Restaurant Operations Analysis

SQL PROJECT

The Taste of the World Café

Dishes starting from $5

Order Now

The Assignment

The Taste of the World Café debuted a new menu at the start of the year 2023.

We’ve been asked to analyze the customer data to see which dishes are doing well and not doing well.

The Objectives

1. Explore the menu_items table to get an idea of what's on the menu
2. Explore order_details table to get an idea of price range and date range.
3. Use both tables to understand how customers are reacting to the new menu

1. Exploring menu_items table

1.Exploring menu_items table

```
SELECT *
FROM menu_items;
```

Result:

menu_item_id	item_name	category	price
101	Hamburger	American	12.95
102	Cheeseburger	American	13.95
103	Hot Dog	American	9.00
104	Veggie Burger	American	10.50
105	Mac & Cheese	American	7.00
106	French Fries	American	7.00
107	Orange Chicken	Asian	16.50
108	Tofu Pad Thai	Asian	14.50
109	Korean Beef Bowl	Asian	17.95
110	Pork Ramen	Asian	17.95
111	California Roll	Asian	11.95
112	Salmon Roll	Asian	14.95
113	Edamame	Asian	5.00
114	Potstickers	Asian	9.00
115	Chicken Tacos	Mexican	11.95
116	Steak Tacos	Mexican	13.95

menu_item_id	item_name	category	price
117	Chicken Burrito	Mexican	12.95
118	Steak Burrito	Mexican	14.95
119	Chicken Torta	Mexican	11.95
120	Steak Torta	Mexican	13.95
121	Cheese Quesadillas	Mexican	10.50
122	Chips & Salsa	Mexican	7.00
123	Chips & Guacamole	Mexican	9.00
124	Spaghetti	Italian	14.50
125	Spaghetti & Mea...	Italian	17.95
126	Fettuccine Alfredo	Italian	14.50
127	Meat Lasagna	Italian	17.95
128	Cheese Lasagna	Italian	15.50
129	Mushroom Ravioli	Italian	15.50
130	Shrimp Scampi	Italian	19.95
131	Chicken Parmesan	Italian	17.95
132	Eggplant Parmesan	Italian	16.95

2. Total number of items on the menu.

```
SELECT
COUNT(DISTINCT item_name) AS num_items
FROM menu_items;
```

Result:

num_items
32

3. How many items are there in each category?

```
SELECT category,
COUNT(DISTINCT item_name) AS total_items
FROM menu_items
GROUP BY category;
```

Result:

category	total_items
American	6
Asian	8
Italian	9
Mexican	9

4. What are the most expensive items on the menu?

```
SELECT *
FROM menu_items
ORDER BY price DESC;
```

Result:

menu_item_id	item_name	category	price
130	Shrimp Scampi	Italian	19.95
109	Korean Beef Bowl	Asian	17.95
110	Pork Ramen	Asian	17.95
125	Spaghetti & Meatballs	Italian	17.95
127	Meat Lasagna	Italian	17.95
131	Chicken Parmesan	Italian	17.95
132	Eggplant Parmesan	Italian	16.95
107	Orange Chicken	Asian	16.50
128	Cheese Lasagna	Italian	15.50
129	Mushroom Ravioli	Italian	15.50
112	Salmon Roll	Asian	14.95
118	Steak Burrito	Mexican	14.95
108	Tofu Pad Thai	Asian	14.50
124	Spaghetti	Italian	14.50
126	Fettuccine Alfredo	Italian	14.50
102	Cheeseburger	American	13.95

5. What are the least expensive items on the menu?

```
SELECT *
FROM menu_items
ORDER BY price ASC;
```

Result:

menu_item_id	item_name	category	price
113	Edamame	Asian	5.00
105	Mac & Cheese	American	7.00
106	French Fries	American	7.00
122	Chips & Salsa	Mexican	7.00
103	Hot Dog	American	9.00
114	Potstickers	Asian	9.00
123	Chips & Guacamole	Mexican	9.00
104	Veggie Burger	American	10.50
121	Cheese Quesadillas	Mexican	10.50
111	California Roll	Asian	11.95
115	Chicken Tacos	Mexican	11.95
119	Chicken Torta	Mexican	11.95
101	Hamburger	American	12.95
117	Chicken Burrito	Mexican	12.95
102	Cheeseburger	American	13.95
116	Steak Tacos	Mexican	13.95

6. a) What are the most and least expensive American items on the menu?

```
SELECT *
FROM menu_items
WHERE category = "American"
ORDER BY price DESC;
```

Result:

menu_item_id	item_name	category	price
102	Cheeseburger	American	13.95
101	Hamburger	American	12.95
104	Veggie Burger	American	10.50
103	Hot Dog	American	9.00
105	Mac & Cheese	American	7.00
106	French Fries	American	7.00

b) What are the most and least expensive Asian items on the menu?

```
SELECT *
FROM menu_items
WHERE category = "Asian"
ORDER BY price DESC;
```

Result:

menu_item_id	item_name	category	price
109	Korean Beef Bowl	Asian	17.95
110	Pork Ramen	Asian	17.95
107	Orange Chicken	Asian	16.50
112	Salmon Roll	Asian	14.95
108	Tofu Pad Thai	Asian	14.50
111	California Roll	Asian	11.95
114	Potstickers	Asian	9.00
113	Edamame	Asian	5.00

c) What are the most and least expensive Italian items on the menu?

```
SELECT *
FROM menu_items
WHERE category = "Italian"
ORDER BY price DESC;
```

Result:

menu_item_id	item_name	category	price
130	Shrimp Scampi	Italian	19.95
125	Spaghetti & Meatballs	Italian	17.95
127	Meat Lasagna	Italian	17.95
131	Chicken Parmesan	Italian	17.95
132	Eggplant Parmesan	Italian	16.95
128	Cheese Lasagna	Italian	15.50
129	Mushroom Ravioli	Italian	15.50
124	Spaghetti	Italian	14.50
126	Fettuccine Alfredo	Italian	14.50

d) What are the least and most expensive Mexican items on the menu?

```
SELECT *
FROM menu_items
WHERE category = "Mexican"
ORDER BY price DESC;
```

Result:

menu_item_id	item_name	category	price
118	Steak Burrito	Mexican	14.95
116	Steak Tacos	Mexican	13.95
120	Steak Torta	Mexican	13.95
117	Chicken Burrito	Mexican	12.95
115	Chicken Tacos	Mexican	11.95
119	Chicken Torta	Mexican	11.95
121	Cheese Quesadillas	Mexican	10.50
123	Chips & Guacamole	Mexican	9.00
122	Chips & Salsa	Mexican	7.00

7. What is the average dish price in each category?

```
SELECT category,
ROUND(AVG(price),2) AS average_price
FROM menu_items
GROUP BY category;
```

Result:

category	average_price
American	10.07
Asian	13.48
Mexican	11.80
Italian	16.75

2. Exploring order_details table

1. Exploring order details table.

```
SELECT *
FROM order_details;
```

Result:

order_details_id	order_id	order_date	order_time	item_id
1	1	2023-01-01	11:38:36	109
2	2	2023-01-01	11:57:40	108
3	2	2023-01-01	11:57:40	124
4	2	2023-01-01	11:57:40	117
5	2	2023-01-01	11:57:40	129
6	2	2023-01-01	11:57:40	106
7	3	2023-01-01	12:12:28	117
8	3	2023-01-01	12:12:28	119
9	4	2023-01-01	12:16:31	117
10	5	2023-01-01	12:21:30	117
11	6	2023-01-01	12:29:36	101
12	6	2023-01-01	12:29:36	114
13	7	2023-01-01	12:50:37	123
14	8	2023-01-01	12:51:37	123
15	9	2023-01-01	12:52:01	108
16	9	2023-01-01	12:52:01	126

2. What is the date range of the table?

```
SELECT
MIN(order_date) AS start_date,
MAX(order_date) AS end_date
FROM order_details;
```

Result:

start_date	end_date
2023-01-01	2023-03-31

3. How many orders were made within this date range?

```
SELECT
COUNT(DISTINCT order_id) as
total_orders
FROM order_details;
```

Result:

total_orders
5370

4. How many items were ordered within this date range?

```
SELECT
COUNT(order_details_id) AS num_items
FROM order_details;
```

Result:

num_items
12234

5. What is the maximum number of items per order?

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

Result:

order_id	items_per_order
330	14
440	14
443	14
1957	14
2675	14
3473	14
4305	14
1274	13
1569	13
1685	13
1734	13
2075	13
2126	13
2188	13
2725	13
3583	13

3. Analyzing Customer Behaviour

1. Joining two tables using Joins.

```
SELECT *
FROM order_details AS o
LEFT JOIN menu_items AS m
 ON m.menu_item_id = o.item_id;
```

Result:

order_details_id	order_id	order_date	order_time	item_id	menu_item_id	item_name	category	price
1	1	2023-01-01	11:38:36	109	109	Korean Beef Bowl	Asian	17.95
2	2	2023-01-01	11:57:40	108	108	Tofu Pad Thai	Asian	14.50
3	2	2023-01-01	11:57:40	124	124	Spaghetti	Italian	14.50
4	2	2023-01-01	11:57:40	117	117	Chicken Burrito	Mexican	12.95
5	2	2023-01-01	11:57:40	129	129	Mushroom Ravioli	Italian	15.50
6	2	2023-01-01	11:57:40	106	106	French Fries	American	7.00
7	3	2023-01-01	12:12:28	117	117	Chicken Burrito	Mexican	12.95
8	3	2023-01-01	12:12:28	119	119	Chicken Torta	Mexican	11.95
9	4	2023-01-01	12:16:31	117	117	Chicken Burrito	Mexican	12.95
10	5	2023-01-01	12:21:30	117	117	Chicken Burrito	Mexican	12.95
11	6	2023-01-01	12:29:36	101	101	Hamburger	American	12.95
12	6	2023-01-01	12:29:36	114	114	Potstickers	Asian	9.00
13	7	2023-01-01	12:50:37	123	123	Chips & Guacamole	Mexican	9.00
14	8	2023-01-01	12:51:37	123	123	Chips & Guacamole	Mexican	9.00
15	9	2023-01-01	12:52:01	108	108	Tofu Pad Thai	Asian	14.50
16	9	2023-01-01	12:52:01	126	126	Fettuccine Alfredo	Italian	14.50

2. What were the most ordered items? What categories were they in?

```
SELECT item_name, category,
COUNT(order_details_id) as total_orders,
(COUNT(order_details_id) / (SELECT COUNT(*) FROM order_details)) * 100
AS percentage_of_total_orders
FROM order_details as o
LEFT JOIN menu_items as m
 ON m.menu_item_id = o.item_id
GROUP BY item_name, category
ORDER BY total_orders DESC;
```

Result:

item_name	category	total_orders	total_orders_percent
Hamburger	American	622	5.0842
Edamame	Asian	620	5.0678
Korean Beef Bowl	Asian	588	4.8063
Cheeseburger	American	583	4.7654
French Fries	American	571	4.6673
Tofu Pad Thai	Asian	562	4.5938
Steak Torta	Mexican	489	3.9971
Spaghetti & Meatballs	Italian	470	3.8418
Mac & Cheese	American	463	3.7845
Chips & Salsa	Mexican	461	3.7682
Orange Chicken	Asian	456	3.7273
Chicken Burrito	Mexican	455	3.7191
Eggplant Parmesan	Italian	420	3.4331
Chicken Torta	Mexican	379	3.0979
Spaghetti	Italian	367	2.9998
Chicken Parmesan	Italian	364	2.9753

3. What were the least ordered items? What categories were they in?

```
SELECT item_name, category, price,
COUNT(order_details_id) AS total_orders
FROM order_details as o
LEFT JOIN menu_items AS m
 ON m.menu_item_id = o.item_id
GROUP BY item_name,category, price
ORDER BY total_orders ASC;
```

Result:

item_name	category	price	total_orders
Chicken Tacos	Mexican	11.95	123
NULL	NULL	NULL	137
Potstickers	Asian	9.00	205
Cheese Lasagna	Italian	15.50	207
Steak Tacos	Mexican	13.95	214
Cheese Quesadillas	Mexican	10.50	233
Chips & Guacamole	Mexican	9.00	237
Veggie Burger	American	10.50	238
Shrimp Scampi	Italian	19.95	239
Fettuccine Alfredo	Italian	14.50	249
Hot Dog	American	9.00	257
Meat Lasagna	Italian	17.95	273
Salmon Roll	Asian	14.95	324
Steak Burrito	Mexican	14.95	354
California Roll	Asian	11.95	355
Mushroom Ravioli	Italian	15.50	359

4. What do the highest spending orders look like? How much did they spend?

```
SELECT order_id,
SUM(price) AS total_spend
FROM order_details AS o
LEFT JOIN menu_items AS m
 ON m.menu_item_id = o.item_id
GROUP BY order_id
ORDER BY total_spend DESC;
```

Result:

order_id	total_spend
440	192.15
2075	191.05
1957	190.10
330	189.70
2675	185.10
4482	184.50
1274	183.55
2188	182.65
3473	182.55
3583	179.60
740	179.50
4836	177.20
2126	177.05
2547	176.65
4305	176.55
5066	174.00

5. Which category of items were purchased the most by customers?

```
SELECT category,
COUNT(item_id) as num_items
FROM order_details AS o
LEFT JOIN menu_items AS m
ON m.menu_item_id = o.item_id
GROUP BY category
ORDER BY num_items DESC;
```

Result:

category	num_items
Asian	3470
Italian	2948
Mexican	2945
American	2734

6. a) Which Asian dishes did customers spend the most on?

```
SELECT category,item_name,
SUM(price) AS total_spend
FROM order_details AS o
LEFT JOIN menu_items AS m
 ON m.menu_item_id = o.item_id
GROUP BY category,item_name
HAVING category = "Asian"
ORDER BY total_spend DESC;
```

Result:

category	item_name	total_spend
Asian	Korean Beef Bowl	10554.60
Asian	Tofu Pad Thai	8149.00
Asian	Orange Chicken	7524.00
Asian	Pork Ramen	6462.00
Asian	Salmon Roll	4843.80
Asian	California Roll	4242.25
Asian	Edamame	3100.00
Asian	Potstickers	1845.00

b) Which Italian dishes did customers spend the most on?

```
SELECT category,item_name,
SUM(price) AS total_spend
FROM order_details AS o
LEFT JOIN menu_items AS m
 ON m.menu_item_id = o.item_id
GROUP BY category,item_name
HAVING category = "Italian"
ORDER BY total_spend DESC;
```

Result:

category	item_name	total_spend
Italian	Spaghetti & Meatballs	8436.50
Italian	Eggplant Parmesan	7119.00
Italian	Chicken Parmesan	6533.80
Italian	Mushroom Ravioli	5564.50
Italian	Spaghetti	5321.50
Italian	Meat Lasagna	4900.35
Italian	Shrimp Scampi	4768.05
Italian	Fettuccine Alfredo	3610.50
Italian	Cheese Lasagna	3208.50

c) Which Mexican dishes did customers spend the most on?

```
SELECT category,item_name,
SUM(price) AS total_spend
FROM order_details AS o
LEFT JOIN menu_items AS m
 ON m.menu_item_id = o.item_id
GROUP BY category,item_name
HAVING category = "Mexican"
ORDER BY total_spend DESC;
```

Result:

category	item_name	total_spend
Mexican	Steak Torta	6821.55
Mexican	Chicken Burrito	5892.25
Mexican	Steak Burrito	5292.30
Mexican	Chicken Torta	4529.05
Mexican	Chips & Salsa	3227.00
Mexican	Steak Tacos	2985.30
Mexican	Cheese Quesadillas	2446.50
Mexican	Chips & Guacamole	2133.00
Mexican	Chicken Tacos	1469.85

d) Which American dishes did customers spend the most on?

```
SELECT category,item_name,
SUM(price) AS total_spend
FROM order_details AS o
LEFT JOIN menu_items AS m
 ON m.menu_item_id = o.item_id
GROUP BY category,item_name
HAVING category = "American"
ORDER BY total_spend DESC;
```

Result:

category	item_name	total_spend
American	Cheeseburger	8132.85
American	Hamburger	8054.90
American	French Fries	3997.00
American	Mac & Cheese	3241.00
American	Veggie Burger	2499.00
American	Hot Dog	2313.00

7) Which Italian dishes did customers spend the most on?

```
SELECT category,
COUNT(item_id) as num_items,
SUM(price) AS total_spend
FROM order_details AS o
LEFT JOIN menu_items AS m
 ON m.menu_item_id = o.item_id
GROUP BY category
ORDER BY total_spend DESC;
```

Result:

category	num_items	total_spend
Italian	2948	49462.70
Asian	3470	46720.65
Mexican	2945	34796.80
American	2734	28237.75

Insights

1. There are 32 new dishes on the menu
2. Count of dishes from different categories American 6 , Asian 8, Italian 9, Mexican 9
3. Edamame from Asian is the least expensive ($5)
4. Shrimp Scampi from Italian is the most expensive ($19.95)
5. Italian dishes are the most expensive (Average price $16.75)
6. American dishes are most affordable (Average price $10.07)
7. Total Orders 5370, Number of items ordered 12234
8. Maximum Items per order is 14
9. Most ordered items are American (Hamburger (5.08%)) and Asian (Edamame (5.06%))
10. Highest spending order $192.15
11. 'Customers spent the most on the 'Korean Beef Bowl' from Asian category, 'Spaghetti & Meatballs' from Italian, 'Steak Torta' from Mexican, 'Cheeseburger' from Mexican.
12. Despite the higher prices of Italian dishes, customers still prefer to purchase them.

Recommendations

1. Which cuisines should we focus on developing more menu items for based on the data?

American Cuisine should consider expanding its menu offerings to meet customer demand.

Thank You

SQL Data Analysis

by Sujith Jayaprasad