35.95

INITIAL INSIGHT

- Greek Pizza is the highest-priced item on the menu, representing the premium product offering. can be promoted to boost revenue.

4 - Identify the most common pizza size ordered.

CODE </>

```
SELECT
    pizzas.size,
    COUNT(order_details.order_details_id) AS order_count
FROM
    pizzas
        JOIN
    order_details ON pizzas.pizza_id = order_details.pizza_id
GROUP BY pizzas.size
ORDER BY order_count DESC
LIMIT 1;
```

OUTPUT

	size	order_count
▶	L	18526

INITIAL INSIGHT

- Large size pizzas are the most popular, with 18,526 orders, showing clear customer preference.
- Helps in inventory planning to ensure popular sizes are always available.

5 - List the top 5 most ordered pizza types along with their quantities.

CODE </>

```
SELECT
    pizza_types.name,
    SUM(order_details.quantity) AS order_quantity
FROM
    pizza_types
        JOIN
    pizzas ON pizzas.pizza_type_id = pizza_types.pizza_type_id
        JOIN
    order_details ON order_details.pizza_id = pizzas.pizza_id
GROUP BY pizza_types.name
ORDER BY order_quantity DESC
LIMIT 5
```

OUTPUT

name	order_quantity
The Classic Deluxe Pizza	2453
The Barbecue Chicken Pizza	2432
The Hawaiian Pizza	2422
The Pepperoni Pizza	2418
The Thai Chicken Pizza	2371

INITIAL INSIGHT

- The top 5 pizzas are the best-selling products.
- They should always be well-stocked and actively promoted.

6 - Join the necessary tables to find the total quantity of each pizza category ordered.

CODE </>

```
SELECT
    pizza_types.category,
    SUM(order_details.quantity) AS quantity
FROM
    order_details
        JOIN
    pizzas ON pizzas.pizza_id = order_details.pizza_id
        JOIN
    pizza_types ON pizza_types.pizza_type_id = pizzas.pizza_type_id
GROUP BY pizza_types.category
```

OUTPUT

	category	quantity
▶	Classic	14888
	Veggie	11649
	Supreme	11987
	Chicken	11050

INITIAL INSIGHT

- **Classic pizzas are the most popular category; business can focus promotions and inventory accordingly.**

7 - Determine the distribution of orders by hour of the day.

CODE </>

```
SELECT
    HOUR(order_time) AS orders_hour,
    COUNT(order_id) AS order_count
FROM
    orders
GROUP BY HOUR(order_time)
```

INITIAL INSIGHT

- Most orders are placed during 12 PM to 1 PM (2520 orders) & 1 PM to 2 PM (2455 orders), indicating lunch-time peak.
- This insight helps the business optimize staffing, kitchen preparation, and delivery during peak hours.

OUTPUT

orders_hour	order_count
11	1231
12	2520
13	2455
14	1472
15	1468
16	1920
17	2336
18	2399
19	2009
20	1642
21	1198
22	663
23	28
10	8
9	1

8 - Join relevant tables to find the category-wise distribution of pizzas.

CODE </>

```
SELECT
    category, COUNT(name) as pizza_name
FROM
    pizza_types
GROUP BY category;
```

OUTPUT

	category	pizza_name
▶	Chicken	6
	Classic	8
	Supreme	9
	Veggie	9

INITIAL INSIGHT

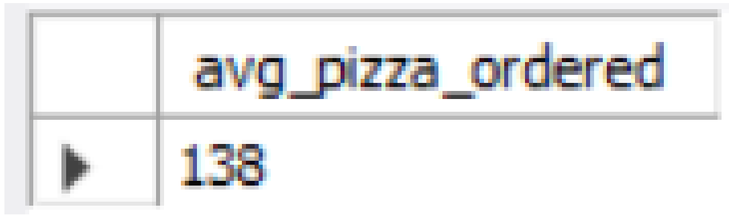
- Expand the Chicken category if there is demand, as currently it has fewer options.
- Promote Supreme and Veggie pizzas since variety is already high and can attract more customers looking for choices.

9 - Group the orders by date and calculate the average number of pizzas ordered per day.

CODE </>

```
SELECT
    ROUND(AVG(quantity), 0) AS avg_pizza_ordered
FROM
    (SELECT
        orders.order_date, SUM(order_details.quantity) AS quantity
    FROM
        orders
    JOIN order_details ON order_details.order_id = orders.order_id
    GROUP BY orders.order_date) AS order_quantity;
```

OUTPUT



avg_pizza_ordered
138

INITIAL INSIGHT

- On average, about 138 pizzas are ordered per day.
- This indicates a strong and consistent daily demand, which can help with: Inventory planning (ingredients, dough prep) , Staff scheduling (ensure adequate coverage daily), Sales forecasting and identifying peak vs. slow days when compared against daily breakdowns.

10 - Determine the top 3 most ordered pizza types based on revenue.

CODE </>

```sql
SELECT
    pizza_types.name,
    SUM(pizzas.price * order_details.quantity) AS revenue
FROM
    order_details
        JOIN
    pizzas ON pizzas.pizza_id = order_details.pizza_id
        JOIN
    pizza_types ON pizza_types.pizza_type_id = pizzas.pizza_type_id
GROUP BY pizza_types.name
ORDER BY revenue DESC
LIMIT 3
```

10 - Determine the top 3 most ordered pizza types based on revenue.

OUTPUT

name	revenue
The Thai Chicken Pizza	43434.25
The Barbecue Chicken Pizza	42768
The California Chicken Pizza	41409.5

INITIAL INSIGHT

- The top 3 pizza types by revenue are all chicken-based, showing a clear customer preference for this category:
- Focus marketing, combo deals, and inventory planning around chicken-based pizzas to maximize revenue, and consider expanding similar flavor profiles to leverage this demand.

11 - Calculate the percentage contribution of each pizza type to total revenue.

CODE </>

```
SELECT
    pizza_types.category,
    ROUND(SUM(pizzas.price * order_details.quantity) / (SELECT
                    ROUND(SUM(pizzas.price * order_details.quantity), 2) AS Total_sales
                FROM
                    pizzas
                        JOIN
                    order_details ON pizzas.pizza_id = order_details.pizza_id) * 100, 2) AS revenue
FROM
    order_details
        JOIN
    pizzas ON pizzas.pizza_id = order_details.pizza_id
        JOIN
    pizza_types ON pizza_types.pizza_type_id = pizzas.pizza_type_id
GROUP BY pizza_types.category
```

11 - Calculate the percentage contribution of each pizza type to total revenue.

OUTPUT

category	revenue
Classic	26.91
Veggie	23.68
Supreme	25.46
Chicken	23.96

INITIAL INSIGHT

- The analysis highlights that all pizza categories play an important role in generating revenue.
- Maintaining a diverse menu and balanced marketing strategy will help sustain and improve overall business performance.

12 - Analyze the cumulative revenue generated over time.

CODE </>

```sql
select order_date , round(sum(revenue) over (order by order_date),2) as cum_revenue
from
(
select orders.order_date , sum(pizzas.price*order_details.quantity) as revenue
     from orders
join
    order_details on order_details.order_id=orders.order_id
join
    pizzas on pizzas.pizza_id=order_details.pizza_id
    group by orders.order_date) as sales;
```

12 - Analyze the cumulative revenue generated over time.

OUTPUT

order_date	cum_revenue
2015-01-01	2713.85
2015-01-02	5445.75
2015-01-03	8108.15
2015-01-04	9863.6
2015-01-05	11929.55
2015-01-06	14358.5
2015-01-07	16560.7
2015-01-08	19399.05
2015-01-09	21526.4
2015-01-10	23990.35
2015-01-11	25862.65
2015-01-12	27781.7
2015-01-13	29831.3
2015-01-14	32358.7
2015-01-15	34343.5
2015-01-16	36937.65
2015-01-17	39001.75
2015-01-18	40978.6
2015-01-19	43365.75

INITIAL INSIGHT

- This query calculates the cumulative revenue over time by adding daily sales in chronological order. It helps analyze overall business growth and sales trends instead of only daily performance.
- The business is experiencing stable and continuous growth over time.

and so onnnnn....

13 - Determine the top 3 most ordered pizza types based on revenue for each pizza category.

CODE </>

```sql
SELECT name, revenue, pizza_rank
FROM (
    SELECT category, name, revenue,
           RANK() OVER (PARTITION BY category ORDER BY revenue DESC) AS pizza_rank
    FROM (
        SELECT pt.category, pt.name,
               SUM(p.price * od.quantity) AS revenue
        FROM pizzas p
        JOIN pizza_types pt ON pt.pizza_type_id = p.pizza_type_id
        JOIN order_details od ON od.pizza_id = p.pizza_id
        GROUP BY pt.category, pt.name
    ) sales
) sales2
WHERE pizza_rank <= 3;
```

13 - Determine the top 3 most ordered pizza types based on revenue for each pizza category.

OUTPUT

name	revenue	pizza_rank
The Thai Chicken Pizza	43434.25	1
The Barbecue Chicken Pizza	42768	2
The California Chicken Pizza	41409.5	3
The Classic Deluxe Pizza	38180.5	1
The Hawaiian Pizza	32273.25	2
The Pepperoni Pizza	30161.75	3
The Spicy Italian Pizza	34831.25	1
The Italian Supreme Pizza	33476.75	2
The Sicilian Pizza	30940.5	3
The Four Cheese Pizza	32265.70000000065	1
The Mexicana Pizza	26780.75	2
The Five Cheese Pizza	26066.5	3

INITIAL INSIGHT

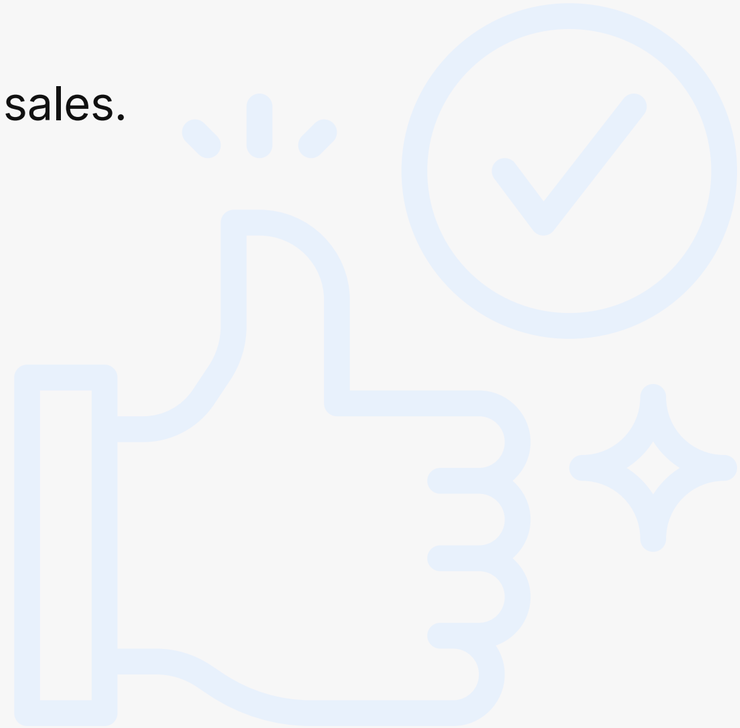
- This query finds the top 3 revenue-generating pizzas in each category using ranking.
- Top-ranked pizzas should be prioritized for marketing, promotions, and stock plan
- Lower-ranked pizzas can be improved or bundled to increase sales.

BUSINESS INSIGHTS

- **High Demand Periods**: Pizza orders rise sharply during midday and evening hours.
  (Derived from: Distribution of orders by hour of the day)
- **Strong Categories**: Classic and Supreme pizzas perform better in terms of revenue.
  (Derived from: Category-wise distribution of pizzas & Total quantity by category)
- **Preferred Sizes**: Medium and Large pizzas are ordered more frequently than other sizes.
  (Derived from: Most common pizza size ordered)
- **Sales Growth Pattern**: Revenue shows a steady upward trend over time.
  (Derived from: Cumulative revenue generated over time)
- **Revenue Drivers**: Certain pizzas generate higher revenue than others.
  (Derived from: Top 3 most ordered pizza types based on revenue & Revenue contribution analysis)

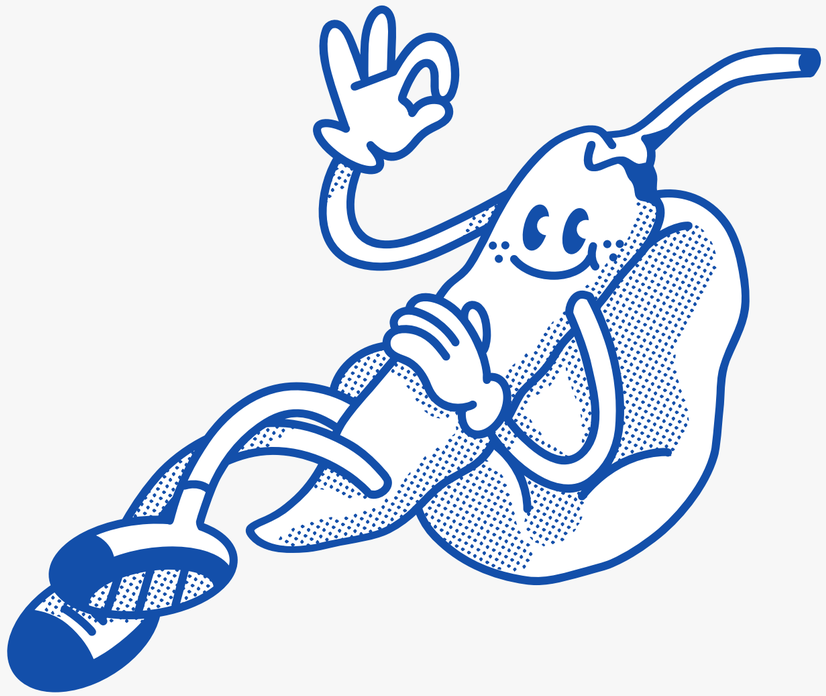
RECOMMENDATIONS

- Focus marketing and promotions on top-selling and high-revenue pizzas.
- Ensure sufficient stock and ingredients during peak order hours.
- Popular pizza sizes should be prioritized in inventory planning.
- Promote premium pizzas to increase average order value.
- Improve or bundle low-performing pizzas with popular items to boost sales.
- Use revenue trends to forecast demand and plan future strategies.



CONCLUSION

- The pizza sales data was successfully **analyzed using SQL queries**.
- The analysis **helped identify customer preferences, best-selling pizzas, and revenue trends**.
- **Results show consistent sales growth** and clear peak ordering periods.
- Data-driven insights can help **improve sales strategy and decision-making**.



THANK YOU