



UNVEILING THE SECRETS
OF PIZZA SALES DATA

Analysis of Pizza Sales and Ordering Patterns



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INTRODUCTION

This project focuses on analyzing pizza sales and order patterns to gain insights into customer preferences and business performance. Through SQL queries and data processing techniques, I calculated the metrics that provide a detailed view of orders, revenue, and popular items, helping to drive data-based decisions for enhanced customer satisfaction and optimized business operations. Dive in to explore how data-driven analysis can fuel smarter decisions and optimize business strategies.

Using advanced SQL techniques, including group by (), join(), where(), having() and many more to help transform raw data into actionable insights, supporting business decisions that enhance customer satisfaction and optimize revenue.

DATASETS 1

	pizza_id	pizza_type	size	price
1	bbq_ckn_s	bbq_ckn	S	12.75
2	bbq_ckn_n	bbq_ckn	M	16.75
3	bbq_ckn_l	bbq_ckn	L	20.75
4	cali_ckn_s	cali_ckn	S	12.75
5	cali_ckn_m	cali_ckn	M	16.75
6	cali_ckn_l	cali_ckn	L	20.75
7	ckn_alfred_s	ckn_alfred	S	12.75
8	ckn_alfred_m	ckn_alfred	M	16.75
9	ckn_alfred_l	ckn_alfred	L	20.75
10	ckn_pesto_s	ckn_pesto	S	12.75
11	ckn_pesto_m	ckn_pesto	M	16.75
12	ckn_pesto_l	ckn_pesto	L	20.75
13	southw_ck_s	southw_ck	S	12.75
14	southw_ck_m	southw_ck	M	16.75
15	southw_ck_l	southw_ck	L	20.75
16	thai_ckn_s	thai_ckn	S	12.75

Count: 97

A	B	C	D
order_details_id	order_id	pizza_id	quantity
1	1	1 hawaiian_m	1
2	2	2 classic_dlx_m	1
3	3	2 five_cheese_l	1
4	4	2 ital_supr_l	1
5	5	2 mexicana_m	1
6	6	2 thai_ckn_l	1
7	7	3 ital_supr_m	1
8	8	3 prsc_argla_l	1
9	9	4 ital_supr_m	1
10	10	5 ital_supr_m	1
11	11	6 bbq_ckn_s	1
12	12	6 the_greek_s	1
13	13	7 spinach_supr_s	1
14	14	8 spinach_supr_s	1
15	15	9 classic_dlx_s	1
16	16	9 green_garden_s	1
17	17	9 ital_cpcollo_l	1
18			

Count: 48621

DATASETS 2

	A	B	C
1	order_id	date	time
2	1	01-01-2015	11:38:36
3	2	01-01-2015	11:57:40
4	3	01-01-2015	12:12:28
5	4	01-01-2015	12:16:31
6	5	01-01-2015	12:21:30
7	6	01-01-2015	12:29:36
8	7	01-01-2015	12:50:37
9	8	01-01-2015	12:51:37
10	9	01-01-2015	12:52:01
11	10	01-01-2015	13:00:15
12	11	01-01-2015	13:02:59
13	12	01-01-2015	13:04:41
14	13	01-01-2015	13:11:55
15	14	01-01-2015	13:14:19

Count: 21351

	A	B	C	D
1	pizza_type_id	name	category	ingredients
2	bbq_ckn	The Barbecue Chicken Pizza	Chicken	Barbecued Chicken, Red Peppers, Green Peppers, Tomatoes, Red Onions, Barbecue Sauce
3	cali_ckn	The California Chicken Pizza	Chicken	Chicken, Artichoke, Spinach, Garlic, Jalapeno Peppers, Fontina Cheese, Gouda Cheese
4	ckn_alfredo	The Chicken Alfredo Pizza	Chicken	Chicken, Red Onions, Red Peppers, Mushrooms, Asiago Cheese, Alfredo Sauce
5	ckn pesto	The Chicken Pesto Pizza	Chicken	Chicken, Tomatoes, Red Peppers, Spinach, Garlic, Pesto Sauce
6	southw_ckn	The Southwest Chicken Pizza	Chicken	Chicken, Tomatoes, Red Peppers, Red Onions, Jalapeno Peppers, Corn, Cilantro, Chipotle Sauce
7	thai_ckn	The Thai Chicken Pizza	Chicken	Chicken, Pineapple, Tomatoes, Red Peppers, Thai Sweet Chilli Sauce
8	big_meat	The Big Meat Pizza	Classic	Bacon, Pepperoni, Italian Sausage, Chorizo Sausage
9	classic_dlx	The Classic Deluxe Pizza	Classic	Pepperoni, Mushrooms, Red Onions, Red Peppers, Bacon
10	hawaiian	The Hawaiian Pizza	Classic	Sliced Ham, Pineapple, Mozzarella Cheese
11	ital_cpcollo	The Italian Capocollo Pizza	Classic	Capocollo, Red Peppers, Tomatoes, Goat Cheese, Garlic, Oregano
12	napolitana	The Napolitana Pizza	Classic	Tomatoes, Anchovies, Green Olives, Red Onions, Garlic
13	pep_msh_pep	The Pepperoni, Mushroom, and Peppers Pizza	Classic	Pepperoni, Mushrooms, Green Peppers
14	pepperoni	The Pepperoni Pizza	Classic	Mozzarella Cheese, Pepperoni
15	the_greek	The Greek Pizza	Classic	Kalamata Olives, Feta Cheese, Tomatoes, Garlic, Beef Chuck Roast, Red Onions
16	brie_carre	The Brie Carre Pizza	Supreme	Brie Carre Cheese, Prosciutto, Caramelized Onions, Pears, Thyme, Garlic
17	calabrese	The Calabrese Pizza	Supreme	'Nduja Salami, Pancetta, Tomatoes, Red Onions, Friggitello Peppers, Garlic
18	ital_supr	The Italian Supreme Pizza	Supreme	Calabrese Salami, Capocollo, Tomatoes, Red Onions, Green Olives, Garlic

Count: 33

OBJECTIVE

1. Analyze Overall Sales and Revenue

- Calculate the total number of orders and total revenue to assess business performance.

2. Identify Popular Pizza Types and Sizes

- Determine the most ordered pizza size and the top 5 pizza types based on order quantity.

3. Understand Category-Wise Sales Distribution

- Evaluate total quantities for each pizza category to gain insights into customer preferences.

4. Track Ordering Patterns by Time

- Analyze order distribution by hour to identify peak business hours.

5. Examine Revenue Contributions and Growth

- Calculate the revenue contribution of each pizza type and track cumulative revenue growth over time.

6. Derive Actionable Insights for Strategy

- Use patterns in sales, revenue, and popular items to optimize menu offerings and enhance business strategies.



Q1. Calculate the total revenue generated from pizza sales

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

total_revenue
817860.05

Calculated the total revenue generated from pizza sales to gauge business performance. This measure provides insight into overall profitability and sales volume, indicating the brand's market strength.

Q2. List the top 5 most ordered pizza types along with their quantities.

```
3 •   SELECT
4     pizza_types.name,
5       SUM(order_details.quantity) AS total_quantity
6   FROM
7     pizza_types
8       JOIN
9     pizzas ON pizza_types.pizza_type_id = pizzas.pizza_type_id
10      JOIN
11    order_details ON order_details.pizza_id = pizzas.pizza_id
12   GROUP BY pizza_types.name
13   ORDER BY total_quantity DESC
14   LIMIT 5
```

	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

Identified the top 5 pizza types by order quantity, highlighting customer favorites. This insight helps the business focus on popular items, ensuring supply availability and promotional strategies are aligned.

Q3. Find the total quantity of each pizza category ordered.

```
3 • select
4     pizza_types.category,
5         SUM(order_details.quantity) AS total_quantity
6 FROM
7     pizza_types
8     JOIN
9     pizzas ON pizza_types.pizza_type_id = pizzas.pizza_type_id
10    JOIN
11    order_details ON order_details.pizza_id = pizzas.pizza_id
12 GROUP BY pizza_types.category
13 ORDER BY total_quantity DESC
14 LIMIT 5
```

	category	total_quantity
▶	Classic	14888
	Supreme	11987
	Veggie	11649
	Chicken	11050

Analyzed the total quantity of pizzas ordered by category, revealing the most popular pizza types (e.g., Classic, Veggie, Supreme). Understanding customer preferences by category allows for targeted marketing and menu adjustments.

Q4. Determine the top 3 most ordered pizza types based on revenue for each pizza category.

```
3 •   select name, revenue from
4   (select category, name, revenue,
5    rank() over(partition by category order by revenue desc) as rn
6   from (select pizza_types.category, pizza_types.name, sum((order_details.quantity)* pizzas.price) as revenue
7   from pizza_types
8   join pizzas on pizza_types.pizza_type_id=pizzas.pizza_type_id
9   join order_details on order_details.pizza_id = pizzas.pizza_id
10  group by pizza_types.category, pizza_types.name) as a) as b
11  where rn<=3
```

	name	revenue
▶	The Thai Chicken Pizza	43434.25
	The Barbecue Chicken Pizza	42768
	The California Chicken Pizza	41409.5
	The Classic Deluxe Pizza	38180.5
	The Hawaiian Pizza	32273.25

This insight helps the business understand which types of pizzas are favored by customers

Q5.Calculate the percentage contribution of each pizza type to total revenue.

```
1 ●   SELECT
2     pizza_types.category,
3     ROUND(SUM(order_details.quantity * pizzas.price), 2) AS revenue,
4     ROUND((SUM(order_details.quantity * pizzas.price) /
5           (SELECT SUM(order_details.quantity * pizzas.price)
6             FROM order_details
7             JOIN pizzas ON order_details.pizza_id = pizzas.pizza_id)) * 100, 2) AS percentage_contribution
8   FROM
9     pizza_types
10   JOIN
11     pizzas ON pizza_types.pizza_type_id = pizzas.pizza_type_id
12   JOIN
13     order_details ON order_details.pizza_id = pizzas.pizza_id
14   GROUP BY
15     pizza_types.category
16   ORDER BY
17     percentage_contribution DESC;
```

category	revenue	percentage_contribution
Classic	220053.1	26.91
Supreme	208197	25.46
Chicken	195919.5	23.96
Veggie	193690.45	23.68

Calculated each pizza type's percentage contribution to the total revenue. This insight helps identify high-revenue-generating items, guiding decisions around promotions and potential up-selling opportunities.

Q6. Group the orders by date and calculate the average number of pizzas ordered per day.

```
3 •   select avg(order_quantity) from
4   (SELECT
5     orders.order_date, SUM(order_details.quantity) as order_quantity
6   FROM
7     orders
8     JOIN
9     order_details ON orders.order_id = order_details.order_id
10    GROUP BY orders.order_date ) as quantity
```

	avg(order_quantity)
▶	138.4749

By understanding the average number of pizzas ordered each day, the business can gauge overall daily demand. This insight helps anticipate typical order volumes, allowing for more effective staffing, inventory management, and resource allocation.

Q7. Find the average revenue per order for each pizza category, but only for categories that have generated at least \$2000 in total revenue.

```
4 •   SELECT pt.category, AVG(p.price * od.quantity) AS avg_revenue_per_order  
5     FROM order_details od  
6     JOIN pizzas p ON od.pizza_id = p.pizza_id  
7     JOIN pizza_types pt ON p.pizza_type_id = pt.pizza_type_id  
8     GROUP BY pt.category  
9     HAVING SUM(p.price * od.quantity) > 2000;
```

	category	avg_revenue_per_order
▶	Classic	15.093840455449625
	Veggie	16.91767403266687
	Supreme	17.678271206588963
	Chicken	18.115533980582523

Compared average revenue per order for each category and only focused on categories generating at least \$2000. This analysis directs attention to high-performing categories while identifying areas that may need strategic improvements.

Q8. Find the total quantity of each pizza category ordered.

```
3 • select
4     pizza_types.category,
5     SUM(order_details.quantity) AS total_quantity
6   FROM
7     pizza_types
8       JOIN
9     pizzas ON pizza_types.pizza_type_id = pizzas.pizza_type_id
10      JOIN
11    order_details ON order_details.pizza_id = pizzas.pizza_id
12  GROUP BY pizza_types.category
13  order by total_quantity desc
14  limit 5
```

	category	total_quantity
▶	Classic	14888
	Supreme	11987
	Veggie	11649
	Chicken	11050

Analyzed the total quantity of pizzas ordered by category, revealing the most popular pizza types (e.g., Classic, Veggie, Supreme). Understanding customer preferences by category allows for targeted marketing and menu adjustments.

Q9. The top 3 most ordered pizza types based on revenue.

```
3 •  select pizza_types.name , sum(order_details.quantity * pizzas.price) as revenue  
4      from pizza_types  
5      join pizzas  
6      on pizza_types.pizza_type_id = pizzas.pizza_type_id  
7      join order_details on order_details.pizza_id = pizzas.pizza_id  
8      group by pizza_types.name  
9      order by revenue desc  
10     limit 3
```

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

Identified the top 3 most profitable pizza types in each category. This helps streamline the menu to focus on bestsellers, optimizing inventory and improving profit margins.

Q10. Determine the distribution of orders by hour of the day.

```
3 •   SELECT  
4       HOUR(order_time), COUNT(order_id)  
5   FROM  
6       orders  
7   GROUP BY HOUR(order_time)  
8   ORDER BY HOUR(order_time) DESC
```

hour(order_time)	count(order_id)
15	1468
14	1472
13	2455
12	2520
11	1231
10	8
9	1

hour(order_time)	count(order_id)
23	28
22	663
21	1198
20	1642
19	2009
18	2399

Tracked orders by hour of the day to determine peak times, aiding in staffing and resource allocation. Identifying peak hours ensures the business is prepared to meet demand during high-traffic periods, enhancing customer satisfaction.

Conclusion

Through a comprehensive analysis of pizza sales and ordering patterns, this project provides actionable insights that highlight customer preferences, peak ordering times, and revenue distribution. By leveraging SQL queries and advanced data processing techniques, I was able to identify top-performing pizza types, popular sizes, and category-wise revenue contributions.

These insights reveal essential patterns in customer demand and help pinpoint high-revenue items, which support data-driven decisions aimed at menu optimization, resource allocation, and strategic marketing. Additionally, understanding peak hours and cumulative revenue growth enables the business to better anticipate customer needs and maximize operational efficiency. Ultimately, this analysis empowers the business to enhance customer satisfaction while optimizing profitability and growth strategies.