# Pizza Hut Sales Analysis Report (SQL)

## 1. Introduction

This project presents a comprehensive analysis of Pizza Hut's sales data using Structured Query Language (SQL). The primary objective is to derive meaningful business insights by examining customer ordering patterns, revenue generation, product performance, and time-based sales trends.

The analysis is structured into three levels—basic, intermediate, and advanced—demonstrating progressive use of SQL concepts such as joins, aggregations, subqueries, and window functions. The underlying database is modeled to represent a real-world pizza ordering system and includes tables for orders, order details, pizzas, and pizza categories.

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## 2. Database Design and Schema

### 2.1 Database Creation

The database was created to store and manage Pizza Hut sales data efficiently.

```
CREATE DATABASE pizzahut;

USE pizzahut;
```

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### 2.2 Tables Overview

#### Orders Table

This table stores high-level information about each order placed by customers.

```
CREATE TABLE orders(
```

```
    order_id INT,
    order_date DATE,
    order_time TIME
);
```

**Key Columns:**

- `order_id`: Unique identifier for each order
- `order_date`: Date when the order was placed
- `order_time`: Time of order placement

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**Order_Details Table**

This table captures detailed information about the pizzas included in each order.

```
CREATE TABLE order_details(
    order_details_id INT NOT NULL,
    order_id INT NOT NULL,
    pizza_id TEXT NOT NULL,
    quantity INT NOT NULL
);
```

**Key Columns:**

- `order_details_id`: Unique record identifier

- `order_id`: References the orders table
- `pizza_id`: Identifies the pizza ordered
- `quantity`: Number of pizzas ordered

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**Pizza_Types Table**

Stores descriptive details about each pizza type.

- pizza_type_id
- name
- category
- ingredients

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**Pizzas Table**

Contains information about pizza sizes and pricing.

- pizza_id
- pizza_type_id
- size
- price

These tables are logically connected through primary and foreign key relationships, enabling detailed analytical queries.

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# 3. Basic Analysis

## 3.1 Total Number of Orders

This query calculates the total number of orders placed.

```
SELECT COUNT(order_id) AS total_orders

FROM orders;
```

| | total_orders |
|---|---|
| ▶ | 21350 |

**Insight:** Provides a measure of overall business activity and customer demand.

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## 3.2 Total Revenue Generated

The following query calculates total revenue based on pizza prices and quantities sold.

```
SELECT

    ROUND(SUM(od.quantity * p.price), 2) AS total_revenue

FROM order_details od

JOIN pizzas p

ON od.pizza_id = p.pizza_id;
```

| | total_revenue |
|---|---|
| ▶ | 817860.05 |

**Insight:** Reflects the overall financial performance of Pizza Hut.

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### 3.3 Highest-Priced Pizza

This query identifies the most expensive pizza available.

```
SELECT
    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;
```

| | pizza_name | size | price |
|---|---|---|---|
| ▶ | The Greek Pizza | XXL | 35.95 |

**Insight:** Useful for understanding premium product offerings.

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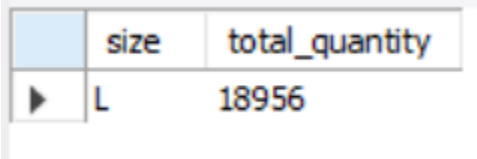
### 3.4 Most Common Pizza Size Ordered

```
SELECT
    p.size,
```

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



| size | total_quantity |
|---|---|
| L | 18956 |

**Insight:** Helps in optimizing inventory planning and packaging decisions.

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### 3.5 Top 5 Most Ordered Pizza Types

```
SELECT
    pt.name AS pizza_type,
    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;
```

| | pizza_type | 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 |

**Insight:** Identifies the most popular pizzas among customers.

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# 4. Intermediate Analysis

## 4.1 Total Quantity Ordered per Pizza Category

```
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;
```

| | category | total_quantity |
|---|---|---|
| ▶ | Classic | 14888 |
| | Supreme | 11987 |
| | Veggie | 11649 |
| | Chicken | 11050 |

**Insight:** Reveals which pizza categories generate the highest demand.

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### 4.2 Order Distribution by Hour

```
SELECT

    EXTRACT(HOUR FROM order_time) AS order_hour,

    COUNT(order_id) AS total_orders

FROM orders

GROUP BY order_hour

ORDER BY order_hour;
```

| order_hour | total_orders |
|---|---|
| 9 | 1 |
| 10 | 8 |
| 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 |

**Insight:** Helps identify peak business hours and optimize staffing.

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### 4.3 Category-wise Pizza Distribution

```
SELECT

    pt.category,

    SUM(od.quantity) AS total_pizzas_ordered

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_pizzas_ordered DESC;
```

| category | total_pizzas_ordered |
|---|---|
| Classic | 14888 |
| Supreme | 11987 |
| Veggie | 11649 |
| Chicken | 11050 |

**Insight:** Supports category-level sales analysis and promotions.

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### 4.4 Average Number of Pizzas Ordered per Day

```
SELECT

    ROUND(AVG(daily_total), 2) AS avg_pizzas_per_day

FROM (

    SELECT

        o.order_date,

        SUM(od.quantity) AS daily_total

    FROM orders o

    JOIN order_details od

    ON o.order_id = od.order_id

    GROUP BY o.order_date
```

```
) daily_orders;
```

| | avg_pizzas_per_day |
|---|---|
| ▶ | 138.47 |

**Insight:** Measures daily sales consistency and demand stability.

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### 4.5 Top 3 Pizza Types by Revenue

```
SELECT

    pt.name AS pizza_type,

    ROUND(SUM(od.quantity * p.price), 2) 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

GROUP BY pt.name

ORDER BY total_revenue DESC

LIMIT 3;
```

| pizza_type | total_revenue |
|---|---|
| The Thai Chicken Pizza | 43434.25 |
| The Barbecue Chicken Pizza | 42768 |
| The California Chicken Pizza | 41409.5 |

**Insight:** Highlights pizzas that contribute most to revenue.

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# 5. Advanced Analysis

## 5.1 Revenue Contribution Percentage per Pizza Type

```
SELECT

    pt.name AS pizza_type,

    ROUND(

        (SUM(od.quantity * p.price)

        / SUM(SUM(od.quantity * p.price)) OVER ()) * 100,

        2

    ) AS revenue_percentage

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 revenue_percentage DESC;
```

| pizza_type | revenue_percentage |
|---|---|
| The Thai Chicken Pizza | 5.31 |
| The Barbecue Chicken Pizza | 5.23 |
| The California Chicken Pizza | 5.06 |
| The Classic Deluxe Pizza | 4.67 |
| The Spicy Italian Pizza | 4.26 |
| The Southwest Chicken Pizza | 4.24 |
| The Italian Supreme Pizza | 4.09 |
| The Hawaiian Pizza | 3.95 |
| The Four Cheese Pizza | 3.95 |
| The Sicilian Pizza | 3.78 |
| The Pepperoni Pizza | 3.69 |
| The Greek Pizza | 3.48 |
| The Mexicana Pizza | 3.27 |
| The Five Cheese Pizza | 3.19 |
| The Pepper Salami Pizza | 3.12 |
| The Italian Capocollo Pizza | 3.07 |
| The Vegetables + Vegetables Pizza | 2.98 |
| The Prosciutto and Arugula Pizza | 2.96 |
| The Napolitana Pizza | 2.95 |
| The Spinach and Feta Pizza | 2.85 |
| The Big Meat Pizza | 2.81 |
| The Pepperoni, Mushroom, and Peppers Pizza | 2.3 |
| The Chicken Alfredo Pizza | 2.07 |
| The Chicken Pesto Pizza | 2.04 |
| The Soppressata Pizza | 2.01 |
| The Italian Vegetables Pizza | 1.96 |
| The Calabrese Pizza | 1.95 |
| The Spinach Pesto Pizza | 1.91 |
| The Mediterranean Pizza | 1.88 |
| The Spinach Supreme Pizza | 1.87 |
| The Green Garden Pizza | 1.71 |
| The Brie Carre Pizza | 1.42 |

**Insight:** Identifies pizzas with the highest revenue contribution.

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## 5.2 Cumulative Revenue Over Time

```
WITH daily_revenue AS (
```

```
    SELECT
        o.order_date,
        SUM(od.quantity * p.price) AS 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
)
SELECT
    order_date,
    revenue,
    SUM(revenue) OVER (ORDER BY order_date) AS
cumulative_revenue
FROM daily_revenue
ORDER BY order_date;
```

**Insight:** Tracks business growth and revenue accumulation over time.

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### 5.3 Top 3 Pizzas by Revenue per Category

```
WITH category_revenue AS (
```

```
    SELECT
        pt.category,
        pt.name AS pizza_type,
        SUM(od.quantity * p.price) 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
    GROUP BY pt.category, pt.name
),
ranked_pizzas AS (
    SELECT
        *,
        RANK() OVER (
            PARTITION BY category
            ORDER BY total_revenue DESC
        ) AS revenue_rank
    FROM category_revenue
)
SELECT
```

```
    category,
    pizza_type,
    ROUND(total_revenue, 2) AS total_revenue
FROM ranked_pizzas
WHERE revenue_rank <= 3
ORDER BY category, revenue_rank;
```

| category | pizza_type | total_revenue |
|---|---|---|
| Chicken | The Thai Chicken Pizza | 43434.25 |
| Chicken | The Barbecue Chicken Pizza | 42768 |
| Chicken | The California Chicken Pizza | 41409.5 |
| Classic | The Classic Deluxe Pizza | 38180.5 |
| Classic | The Hawaiian Pizza | 32273.25 |
| Classic | The Pepperoni Pizza | 30161.75 |
| Supreme | The Spicy Italian Pizza | 34831.25 |
| Supreme | The Italian Supreme Pizza | 33476.75 |
| Supreme | The Sicilian Pizza | 30940.5 |
| Veggie | The Four Cheese Pizza | 32265.7 |
| Veggie | The Mexicana Pizza | 26780.75 |
| Veggie | The Five Cheese Pizza | 26066.5 |

**Insight:** Identifies top-performing pizzas within each category.

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# 6. Conclusion

This SQL-based analysis provides a detailed understanding of Pizza Hut's sales performance, customer preferences, and revenue patterns. The project demonstrates strong proficiency in:

- Table joins
- Aggregation functions
- Subqueries
- Window functions
- Common Table Expressions (CTEs)

The insights derived from this analysis can support data-driven decision-making in inventory management, pricing strategies, marketing campaigns, and operational optimization.