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INNOVATION. AUTOMATION. ANALYTICS

PROJECT ON

Pizza Store Analysis

Submitted by
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Aboutme

- **Background**

I have completed a Bachelor of Science (BSc) in Information Technology from MIT College,Chh.Sambhiji Nagar, affiliated with Dr. Babasaheb Ambedkar Technological University (BAMU).

Why do you want to learn Data Science?

I want to learn **Data Science** because it enables me to turn large volumes of raw data into intelligent insights and predictive solutions that drive informed decision-making. I am deeply interested in how data can be used not only to analyze past performance but also to **predict future trends and behaviors** using machine learning and statistical models.

Data Science allows me to combine **programming, mathematics, and domain knowledge** to solve real-world problems such as optimization, forecasting, and automation. By learning Data Science, I will strengthen my skills in **Python, SQL, data analysis, machine learning, and data visualization**, which will help me build a strong and future- oriented career in the **Data Science and AI field**.

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Agenda

- Objective of the Project
- ER Diagram and schema explanation
- About Tables
- Key analysis questions
- SQL query results with screenshots or summaries
- Final business insights and recommendations
- Conclusion
- Q&A Slide

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🎯 Objective of the Project

The main objective of this project is to analyze the Pizza Store sales data using SQL to extract useful business insights.

By writing SQL queries, we explore order details, customer demand patterns, pizza categories, sizes, and revenue information to understand which pizzas and ingredients are most popular.

This analysis helps the business improve sales performance, optimize menu offerings, manage inventory efficiently, and target peak ordering times.

The project focuses on converting raw sales data into meaningful insights.
It demonstrates how SQL can be used not only for data storage but also for effective data analysis.

Through this project, we understand the importance of data in evaluating business performance and supporting informed decision-making.

Tables

Orders

Result Grid | Filter Rows:

order_id	order_date	order_time
1	2015-01-01	11:38:36
2	2015-01-01	11:57:40
3	2015-01-01	12:12:28
4	2015-01-01	12:16:31
5	2015-01-01	12:21:30
6	2015-01-01	12:29:36
7	2015-01-01	12:50:37
8	2015-01-01	12:51:37

orders 2 ×

Pizza

Result Grid | Filter Rows:

pizza_id	pizza_type_id	size	price
41392	ckn_alfredo	L	20.75
41395	ckn_pesto	L	20.75
41401	thai_ckn	L	20.75
41402	big_meat	S	12.00
41403	big_meat	M	16.00
41416	napolitana	L	20.50
41418	pep_msh_pep	M	14.50
41419	pep_msh_pep	L	17.50

order_details;

Result Grid | Filter Rows: | Edit:

order_details_id	order_id	pizza_id	quantity
1	1	hawaiian_m	1
2	2	classic_dlx_m	1
3	2	five_cheese_l	1
4	2	ital_supr_l	1
5	2	mexicana_m	1
6	2	thai_ckn_l	1
7	3	ital_supr_m	1
8	3	prsc_argla_l	1

pizza_types

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell C

pizza_type_id	name	category	ingredients
bbq_ckn	The Barbecue Chicken Pizza	Chicken	Barbecued Chicken, Red Peppers, Green Peppe...
big_meat	The Big Meat Pizza	Classic	Bacon, Pepperoni, Italian Sausage, Chorizo Sau...
brie_carre	The Brie Carre Pizza	Supreme	Brie Carre Cheese, Prosciutto, Caramelized Oni...
calabrese	The Calabrese Pizza	Supreme	'Nduja Salami, Pancetta, Tomatoes, Red Onions...
cali_ckn	The California Chicken Pizza	Chicken	Chicken, Artichoke, Spinach, Garlic, Jalapeno P...
ckn_alfredo	The Chicken Alfredo Pizza	Chicken	Chicken, Red Onions, Red Peppers, Mushrooms...
ckn_pesto	The Chicken Pesto Pizza	Chicken	Chicken, Tomatoes, Red Peppers, Spinach, Garl...
classic_dlx	The Classic Deluxe Pizza	Classic	Pepperoni, Mushrooms, Red Onions, Red Peppe...

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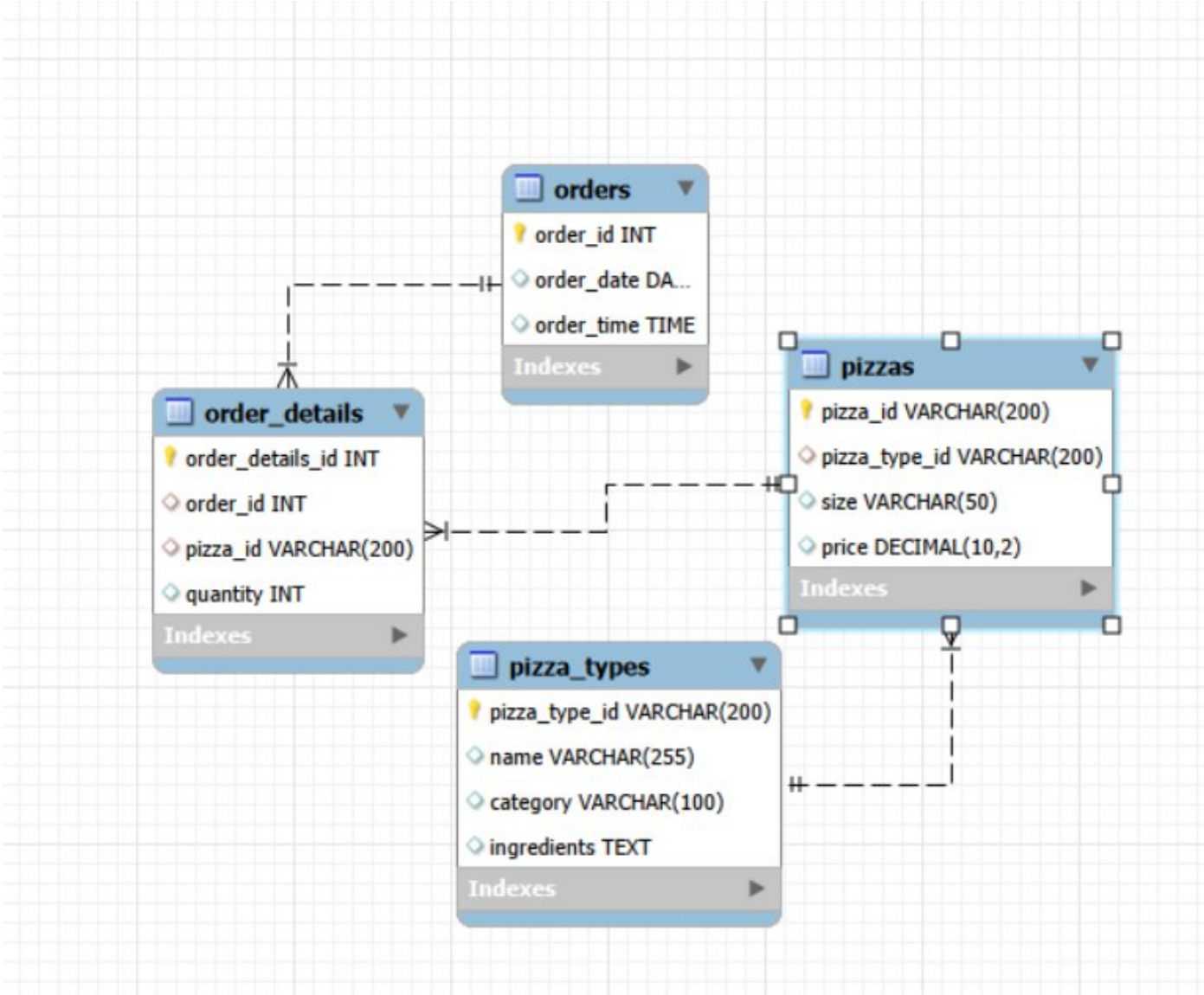
ER Diagram



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SQL query result with screenshot

Q1. Retrieve the total number of orders placed.

```
SELECT COUNT(*) AS total_orders
FROM orders;
```

This query counts the total number of orders placed in the pizza store..

Result Grid

	total_orders
▶	21350

Q2. Identify the highest-priced pizza.

```sql
SELECT
    p.pizza_id,
    pt.name AS pizza_name,
    p.size,
    p.price
FROM pizzas p
JOIN pizza_types pt
    ON p.pizza_type_id = pt.pizza_type_id
ORDER BY p.price DESC
LIMIT 1;
```

Result Grid | Filter Rows:

pizza_id	pizza_name	size	price
41427	The Greek Pizza	XXL	35.95

This query retrieves the most expensive pizza from the menu.

It displays the pizza name, size, and price by joining pizza details with pizza types.

This helps identify premium products that contribute to higher revenue.

Q3. Identify the most common pizza size ordered.

```sql
SELECT
    p.size,
    SUM(od.quantity) AS total_orders
FROM order_details od
JOIN pizzas p
    ON od.pizza_id = p.pizza_id
GROUP BY p.size
ORDER BY total_orders DESC
LIMIT 1;
```

Result Grid | Filter Rov

size	total_orders
L	11785

📌 **Most Common Pizza Size Ordered**

This query identifies the pizza size that is ordered the most.

It calculates the total quantity ordered for each pizza size and selects the highest one.

This insight helps understand customer size preference and plan size-based offers.

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Q4. List the top 5 most ordered pizza types along with their quantities.

```sql
SELECT
    pt.name AS pizza_name,
    SUM(od.quantity) AS total_quantity
FROM order_details od
JOIN pizzas p
    ON od.pizza_id = p.pizza_id
JOIN pizza_types pt
    ON p.pizza_type_id = pt.pizza_type_id
GROUP BY pt.name
ORDER BY total_quantity DESC
LIMIT 5;
```

Result Grid | Filter Rows:

pizza_name	total_quantity
The Classic Deluxe Pizza	2453
The Barbecue Chicken Pizza	2432
The Hawaiian Pizza	2422
The Pepperoni Pizza	2418
The Thai Chicken Pizza	2371

📌 **Top 5 Most Ordered Pizza Types**

This query identifies the top 5 pizza types based on total quantity ordered.

It combines order details with pizza and pizza type information to calculate total sales for each pizza.

This helps recognize the most popular pizzas among customers.

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Q5. Find the total quantity of each pizza category ordered.

```sql
SELECT
    pt.category,
    SUM(od.quantity) AS total_quantity
FROM order_details od
JOIN pizzas p
    ON od.pizza_id = p.pizza_id
JOIN pizza_types pt
    ON p.pizza_type_id = pt.pizza_type_id
GROUP BY pt.category
ORDER BY total_quantity DESC;
```

Result Grid | Filter Rows:

category	total_quantity
Classic	14888
Supreme	11987
Veggie	11649
Chicken	11050

📌 Total Quantity of Each Pizza Category

This query calculates the total number of pizzas ordered for each category.

It groups the sales data by pizza category and sums the ordered quantities.

This helps compare category-wise performance and identify the most popular categories.

Q6. Determine the distribution of orders by hour of the day.

```sql
SELECT
    HOUR(o.order_time) AS order_hour,
    COUNT(o.order_id) AS total_orders
FROM orders o
GROUP BY order_hour
ORDER BY order_hour;
```

Result Grid | Filter Rows:

order_hour	total_orders
9	1
10	8
11	1231
12	2520
13	2455
14	1472
15	1468

📌 **Distribution of Orders by Hour**

This query shows how orders are distributed across different hours of the day.

It groups orders based on the hour in which they were placed and counts the total orders for each hour.

This helps identify peak ordering times and optimize staff and delivery planning.

Q7. Analyze the cumulative revenue generated over time.

```sql
SELECT
    o.order_date,
    SUM(p.price * od.quantity) AS daily_revenue,
    SUM(SUM(p.price * od.quantity))
        OVER (ORDER BY o.order_date) AS cumulative_revenue
FROM orders o
JOIN order_details od
    ON o.order_id = od.order_id
JOIN pizzas p
    ON od.pizza_id = p.pizza_id
GROUP BY o.order_date
ORDER BY o.order_date;
```

Result Grid | Filter Rows:

order_date	daily_revenue	cumulative_revenue
2015-01-01	1595.50	1595.50
2015-01-02	1691.75	3287.25
2015-01-03	1537.75	4825.00
2015-01-04	1123.25	5948.25
2015-01-05	1126.25	7074.50
2015-01-06	1433.75	8508. 7074.50
2015-01-07	1170.25	9678.50

📌 Cumulative Revenue Over Time
This query calculates the revenue generated each day from pizza sales.

It also computes the cumulative revenue by adding daily revenue over time.

This helps analyze revenue growth trends and overall business performance.

Q8. Find the ingredient that contributes the most to revenue.

```sql
SELECT
    ingredient,
    SUM(p.price * od.quantity) AS total_revenue
FROM order_details od
JOIN pizzas p
    ON od.pizza_id = p.pizza_id
JOIN pizza_types pt
    ON p.pizza_type_id = pt.pizza_type_id
JOIN (
    SELECT
        pizza_type_id,
        TRIM(SUBSTRING_INDEX(
            SUBSTRING_INDEX(ingredients, ',', n.n), ',', -1)
        ) AS ingredient
    FROM pizza_types
    JOIN (
        SELECT 1 n UNION ALL SELECT 2 UNION ALL SELECT 3 UNION ALL
        SELECT 4 UNION ALL SELECT 5 UNION ALL SELECT 6 UNION ALL
        SELECT 7 UNION ALL SELECT 8
    ) n
    ON CHAR_LENGTH(ingredients)
       - CHAR_LENGTH(REPLACE(ingredients, ',', '')) >= n.n - 1
) ing
ON pt.pizza_type_id = ing.pizza_type_id
GROUP BY ingredient
ORDER BY total_revenue DESC
LIMIT 1;
```

Result Grid | Filter Rows:

ingredient	total_revenue
Garlic	299747.00

📌 **Highest Revenue Contributing Ingredient**
This query identifies the ingredient that generates the highest total revenue.

It breaks down pizza ingredients and calculates revenue based on orders and prices.

This insight helps understand which ingredients contribute most to overall sales.

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Business Insights

1) Order Volume Insight

The total number of orders is significantly high, indicating **strong and consistent customer demand**.
Orders are evenly distributed over time, showing **business stability**.

2) Revenue Performance Insight

Pizza sales generate **high overall revenue**.
Revenue is mainly driven by **popular pizza types and larger pizza sizes**.

3) Pricing Insight

Customers are purchasing **high-priced pizzas**, indicating **low price sensitivity**.
Premium pizzas contribute noticeably to total revenue.

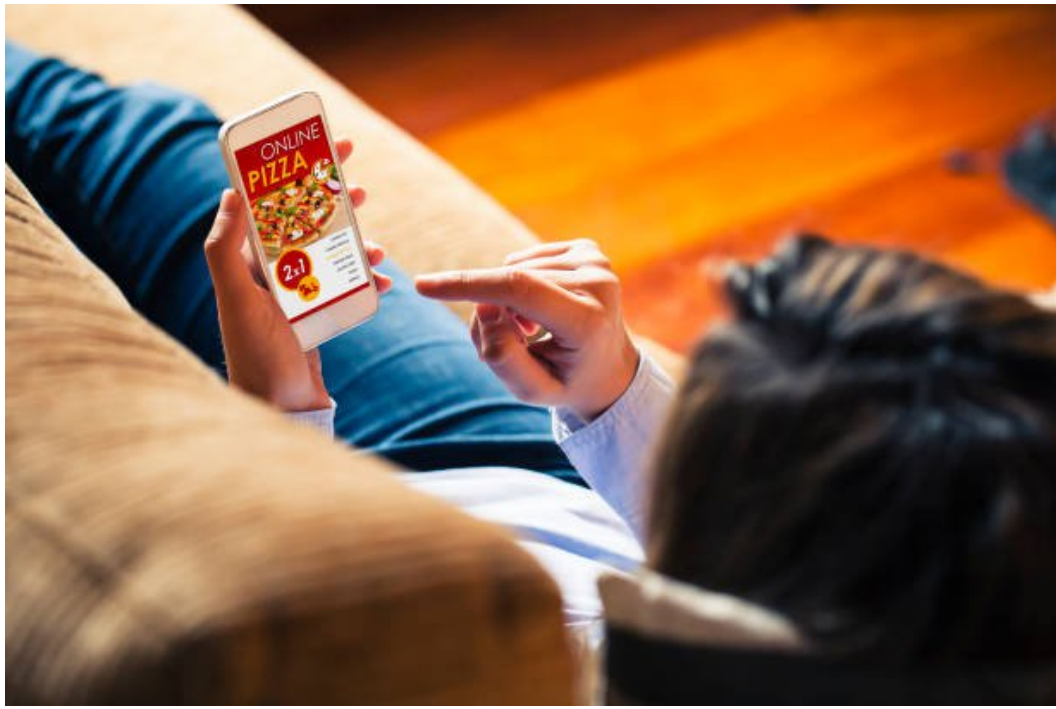
4) Pizza Size Preference Insight

Large size pizzas are the most frequently ordered.
Small and Medium sizes have comparatively lower demand.

Business Insights

5)Product Popularity Insight

A small number of pizza types contribute to a **major portion of total orders**.
The Top 5 pizzas dominate overall sales



6) Category Performance Insight

Classic and Chicken categories perform better than others.
Veggie and Supreme categories show moderate demand.

7)Time-Based Ordering Insight (Peak Hours)

Order volume peaks during **evening hours (6 PM – 9 PM)**.
Dinner time generates more orders compared to lunch hours.

8) Revenue Growth Insight

Cumulative revenue shows a **steady upward trend over time**.
The business demonstrates consistent growth with minimal fluctuations.

9) Ingredient Contribution Insight

Cheese-based ingredients (e.g., Mozzarella) contribute the **highest revenue**.
High-revenue ingredients are used in the most popular pizzas.

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Recommendations

1)Focus on Best-Selling Pizzas

The Top 5 pizzas contribute a major share of total sales.
These pizzas should always be **available and well-stocked**

2)Introduce More Premium Pizzas

Customers are willing to buy **high-priced pizzas**.
Premium pizzas generate higher revenue per order.

3)Optimize Pizza Sizes Strategy

Large size pizzas are the most preferred by customers.
Small and Medium sizes have lower demand.

4)Improve Category-Based Marketing

Classic and Chicken categories perform better than others.
Veggie and Supreme categories have growth potential.

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Recommendations

5)Increase Efficiency During Peak Hours

Orders peak during **evening hours (6 PM – 9 PM)**.
High demand during this time can cause delays if not managed properly.

6)Use Ingredient-Level Insights

Cheese-based ingredients generate the highest revenue.
Popular pizzas share common high-value ingredients.

7) Improve Inventory Management

Some ingredients are used more frequently than others.
Overstocking low-demand items can increase costs.

8)Menu Optimization

Some pizzas have consistently low sales.
Maintaining too many low-performing items increases operational cost.

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Conclusion

This analysis used SQL to study pizza sales and identify key business insights.

The results highlight popular pizza types, preferred sizes, peak ordering hours, and major revenue contributors.

Overall, the findings help improve decision-making related to pricing, menu planning, and operational efficiency.

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Any Queries?

THANK YOU

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