

# Executive Summary :

## Project Overview:

This project focused on analyzing McDonald's US sales data using a structured ETL (Extract, Transform, Load) process. The objective was to clean, transform, and analyze the data to generate actionable insights, which were then visualized in a dynamic dashboard.

### ETL Process:

#### 1. Data Extraction:

- Data was sourced from a folder containing relevant files, utilizing Power Query in Excel for extraction.

#### 2. Data Cleaning:

- Data types were corrected across all columns, with particular attention to the date column, ensuring it conformed to the English US format.
- Duplicate records were removed, and null values were handled using the "fill down" feature.

#### 3. Data Transformation:

- New columns were derived from existing data, such as "Exact Hours," "Time of Day," and "Meal of the Day," based on the given time.
- The "Menu Items" table containing prices was merged with the "Order Details" table containing order information using a foreign key concept (common keys: item\_id and menu\_item\_id).
- Additional columns were extracted from the date, including "Day Name," "Month Name," "Day of Week," and a flag for "Weekend or Weekday."

#### 4. Data Loading:

- The cleaned and transformed data was loaded into Excel, forming a structured data model for further analysis.

## Data Analysis & Dashboard Creation:

Using Power Pivot and Diagram View in Excel, relationships between tables were established. Various pivot tables and measures were created, leading to the development of a comprehensive dashboard. The dashboard presents critical metrics and visualizations that provide a clear overview of McDonald's sales performance.

## Key Insights from the Dashboard:

### 1. Sales Distribution by Time:

- Orders peak between 12 PM to 2 PM, indicating lunch as the most popular time for sales.
- Evening hours also show significant activity, especially during dinner time.

### 2. Top 5 Best-Selling Items:

- **Meatball Marinara** has emerged as the top-selling item, generating the highest revenue among all menu items.
- Other high-performing items include popular choices across different meal categories, reflecting consumer preferences.

### 3. Revenue Analysis:

- January and March reported the highest revenues, with a slight dip observed in February.
- Revenue generation remains steady throughout the day, with notable peaks during lunch and dinner hours.

### 4. Order and Revenue Correlation:

- There is a clear correlation between the number of orders and revenue, with top-selling items significantly driving overall revenue.

### 5. Day of the Week Trends:

- Weekends, particularly Saturdays, show a higher volume of sales compared to weekdays.

## Additional Insights:

### 1. Revenue Contribution by Category:

- **Burger** category leads in total revenue contribution, followed by **Chicken** and **Fries**. These categories consistently perform well across different time periods, indicating their strong appeal to customers.

- Categories like **Shakes** and **Sides** contribute less to overall revenue but may have potential for growth through targeted promotions.

## 2. Item Sales Volume vs. Revenue Generation:

- While **Meatball Marinara** tops the list in terms of revenue, it's essential to analyze whether it also has the highest sales volume or if its revenue dominance is due to higher pricing.
- Items with high sales volume but lower revenue contribution might be priced too low, indicating a potential area for price optimization.

## 3. Hourly Revenue Trends:

- Detailed hourly analysis reveals that while lunchtime (12 PM - 2 PM) has the highest order volume, the revenue generated during **evening hours (6 PM - 8 PM)** is almost equally significant. This suggests that customers may be purchasing higher-value items or larger quantities during dinner.
- The lowest revenue-generating hours are early morning (6 AM - 9 AM), which could indicate an opportunity to introduce breakfast promotions or special morning offers to boost sales during this time.

## 4. Average Sales per Order:

- The **Average Sales per Order** is approximately **\$11.48**, which is consistent across most categories. However, some categories like **Burgers** and **Chicken** have slightly higher average sales per order, suggesting customers tend to order more items or higher-value items within these categories.
- Enhancing combo deals or upsell opportunities could increase the average sales per order, especially in lower-performing categories.

## 5. Day of the Week Analysis:

- Sales are highest on **Saturdays**, followed by **Fridays** and **Sundays**, indicating that weekends are peak sales periods for McDonald's.
- **Wednesday** sees a notable drop in sales, which could be a focus for midweek promotions or special offers to drive traffic.

## 6. Meal Time Preferences:

- **Dinner** slightly surpasses **Lunch** in terms of revenue, suggesting that McDonald's could benefit from further optimizing dinner offerings or introducing new menu items targeted at evening diners.
- **Breakfast** orders are relatively lower, indicating a potential area for growth, especially with targeted marketing or menu enhancements catering to early risers.

## 7. Top 5 Items Contribution:

- The top 5 items, led by **Meatball Marinara**, contribute significantly to overall revenue. This insight suggests that McDonald's should ensure consistent availability and possibly expand variations of these top-performing items.
- Understanding the customer demographics and preferences for these top items could further inform marketing strategies and menu development.

## 8. Customer Behavior Insights:

- The consistent performance of specific categories and items across different times of the day and days of the week provides insights into customer behavior patterns. For instance, **Burgers** remain a popular choice across all meal times, indicating their universal appeal.
- Seasonal or limited-time offerings aligned with these insights could boost sales during off-peak periods or midweek.

## Strategic Recommendations:

- **Optimize Pricing Strategy:** Consider reviewing the pricing of top-selling items and high-volume low-revenue items to maximize profit margins without affecting sales volume.
- **Promote Low-Performing Categories:** Introduce targeted promotions or new products in categories like **Shakes** and **Sides** to increase their contribution to total revenue.
- **Leverage High Revenue Hours:** Develop special promotions for the evening hours to capitalize on the higher revenue generation during dinner time.
- **Midweek Promotions:** To address the dip in sales on Wednesdays, McDonald's could introduce special midweek offers or loyalty rewards to attract more customers.

## Conclusion:

This updated analysis highlights the significance of specific menu items, such as Meatball Marinara, in driving sales and revenue. Understanding which items are performing best allows McDonald's to optimize inventory, marketing strategies, and menu offerings. The dashboard effectively visualizes these insights, serving as a powerful tool for McDonald's management to make data-driven decisions that enhance operational efficiency and profitability.

