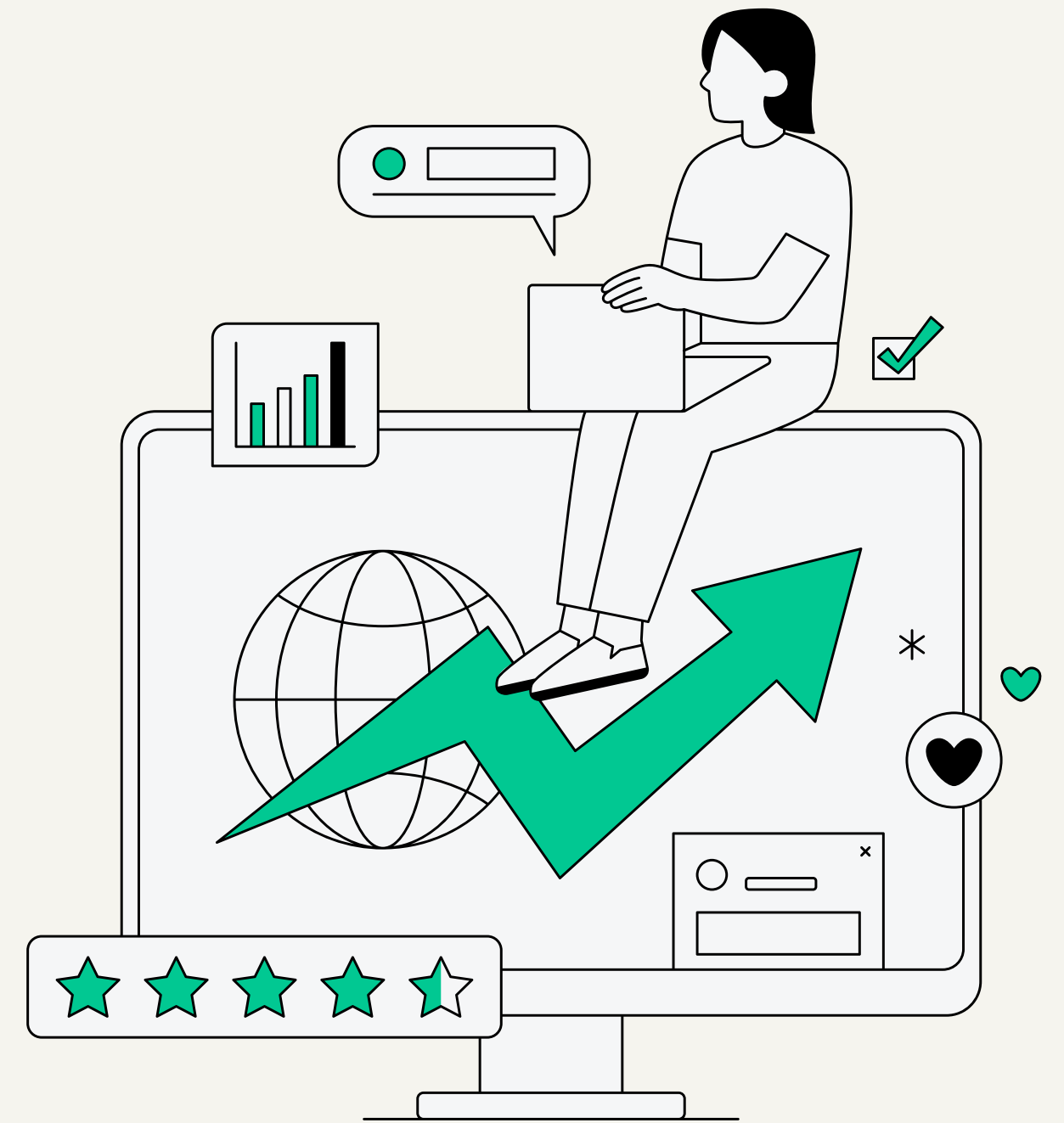# Restaurant Operations Analysis

Insights into Menu and Customer Behavior
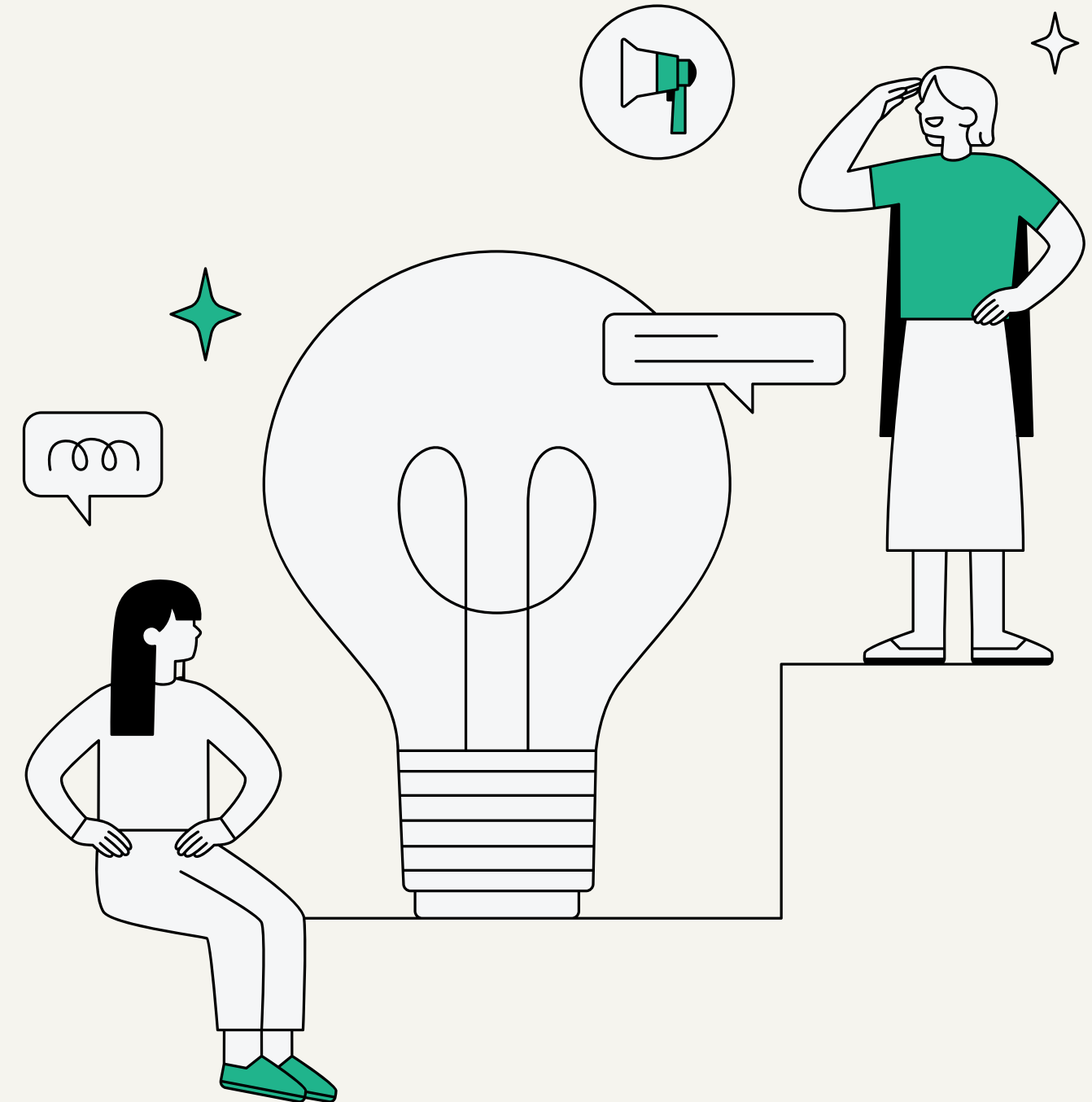
Project overview

Analyze customer data to identify trends in menu performance and customer preferences.

Objectives

01. Analyze the menu items.

02. Review order details.

03. Understand customer behavior.

01. Menu Analysis

What is the total Items on the Menu?

32 items.

```sql
-- View the menu_items table and write a query to find the number of items on the menu
select * from menu_items;


select count(menu_item_id) from menu_items;
```

01. Menu Analysis

What are the least and most expensive items on the menu?

Least: Edamame, Price: 5.00.

Most: Shrimp Scampi, Price: 19.95.

```sql
-- What are the least and most expensive items on the menu?
select item_name,price
from menu_items
order by price
limit 1;


select item_name,price
from menu_items
order by price desc
limit 1;
```

01. Menu Analysis

How many Italian dishes are on the menu? What are the least and most expensive Italian dishes on the menu?

9 Italian Items

Least: Spaghetti and Fettuccine Alfredo, Price: 14.50

Most: Shrimp Scampi, Price: 19.95.

```sql
-- How many Italian dishes are on the menu? What are the least and most expensive Italian dishes on the menu?
select count(menu_item_id) as italian_deshes
from menu_items
where category = 'Italian';


select item_name,price
from menu_items
where category = 'Italian'
order by price desc;
```

01. Menu Analysis

How many dishes are in each category? What is the average dish price within each category?

Category	Items	Avg dish price
American	6	10.066
Asian	8	13.475
Mexican	9	11.800
Italian	9	16.750

```sql
-- How many dishes are in each category? What is the average dish price within each category?
select category,count(menu_item_id) as count_items, avg(price) as avg_price
from menu_items
group by category;
```

02. Order details Analysis

What is the date range of the table?
Start: 1/1/2023
End: 31/3/2023

```sql
-- View the order_details table. What is the date range of the table?
select max(order_date),min(order_date) from order_details;
```

02. Order details Analysis

How many orders were made within this date range? How many items were ordered within this date range?

Total orders: 5370 order.

Total items: 12234 item.

```sql
-- How many orders were made within this date range? How many items were ordered within this date range?
select count(order_details_id) as total_items,
       count(distinct order_id) as total_orders
from order_details;
```

02. Order details Analysis

Which orders had the greatest number of items?
Orders: 4482, 3473, 1957, 330, 2675, 440, 443, 4305
Total items: 14 item

```sql
-- Which orders had the most number of items?
select order_id, count(order_details_id) as total_items
from order_details
group by order_id
order by total_items desc;
```

02. Order details Analysis

How many orders had more than 12 items?

23 order.

```sql
-- How many orders had more than 12 items?
select order_id, count(order_details_id) as total_items
from order_details
group by order_id
having total_items >12
order by total_items desc;
```

03. Analyze customer behavior.

What were the least and most ordered items? What categories were they in?

	Item	Category	Count
Least	Chicken Tacos	Mexican	123
Most	Hamburger	American	622

```sql
-- What were the least and most ordered items? What categories were they in?
select menu_items.item_name, menu_items.category, count(order_details.item_id)
from order_details left join menu_items on order_details.item_id = menu_items.menu_item_id
group by menu_items.item_name, menu_items.category
having count(order_details.item_id) > 0
order by count(order_details.item_id);
```

03. Analyze customer behavior.

What were the top 5 orders that spent the most money?

Order Id	Total spent money
440	192.15
2075	191.05
1957	190.10
330	189.70
2675	185.10

```sql
-- What were the top 5 orders that spent the most money?
select order_details.order_id, sum(menu_items.price)
from order_details left join menu_items on order_details.item_id = menu_items.menu_item_id
group by order_details.order_id
order by sum(menu_items.price) desc
limit 5;
```

03. Analyze customer behavior.

View the details of the highest spend order. Which specific items were purchased?

```sql
-- View the details of the highest spend order. Which specific items were purchased?

with top_order as (select sum(menu_items.price) as totals, order_details.order_id as orders

from order_details inner join menu_items on order_details.item_id = menu_items.menu_item_id

group by order_details.order_id

order by totals desc

limit 1)

select menu_items.menu_item_id, menu_items.item_name, menu_items.price, order_details.order_id

from menu_items inner join order_details on order_details.item_id = menu_items.menu_item_id

where order_details.order_id = (select orders from top_order);
```

Item ID	Item	Price
116	Steak Tacos	13.95
103	Hot Dog	9.00
124	Spaghetti	14.50
125	Spaghetti & Meatballs	17.95
125	Spaghetti & Meatballs	17.95
126	Fettuccine Alfredo	14.50
126	Fettuccine Alfredo	14.50
109	Korean Beef Bowl	17.95
127	Meat Lasagna	17.95
113	Edamame	5.00
122	Chips & Salsa	7.00
131	Chicken Parmesan	17.95
106	French Fries	7.00
132	Eggplant Parmesan	16.95

Key Recommendations

Menu Insights:

• Consider promoting Italian dishes more prominently since they have the highest average price.

• Evaluate the performance of underperforming dishes (e.g., Chicken Tacos) and decide whether to retain or improve them.

Order Management:

• Analyze the busiest times within the date range to optimize staffing and inventory.

• Encourage bulk orders by offering discounts for orders with more than 12 items, This could increase revenue and improve operational efficiency during off-peak hours.

Customer Behavior:

• Highlight the most popular items (e.g., Hamburger) in marketing campaigns.

• Consider introducing more variations of popular items to increase customer engagement.

Conclusion

The analysis provided key insights into menu pricing, customer behavior, and order trends, helping identify opportunities for operational improvements.

•Menu Optimization: Italian dishes have the highest average price and should be promoted more prominently.

•Customer Behavior: Popular items like hamburgers can be leveraged for marketing campaigns, while underperforming items like chicken tacos require evaluation.

•Order Management: Offering discounts for large orders and analyzing peak times can improve revenue and efficiency.

By applying SQL and data analysis techniques, this project demonstrates how data-driven strategies can enhance restaurant performance and customer satisfaction.

Thank you very much!

Lamiaa Wael