RESTAURANT OPERATION ANALYSIS

Objective: This project aims to analyze customer data to evaluate the performance of the new menu items and understand customer preferences.

Exploration:

- The **menu_items** table contains information about the items on the new menu, including item ID, item name, category, and price.
- The **order_details** table stores data about customer orders, including order ID details, order ID, item ID, and order date.
- **Initial insights**: The menu consists of a variety of items ranging from appetizers to main courses. The order details reveal the volume of orders for different menu items.

Data Analysis:

- **Popular Menu Items:**
    - SQL query:

```
82    /*What were the top 10 most ordered items?*/
83
84    SELECT item_name, COUNT(item_id) AS num_item
85    FROM menu_items AS mi
86    JOIN order_details AS od ON mi.menu_item_id = od.item_id
87    GROUP BY item_name
88    ORDER BY num_item DESC
89    LIMIT 10
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

item_name	num_item
Hamburger	622
Edamame	620
Korean Beef Bowl	588
Cheeseburger	583
French Fries	571
Tofu Pad Thai	562
Steak Torta	489
Spaghetti & Meatballs	470
Mac & Cheese	463
Chips & Salsa	461

```
91    /*What were the least and most ordered items in? What categories they were in?*/
92
93    SELECT item_name, category, COUNT(item_id) AS num_item
94    FROM menu_items AS mi
95    JOIN order_details AS od ON mi.menu_item_id = od.item_id
96    GROUP BY item_name, category
97    ORDER BY num_item ASC
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

item_name	category	num_item
Chicken Tacos	Mexican	123
Potstickers	Asian	205
Cheese Lasagna	Italian	207
Steak Tacos	Mexican	214
Cheese Quesadillas	Mexican	233
Chips & Guacamole	Mexican	237
Veggie Burger	American	238
Shrimp Scampi	Italian	239
Fettuccine Alfredo	Italian	249
Hot Dog	American	257
Meat Lasagna	Italian	273
Salmon Roll	Asian	324
Steak Burrito	Mexican	354
California Roll	Asian	355
Mushroom Ravioli	Italian	359

- **Key findings**:
    1. The top 10 most ordered menu items include "Hamburger", "Edamame", and "Korean Beef Bowl".
    2. Some Mexican, Asian, & Italian foods are doing good.

- **Customer Preferences:**
    - SQL query:

```sql
/*What were the top 5 orders that spent the most money?*/

SELECT order_id, SUM(price) AS total_price
FROM menu_items
JOIN order_details ON menu_item_id = item_id
GROUP BY order_id
ORDER BY total_price DESC
LIMIT 5

/*View the details of the top 5 highest spend orders*/

SELECT *
FROM menu_items
JOIN order_details ON menu_item_id = item_id
WHERE order_id IN (440, 440, 2075, 1957, 330, 2675)
ORDER BY price DESC
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content:

menu_item_id	item_name	category	price	order_details_id	order_id	order_date	order_time	item_id
125	Spaghetti & Meatballs	Italian	17.95	755	330	2023-01-06	13:27:11	125
125	Spaghetti & Meatballs	Italian	17.95	4685	2075	2023-02-04	14:03:04	125
131	Chicken Parmesan	Italian	17.95	1014	440	2023-01-08	12:16:34	131
131	Chicken Parmesan	Italian	17.95	4399	1957	2023-02-02	14:50:01	131
109	Korean Beef Bowl	Asian	17.95	1010	440	2023-01-08	12:16:34	109
131	Chicken Parmesan	Italian	17.95	4400	1957	2023-02-02	14:50:01	131
109	Korean Beef Bowl	Asian	17.95	756	330	2023-01-06	13:27:11	109
127	Meat Lasagna	Italian	17.95	1011	440	2023-01-08	12:16:34	127
131	Chicken Parmesan	Italian	17.95	762	330	2023-01-06	13:27:11	131
127	Meat Lasagna	Italian	17.95	4686	2075	2023-02-04	14:03:04	127
125	Spaghetti & Meatballs	Italian	17.95	1006	440	2023-01-08	12:16:34	125
125	Spaghetti & Meatballs	Italian	17.95	1007	440	2023-01-08	12:16:34	125
132	Eggplant Parmesan	Italian	16.95	4693	2075	2023-02-04	14:03:04	132
132	Eggplant Parmesan	Italian	16.95	4692	2075	2023-02-04	14:03:04	132
132	Eggplant Parmesan	Italian	16.95	6040	2675	2023-02-14	14:41:49	132
132	Eggplant Parmesan	Italian	16.95	6039	2675	2023-02-14	14:41:49	132

- **Key findings**:
    1. The top 5 customers by order count are identified, indicating frequent patrons who may have strong preferences.
    2. The Mexican food is the highest spend order.

SQL Script Appendix:

Below, the entire SQL script used for data analysis including all the queries referenced and any additional queries not explicitly mentioned in the main body of the report is given:

```sql
/*   RESTAURANT OPERATION ANALYSIS   */


/*View the menu_items table and write a query to find the number of items on the menu*/

SELECT *
FROM menu_items

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

SELECT *
FROM menu_items
ORDER BY price

/*How many Italian dishes are on the menu?*/

SELECT COUNT(*) as Total_dishes
FROM menu_items
WHERE category = 'Italian'

/*What are the least and most expensive Italian dishes on the menu?*/

SELECT *
FROM menu_items
WHERE category = 'Italian'
ORDER BY price

/*How many dishes are in each category?*/

SELECT COUNT(menu_item_id)
FROM menu_items
WHERE category = 'Italian'

/*What is the average dish price within each category?*/

SELECT avg(price) as Avg_price, category
FROM menu_items
GROUP BY category

/*View the order_details table*/

SELECT *
FROM order_details

/*What is the date range of the table?*/

SELECT MIN(order_date), MAX(order_date)
FROM order_details

/*How many orders were made within this date range?*/

SELECT COUNT(DISTINCT order_id) AS Total_order
FROM order_details

/*How many items were ordered within this date range?*/

SELECT COUNT(*)
FROM order_details

/*Which orders had the most number of items?*/

SELECT order_id, COUNT(item_id) as Total_item
FROM order_details
GROUP BY order_id
ORDER BY Total_item DESC
```

```sql

/*How many orders had more than 12 items?*/

SELECT COUNT(*)
FROM (
SELECT order_id, COUNT(item_id) as Total_item
FROM order_details
GROUP BY order_id
HAVING Total_item > 12) AS num_order

/*Combine the menu_items and order_details tables into a single table*/

SELECT *
FROM menu_items
JOIN order_details ON menu_item_id = item_id

/*What were the top 10 most ordered items?*/

SELECT item_name, COUNT(item_id) AS num_item
FROM menu_items AS mi
JOIN order_details AS od ON mi.menu_item_id = od.item_id
GROUP BY item_name
ORDER BY num_item DESC
LIMIT 10

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

SELECT item_name, category, COUNT(item_id) AS num_item
FROM menu_items AS mi
JOIN order_details AS od ON mi.menu_item_id = od.item_id
GROUP BY item_name, category
ORDER BY num_item ASC

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

SELECT order_id, SUM(price) AS total_price
FROM menu_items
JOIN order_details ON menu_item_id = item_id
GROUP BY order_id
ORDER BY total_price DESC
LIMIT 5

/*View the details of the top 5 highest spend orders*/

SELECT *
FROM menu_items
JOIN order_details ON menu_item_id = item_id
WHERE order_id IN (440, 440, 2075, 1957, 330, 2675)
ORDER BY price DESC

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

SELECT *
FROM menu_items
JOIN order_details ON menu_item_id = item_id
WHERE order_id = 440
```