

# **COFFEE SHOP SALES ANALYSIS**

## **USING**

### **SQL + POWER BI**



# Introduction

This project presents an end-to-end sales analysis of a coffee shop business using SQL (MySQL) and Power BI. The goal was to solve a set of well-defined business problems by extracting, transforming and visualizing sales data to support data-driven decision-making.

The analysis follows a real-world problem statement with clearly defined KPI and chart requirements including month-over-month performance tracking, time-based trends and product-level insights.

SQL was used to structure and preprocess the raw data, while advanced DAX measures in Power BI enabled dynamic visualizations, tooltips and interactive filters. Together, this project demonstrates how backend data processing and frontend visualization can be integrated to build a powerful business intelligence solution.



## Tools & Technologies Used

- MySQL - Querying, Joins, Aggregations, Filtering
- Power BI - Data modeling, Advanced DAX, Dashboard design

# *Problem Statement*

## KPI Requirements

### **1. Total Sales Analysis**

- Monthly sales, MoM growth and differences

### **2. Total Orders Analysis**

- Monthly orders, MoM changes and differences

### **3. Total Quantity Sold Analysis**

- Monthly quantity, MoM trends, and change comparison

# ***Chart Requirements***

## **1. Calendar Heatmap**

- Color-coded daily sales with hover tooltips

## **2. Sales by Weekday vs Weekend**

- Performance comparison by day type

## **3. Sales by Store Location**

- Location-wise MoM metrics and growth indicators

## **4. Daily Sales with Average Line**

- Identify above/below average sales days

## **5. Sales by Product Category**

- Category-wise performance and contribution

## **6. Top 10 Products by Sales**

- Highest-selling products based on revenue

## **7. Sales by Days and Hours**

- Heatmap of sales by day-hour combination

# Total Sales Analysis – Revenue for May

```
SELECT  
    MONTHNAME(transaction_date) AS month,  
    CONCAT(ROUND(SUM(transaction_qty * unit_price)/1000), 'K') AS total_sales  
FROM  
    coffee_shop_sales  
WHERE MONTHNAME(transaction_date) = 'May'  
GROUP BY  
    month;
```

Result Grid

	month	total_sales
▶	May	157K

# MoM Sales Growth - April to May

```
SELECT  
    MONTH(transaction_date) AS month,  
    ROUND(SUM(unit_price * transaction_qty)) AS total_sales,  
    CONCAT(ROUND((SUM(unit_price * transaction_qty) - LAG(SUM(unit_price * transaction_qty), 1)  
        OVER (ORDER BY MONTH(transaction_date))) / LAG(SUM(unit_price * transaction_qty), 1)  
        OVER (ORDER BY MONTH(transaction_date)) * 100, 1), '%') AS mom_increase_percentage  
FROM  
    coffee_shop_sales  
WHERE  
    MONTH(transaction_date) IN (4, 5)  
GROUP BY  
    MONTH(transaction_date)  
ORDER BY  
    MONTH(transaction_date);
```

	month	total_sales	mom_increase_percentage
▶	4	118941	NULL
	5	156728	31.8%

# Total Order Analysis - May

```
SELECT  
    MONTHNAME(transaction_date) AS month,  
    COUNT(transaction_id) AS Total_Orders  
FROM  
    coffee_shop_sales  
WHERE MONTHNAME(transaction_date) = 'May'  
GROUP BY month;
```

Result Grid | Filter

	month	Total_Orders
▶	May	33527

# MoM OrdersGrowth – April to May

```
SELECT  
    MONTH(transaction_date) AS month,  
    ROUND(COUNT(transaction_ID)) AS total_orders,  
    CONCAT(ROUND((COUNT(transaction_id) - LAG(COUNT(transaction_id), 1)  
        OVER (ORDER BY MONTH(transaction_date))) / LAG(COUNT(transaction_id), 1)  
        OVER (ORDER BY MONTH(transaction_date)) * 100, 1), '%') AS mom_increase_percentage  
FROM  
    coffee_shop_sales  
WHERE  
    MONTH(transaction_date) IN (4, 5)  
GROUP BY  
    MONTH(transaction_date)  
ORDER BY  
    MONTH(transaction_date);
```

	month	total_orders	mom_increase_percentage
▶	4	25335	NULL
	5	33527	32.3%

# Total Quantity Sold – May



```
SELECT  
    MONTHNAME(transaction_date) AS month,  
    SUM(transaction_qty) AS Total_Quantity_Sold  
FROM  
    coffee_shop_sales  
WHERE  
    MONTHNAME(transaction_date) = 'May'  
GROUP BY month;
```

Result Grid | Filter Rows

	month	Total_Quantity_Sold
▶	May	48233

# MoM Quantity Sold - April to May

SELECT

```
MONTH(transaction_date) AS month,  
ROUND(SUM(transaction_qty)) AS total_quantity_sold,  
CONCAT(ROUND((SUM(transaction_qty) - LAG(SUM(transaction_qty),1)  
OVER (ORDER BY MONTH(transaction_date)))/LAG(SUM(transaction_qty),1)  
OVER (ORDER BY MONTH(transaction_date))*100,1), '%') AS mom_increase_percentage  
FROM coffee_shop_sales  
WHERE MONTH(transaction_date) IN (4,5)  
GROUP BY MONTH(transaction_date)  
ORDER BY MONTH(transaction_date);
```

	month	total_quantity_sold	mom_increase_percentage
▶	4	36469	NULL
	5	48233	32.3%

# Daily KPI Summary – 18 May 2023



```
SELECT  
    CONCAT(ROUND(SUM(unit_price * transaction_qty)/1000,1), 'K') AS Total_sales,  
    CONCAT(ROUND(SUM(transaction_qty)/1000,1), 'K') AS Total_Quantity_Sold,  
    CONCAT(ROUND(COUNT(transaction_id)/1000,1), 'K') AS Total_Orders  
FROM coffee_shop_sales  
WHERE  
    transaction_date = '2023-05-18';
```

	Total_sales	Total_Quantity_Sold	Total_Orders
▶	5.6K	1.7K	1.2K

# Sales Comparison – Weekdays vs Weekends (May)



SELECT

```
CASE WHEN DAYOFWEEK(transaction_date) IN (1,7) THEN 'Weekends'  
ELSE 'Weekdays'  
END AS data_type,  
CONCAT(ROUND(SUM(unit_price * transaction_qty)/1000,1), 'K') AS Total_sales  
FROM coffee_shop_sales  
WHERE MONTH(transaction_date) = 5 -- May Month  
GROUP BY  
    data_type;
```

Result Grid | Filter |

	data_type	Total_sales
▶	Weekdays	116.6K
	Weekends	40.1K



# Store-wise Sales Performance - May

```
SELECT
```

```
    store_location,  
    CONCAT(ROUND(SUM(unit_price * transaction_qty)/1000,1), 'K') AS Total_sales  
FROM coffee_shop_sales  
WHERE MONTH(transaction_date) = 5 -- May  
GROUP BY store_location  
ORDER BY Total_sales DESC;
```

Result Grid | Filter Rows:

	store_location	Total_sales
▶	Hell's Kitchen	52.6K
	Astoria	52.4K
	Lower Manhattan	51.7K

# Average Daily Sales – May



```
SELECT  
    CONCAT(ROUND(AVG(total_sales)/1000,1), 'K') AS Avg_Sales  
FROM  
(  
    SELECT SUM(transaction_qty * unit_price) AS total_sales  
    FROM coffee_shop_sales  
    WHERE MONTH(transaction_date) = 5  
    GROUP BY transaction_date  
) AS Internal_query;
```

Result Grid

	Avg_Sales
▶	5.1K



# Daily Sales Status vs Average – May

SELECT

    day\_of\_month,

    CASE

        WHEN total\_sales > avg\_sales THEN 'Above Average'

        WHEN total\_sales < avg\_sales THEN 'Below Average'

        ELSE 'Average'

    END AS sales\_status,

    total\_sales

FROM (

    SELECT

        DAY(transaction\_date) AS day\_of\_month,

        ROUND(SUM(unit\_price \* transaction\_qty)) AS total\_sales,

        AVG(SUM(unit\_price \* transaction\_qty)) OVER() AS avg\_sales

    FROM coffee\_shop\_sales

    WHERE MONTH(transaction\_date) = 5

    GROUP BY day\_of\_month) AS sales\_data

    ORDER BY day\_of\_month;

	day_of_month	sales_status	total_sales
▶	1	Below Average	4731
	2	Below Average	4625
	3	Below Average	4715
	4	Below Average	4590
	5	Below Average	4701
	6	Below Average	4205
	7	Below Average	4543
	8	Above Average	5604
	9	Above Average	5101
	10	Above Average	5256
	11	Below Average	4850

# Sales by Product Category – May



```
SELECT product_category,  
       CONCAT(ROUND(SUM(unit_price * transaction_qty)/1000,1), 'K') AS total_sales  
  FROM coffee_shop_sales  
 WHERE MONTH(transaction_date) = 5  
 GROUP BY product_category  
 ORDER BY product_category DESC;
```

Result Grid | Filter Rows:

	product_category	total_sales
▶	Tea	44.5K
	Packaged Chocolate	1K
	Loose Tea	2.4K
	Flavours	1.9K
	Drinking Chocolate	16.3K
	Coffee beans	8.8K
	Coffee	60.4K
	Branded	2.9K
	Bakery	18.6K



# Top 10 Coffee Products by Sales – May



```
SELECT product_type,  
CONCAT(ROUND(SUM(unit_price * transaction_qty)/1000,1), 'K') AS total_sales  
FROM coffee_shop_sales  
WHERE MONTH(transaction_date) = 5 AND product_category = 'Coffee'  
GROUP BY product_type  
ORDER BY total_sales DESC LIMIT 10;
```

Result Grid | Filter Rows:

	product_type	total_sales
▶	Premium brewed coffee	8.7K
	Organic brewed coffee	8.4K
	Drip coffee	7.3K
	Barista Espresso	20.4K
	Gourmet brewed coffee	15.6K

# Sales by Day and Hour – Monday at 08:00 (May)



SELECT

```
    CONCAT(ROUND(SUM(unit_price * transaction_qty)/1000,1), 'K') AS total_sales,  
    ROUND(SUM(transaction_qty),1) AS total_qty_sold,  
    ROUND(COUNT(*),1) AS total_order  
FROM coffee_shop_sales  
WHERE MONTH(transaction_date) = 5 -- May  
AND DAYOFWEEK(transaction_date) = 2 -- Monday  
AND HOUR(transaction_time) = 8 -- Hour No 8
```

Result Grid | Filter Rows:

	total_sales	total_qty_sold	total_order
▶	2.7K	819	572



# Hourly Sales Distribution - May



SELECT

```
HOUR(transaction_time),  
CONCAT(ROUND(SUM(unit_price * transaction_qty)/1000,1), 'K') AS total_sales  
FROM coffee_shop_sales  
WHERE MONTH(transaction_date) = 5  
GROUP BY HOUR(transaction_time)  
ORDER BY HOUR(transaction_time);
```

	HOUR(transaction_time)	total_sales
▶	6	4.9K
	7	14.4K
	8	18.8K
	9	19.1K
	10	19.6K
	11	10.3K
	12	8.9K
	13	9.4K
	14	9.1K
	15	9.5K
	16	9.2K
	17	9K
	18	7.7K
	19	6.3K
	20	0.7K

# Final Dashboard - Coffee Shop Sales (Power BI)



## COFFEE SHOP SALES

### SALES REPORT

#### FILTER PANEL

MONTH May 2023

May 2023

Mon	Tue	Wed	Thu	Fri	Sat	Sun
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

Hover on this visual to see details

### Sales by Weekday / Weekend



### Sales by Store Location

Hell's Kitchen   \$52.60K	▲ +30.5%   +12.3K vs LM
Astoria   \$52.43K	▲ +32.8%   +13.1K vs LM
Lower Manhattan   \$51.70K	▲ +32.0%   +12.5K vs LM

### Total Sales

**\$157K**

▲ +31.8% | +37.8K vs LM



### Total Orders

**33527**

▲ +32.3% | +8.2K vs LM



### Total Quantity Sold

**48233**

▲ +32.3% | +11.8K vs LM



### Sales trend over period

Avg Sales: \$5,056



### Sales by Product Category

Coffee | \$60.36K ▲ +31.3%

Tea | \$44.54K ▲ +33.5%

Bakery | \$18.57K ▲ +32.4%

Drinking Chocolate | \$16.32K ▲ +33.0%

Coffee beans | \$8.77K ▲ +31.1%

Branded | \$2.89K ▲ +34.3%

Loose Tea | \$2.40K ▲ +33.1%

Flavours | \$1.91K ▲ +29.2%

Packaged Chocolate | \$0.98K ▲ +34.6%

### Sales by Product Category

Barista Espresso | \$20.42K ▲ +31.3%

Brewed Chai tea | \$17.43K ▲ +31.1%

Hot chocolate | \$16.32K ▲ +33.0%

Gourmet brewed coffee | \$15.56K ▲ +31.6%

Brewed herbal tea | \$10.93K ▲ +35.8%

Brewed Black tea | \$10.78K ▲ +34.3%

Premium brewed coffee | \$8.74K ▲ +33.1%

Organic brewed coffee | \$8.35K ▲ +26.3%

Scone | \$8.31K ▲ +29.2%

Drip coffee | \$7.29K ▲ +34.6%

### Sales by Days | Hours

\$25K \$25K \$25K \$20K \$20K \$21K \$19K



# **Power BI Techniques & Features**

- **Dynamic KPIs (Cards)**
  - Total Sales, Orders & Quantity calculated using custom DAX measures
- **Advanced DAX Calculations**
  - MoM % Growth, Avg Daily Sales, Category-wise totals
- **Custom Tooltips**
  - Enabled on Calendar & Hourly Heatmaps for interactive insights
- **Calendar Heatmap**
  - Color-coded by sales to highlight daily performance
- **Sales by Day & Hour Heatmap**
  - Visualizes hourly trends across weekdays
- **Slicers for Month Filtering**
  - Filters visuals based on selected month (May in this case)
- **Clean, Organized Layout**
  - Dashboard grouped by KPIs: Time, Product, Store

# Key Business Insights – May 2023

## Insight-Focused Points

- ◆ May showed strong business growth across all KPIs, with a significant increase in sales, orders and quantity sold compared to April.
- ◆ Most orders were placed on weekdays, showing weekday demand is much stronger.
- ◆ The 08:00-09:00 time slot on Mondays consistently performed as a peak revenue period.
- ◆ Among all stores, one location clearly outperformed the others, indicating better regional engagement.
- ◆ Coffee-based products, especially Brewed Chai, led product category sales.
- ◆ Category-wise and hourly sales trends revealed meaningful customer behavior patterns.

# Conclusion

This project showcases how SQL and Power BI can be used together to turn raw data into business insights.

SQL was used to extract and transform transactional data, while Power BI with advanced DAX was used to build an interactive dashboard.

The analysis successfully highlights patterns in customer behavior, peak performance times, and product/category insights – reflecting real-world decision-making needs.



THANK  
YOU.