

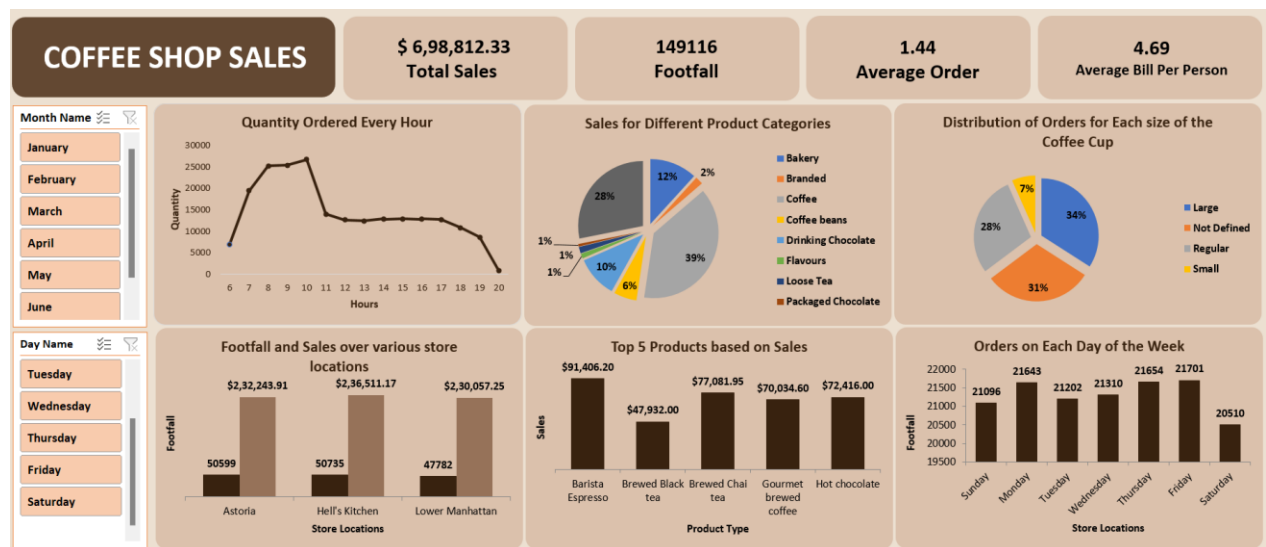
# Coffee Shop Sales Analysis

## Introduction

This project focuses on analysing retail sales data from a coffee shop using **MS Excel** to uncover actionable insights that drive business performance. The analysis explores sales trends, customer behaviour, and operational efficiency to support data-driven decision-making.

The process began with cleaning and transforming raw sales data, ensuring accuracy and consistency for meaningful analysis. New variables were created to enhance the depth of insights, allowing for a more granular understanding of sales patterns and customer preferences. Through advanced data analysis techniques, key trends were identified, highlighting fluctuations in daily and hourly sales, product demand, and store performance.

To facilitate real-time decision-making, an interactive **Excel dashboard** was developed, integrating dynamic visualizations and key performance indicators (KPIs). This provided a comprehensive view of business performance, enabling better workforce planning, inventory optimization, and targeted marketing strategies.



## Objective

The primary objective of this project was to analyse sales data and extract meaningful insights in order to optimize operations and enhance profitability. The key goals included:

- Identifying sales patterns based on days and hours.
- Understanding peak sales periods for efficient resource allocation.
- Analysing customer preferences for coffee cup sizes and product categories.

- Evaluating store performance based on sales and footfall.
- Identifying top-selling products to improve inventory and marketing strategies.
- Developing a dynamic dashboard for easy monitoring of trends.

## Process Overview

### 1. Data Cleaning and Transformation:

- Used **Power Query Editor** to clean the dataset by removing inconsistencies and extracting useful variables such as day names, hours, and coffee cup sizes.
- Created new columns to categorize product sizes and formats for better segmentation.

### 2. Data Analysis & Interpretation:

- Applied **Pivot Tables and PowerPivot** to analyse sales trends and footfall.
- Extracted key insights related to customer purchasing behaviour and store performance.
- Calculated **KPIs** such as total sales, footfall, average bill per person, and order distribution.

### 3. Data Visualization:

- Developed various **charts and graphs** to represent data trends effectively.
- Designed an interactive **Excel dashboard** with slicers for filtering and dynamic insights.

## Data Description

The dataset contained transaction details, including:

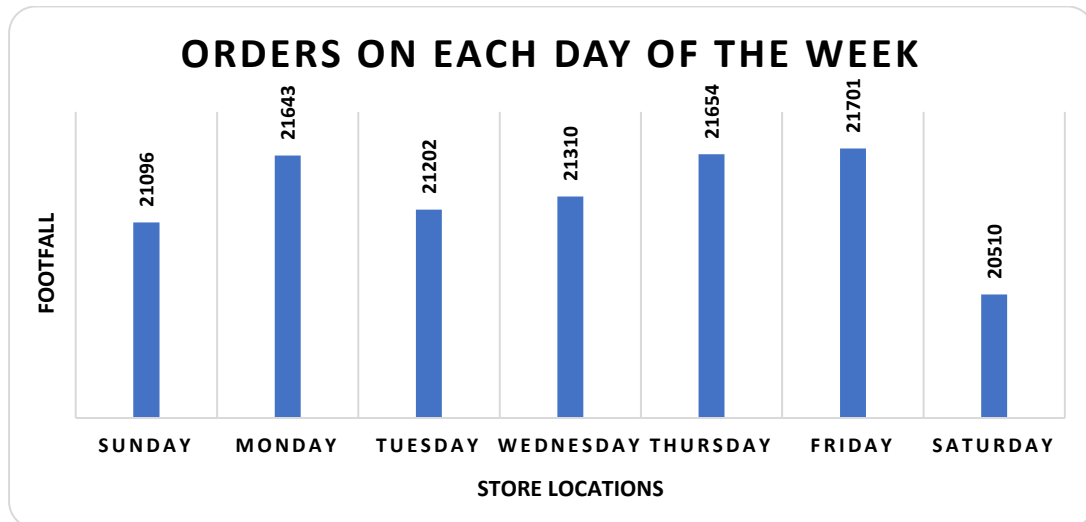
- **Transaction ID:** Unique identifier for each sale.
- **Transaction Date & Time:** Used to extract day names and peak sales hours.
- **Store ID & Location:** Used to analyse store-wise sales performance.
- **Product ID & Category:** Helped in identifying bestselling products.
- **Price & Quantity:** Used to calculate total revenue and average order value.

## Analysis and Interpretation of Data

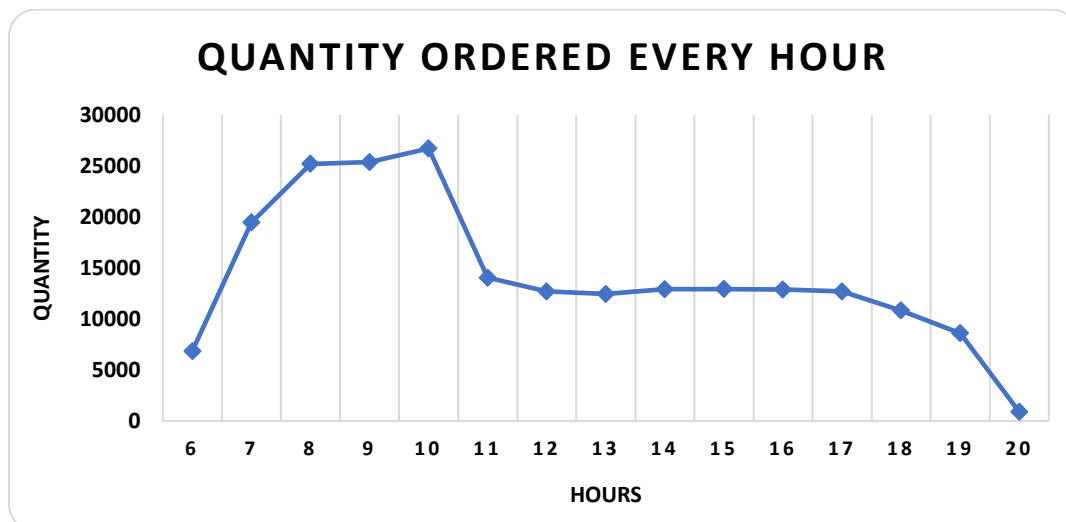
### 1. Sales Variation by Day & Hour

Sales trends fluctuate across different days and hours, affecting workforce management, inventory planning, and sales strategies. Insights were derived using:

- **Column Chart:** *"Orders on Each Day of the Week"* to identify peak and low-demand days.



- **Line Chart:** *"Quantity Ordered Every Hour"* to determine peak sales hours and optimize operations accordingly.



### Sales by Day of the Week

- **Highest Sales Days:** *Friday (21,701 transactions) and Thursday (21,654 transactions)* indicate strong weekday demand, possibly driven by office-goers and routine customers. To accommodate this, increasing workforce and stocking inventory appropriately can enhance efficiency.
- **Lowest Sales Days:** *Saturday (20,510 transactions) and Sunday (21,096 transactions)* show a slight decline, suggesting lower footfall during weekends. Introducing weekend promotions or loyalty programs can encourage more visits.

- **Steady Weekday Sales:** Sales remain relatively stable from *Monday to Wednesday* (~21,200 transactions each day), reflecting a consistent customer base. Monitoring these trends can help identify opportunities for midweek campaigns to maintain engagement.

#### Sales by Hour of the Day

- **Peak Hours (8 AM – 11 AM):** Highest sales occur at **10 AM (26,713 orders)**, emphasizing strong morning coffee demand. Optimizing staffing schedules and ensuring inventory readiness before peak hours can improve operational efficiency.
- **Sustained Sales (12 PM – 4 PM):** A steady flow of orders suggests regular lunch-break visitors and casual customers. Maintaining stock levels and offering lunch-hour deals can further enhance sales.
- **Declining Sales Post 5 PM:** Orders gradually drop, reaching a low of **880 transactions by 8 PM**, indicating minimal evening demand. Introducing evening discounts or special offers can help attract more customers and increase sales during off-peak hours.

Day of the Week	No. of Orders
Sunday	21096
Monday	21643
Tuesday	21202
Wednesday	21310
Thursday	21654
Friday	21701
Saturday	20510
<b>Grand Total</b>	<b>149116</b>

Hour of the Day	Quantity Ordered
6	6865
7	19449
8	25197
9	25370
10	26713
11	14035
12	12690
13	12439
14	12907
15	12923
16	12881
17	12700
18	10826

19	8595
20	880
<b>Grand Total</b>	<b>214470</b>

## 2. Peak Sales Hours

Sales show distinct spikes at specific times, directly influencing workforce planning and inventory management strategies.

### Key Observations

- **Morning Peak (8 AM – 11 AM):** The highest sales occur at **10 AM (26,713 transactions)**, likely driven by morning coffee and breakfast demand.
- **Sustained Midday Sales (12 PM – 4 PM):** Consistent transaction volume suggests a steady influx of customers during lunch hours.
- **Evening Decline (After 5 PM):** Sales gradually drop, reaching their lowest point at **8 PM (880 transactions)**, indicating reduced customer activity in the late hours.

### Business Implications

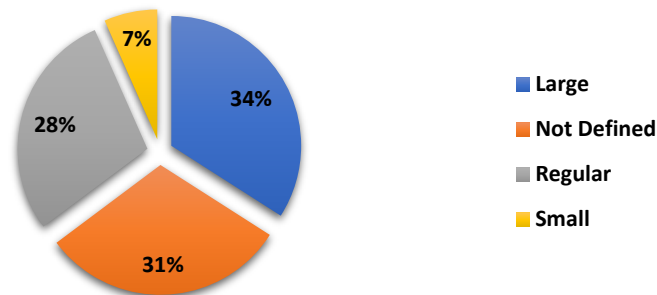
- Increase staffing during peak morning hours to enhance efficiency and customer service.
- Ensure high-demand products are well-stocked before peak periods to prevent shortages and maximize sales.
- Introduce happy hour discounts, promotional combos, or limited-time offers to attract more customers during low-demand hours.

## 3. Order Distribution by Coffee Cup Size

Customer preferences for different cup sizes influence pricing strategies, product availability, and promotional campaigns. Insights were derived using:

- **Pie Chart:** *"Distribution of Orders for Each Size of the Coffee Cup"* to analyse purchasing patterns for small, regular, and large cups.

### Distribution of Orders for Each size of the Coffee Cup



#### Key Observations

- **Large Cups Dominate Sales:** \$237,958.15 in total sales, indicating a strong preference for larger servings, possibly due to a value-for-money perception.
- **Regular Cups Maintain Steady Demand:** Generating \$199,761.35, these remain a popular choice for standard coffee orders.
- **Small Cups Contribute the Least:** At \$46,402.70, small-sized orders form a minor segment, suggesting limited demand for smaller portions.
- **Unspecified Orders ("Not Defined")** Account for \$214,690.13, indicating possible gaps in data entry or custom orders.

#### Business Implications

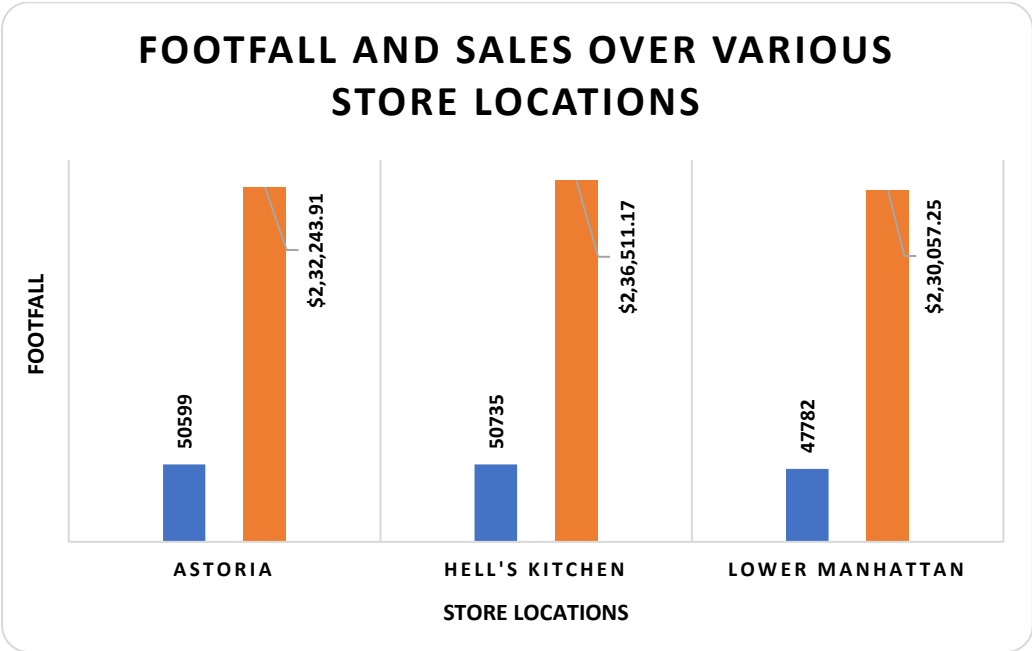
- Focus on bundled deals or loyalty rewards for Large and Regular cup sizes to capitalize on high demand.
- Consider repositioning or promoting small-sized coffees to attract budget-conscious or light coffee drinkers.
- Investigate "Not Defined" orders to improve tracking accuracy and refine inventory forecasting.

Size of Cup	Total Bill (\$)
Large	2,37,958.15
Not Defined	2,14,690.13
Regular	1,99,761.35
Small	46,402.70
Grand Total	6,98,812.33

## 4. Sales and Footfalls Across Locations

Sales and customer footfall vary by store location, affecting resource allocation, inventory planning, and localized marketing efforts. Insights were derived using:

- **Bar Chart:** *"Footfall and Sales over Various Store Locations"* to assess location-based performance.



Key Observations

- **Hell’s Kitchen Leads in Sales:** With **50,735 transactions** and **\$236,511.17** in revenue, this location records the highest sales, likely due to high customer traffic and demand.
- **Astoria Shows Strong Footfall:** **50,599 transactions** generating **\$232,243.91**, indicating a consistent customer base with potential for revenue growth.
- **Lower Manhattan Lags Behind:** Despite **47,782 transactions**, its total sales of **\$230,057.25** are the lowest among the three, possibly due to smaller average order values.

Business Implications

- Ensure higher stock levels and workforce availability at Hell’s Kitchen to sustain peak demand.
- Introduce upselling strategies, combo deals, or premium product offerings to boost average order value.
- Implement store-specific promotions to attract new customers and maximize location-based sales potential.

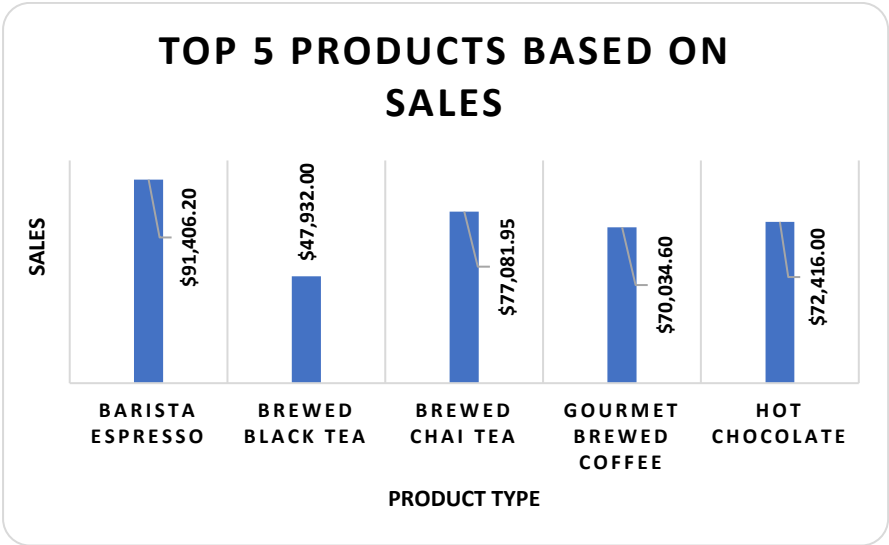
Store Location	Footfall	Total Bill (\$)
Astoria	50599	2,32,243.91

Hell's Kitchen	50735	2,36,511.17
Lower Manhattan	47782	2,30,057.25
<b>Grand Total</b>	<b>149116</b>	<b>6,98,812.33</b>

### 5. Bestselling Products

Certain products significantly outperformed others in revenue, providing insights for **inventory management, targeted promotions, and product bundling**. Insights were derived using:

- **Bar Chart:** *"Top 5 Products Based on Sales"* to identify the best-selling items.



#### Key Observations

- **Barista Espresso Leads in Sales:** Generating **\$91,406.20**, it is the most popular product, likely due to high customer preference and repeat purchases.
- **Brewed Chai Tea & Hot Chocolate Follow:** With revenues of **\$77,081.95** and **\$72,416.00**, these products appeal to a broad customer base, especially during colder months.
- **Gourmet Brewed Coffee & Brewed Black Tea Show Moderate Sales:** While **\$70,034.60** and **\$47,932.00** indicate strong demand, there is room for revenue optimization through marketing efforts.

#### Business Implications

- Ensure consistent stock availability for Barista Espresso and Chai Tea to meet high demand.
- Introduce combo offers (e.g., pairing espresso with a pastry) to increase average transaction value.



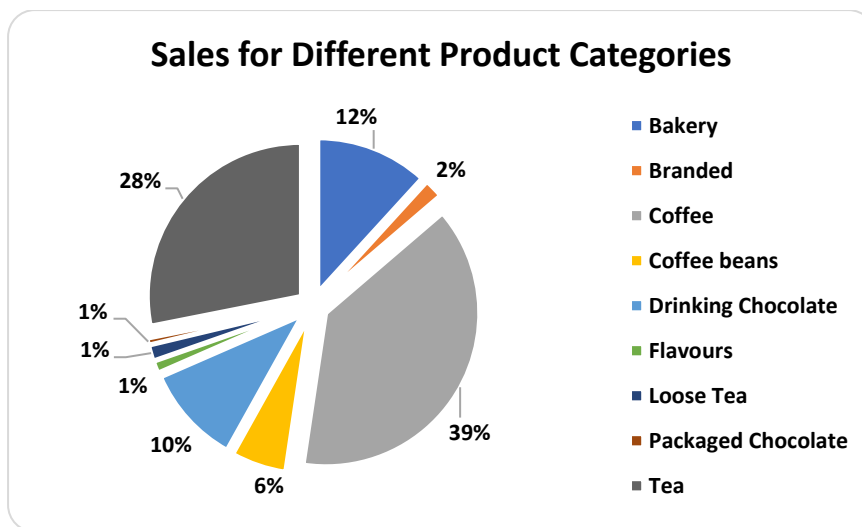
- Promote Brewed Black Tea through seasonal discounts or loyalty programs to enhance its appeal.

Product Type	Total Bill (\$)
Barista Espresso	91,406.20
Brewed Black tea	47,932.00
Brewed Chai tea	77,081.95
Gourmet brewed coffee	70,034.60
Hot chocolate	72,416.00
<b>Grand Total</b>	<b>3,58,870.75</b>

## 6. Sales Distribution by Product Category

Different product categories played distinct roles in total revenue, influencing **inventory allocation, promotional focus, and pricing strategies**. Insights were derived using:

- Pie Chart:** "Sales for Different Product Categories" to assess category-wise revenue distribution.



### Key Observations

- Coffee Dominates Sales:** Accounting for **\$2,69,952.45**, coffee is the leading revenue driver, indicating strong customer demand for brewed beverages.
- Tea is the Second Highest Contributor:** With **\$1,96,405.95**, tea products hold a significant share, suggesting a loyal customer base.
- Drinking Chocolate & Bakery Perform Well:** Generating **\$72,416.00** and **\$82,315.64**, these categories cater to diverse customer preferences, especially for complementary food items.

- **Lower Sales in Packaged & Branded Products:** Flavours, Loose Tea, and Packaged Chocolate contribute relatively less, highlighting areas for potential growth.

#### Business Implications

- Ensure consistent stock availability and premium-quality offerings to sustain high demand.
- Promote bakery pairings with coffee/tea to boost total transaction value.
- Introduce discounts, bundle deals, or in-store sampling to encourage purchases in underperforming categories.

Product Category	Total Bill (\$)
Bakery	82,315.64
Branded	13,607.00
Coffee	2,69,952.45
Coffee beans	40,085.25
Drinking Chocolate	72,416.00
Flavours	8,408.80
Loose Tea	11,213.60
Packaged Chocolate	4,407.64
Tea	1,96,405.95
<b>Grand Total</b>	<b>6,98,812.33</b>

## 7. Key Performance Indicators (KPIs)

To assess overall business performance, key sales metrics were analysed, providing insights into customer spending behaviour, transaction volume, and order patterns.

#### Key Observations

- **Total Sales:** The cumulative revenue from all transactions amounted to **\$6,98,812.33**, indicating strong overall sales performance.
- **Total Footfall:** A total of **1,49,116** transactions were recorded, reflecting the store's customer reach.
- **Average Bill per Person:** Customers spent an average of **\$4.69 per transaction**, suggesting an optimal pricing structure and product mix.
- **Average Order per Person:** On average, each customer purchased **1.44 items per transaction**, highlighting purchasing trends.

#### Business Implications

- Introduce combo offers and upselling strategies to encourage higher spending per transaction.
- Implement bundle deals and product recommendations to increase the number of items per order.

- Align staffing and inventory planning with peak footfall periods to optimize operational efficiency.

## Data Visualization

An interactive **Excel dashboard** was created with:

- **Slicers** for filtering data dynamically (e.g., by day, month, or product category).
- **Charts and Graphs** to visually represent trends and insights.
- **Key Metrics and KPIs** to provide an at-a-glance view of sales performance.
- **Formatted visuals using a coffee-themed colour palette** for better aesthetics.

## Conclusion

This project offered valuable insights into the coffee shop's sales trends, customer behaviour, and store performance, enabling data-driven decision-making. Through data analysis, Power Query transformations, dashboard creation, and visualization techniques, key patterns were identified to optimize workforce allocation, inventory management, and marketing strategies. The interactive dashboard serves as a dynamic tool for continuous monitoring, helping businesses adapt to changing trends, enhance operational efficiency, and drive sustainable growth.