Restaurant Industry: A Data Analytics Project

# Introduction

This repository contains the code and data files for the Restaurant Industry Data Analytics Project. The purpose of this project was to analyze the sales data of a restaurant chain and provide insights into the performance of different divisions within the company. The project involved data exploration, data transformation, building key performance indicators (KPIs), and creating visualizations to showcase the findings.

The task involved analyzing sales data from the restaurant industry. The dataset consisted of two Excel sheets. The first sheet contained the daily sales table, including dates, location IDs, daily actual sales, covers, budget sales, and delivery sales. The second sheet provided information on the division of each location.

# Background

The restaurant industry is a highly competitive and dynamic sector, constantly evolving to meet changing consumer preferences and market trends. In this fast-paced environment, companies need to stay ahead of the competition by making data-driven decisions.

Our data analytics project focuses on the restaurant industry, specifically addressing the challenge of gender balance at the executive management level. Many organizations recognize the importance of diversity and inclusion for their success in an increasingly complex and diverse world. However, achieving true diversity and inclusion involves practical challenges that require a strategic approach.

The project was undertaken to assist a telecom client in improving gender balance at the executive management level. As a data analyst, the task was to analyze sales data and provide insights and recommendations to drive positive change in the organization. By leveraging data analytics techniques, we aimed to identify potential root causes for the slow progress and provide actionable recommendations to foster a more inclusive and diverse workforce.

# Project Overview

The objective of this project was to analyze the sales data of a restaurant chain and identify the root causes for the slow progress in achieving gender balance at the executive management level. The project involved performing data analytics and creating visualizations to gain insights into the performance of different divisions within the company. By defining relevant KPIs, we aimed to identify areas that required improvement and provide recommendations to address the identified issues.

# Data Description

The project utilized two Excel sheets. The first sheet contained the daily sales table, which included information such as dates, location IDs, daily actual sales, covers, budget sales, and delivery sales. The second sheet contained the location IDs and their corresponding divisions.

# Procedure

The following steps were followed to complete the data analytics task:

## 1. Data Exploration

In this step, the data was examined to gain a better understanding of its structure and contents. Exploratory data analysis techniques were employed to identify any data quality issues, missing values, outliers, or inconsistencies.

## 2. Data Transformation

Data transformation and cleaning processes were performed to prepare the data for analysis. This involved handling missing values, removing duplicates, standardizing data formats, and mapping essential attributes required for the analysis.

### 3. Build Relationship

A relationship was established between the daily sales table and the division table using the location ID as the primary key in the division table and the foreign key in the daily sales table. This relationship enabled the integration of relevant information from both tables for analysis.

## 4. KPI Building

Key performance indicators (KPIs) were defined based on a comprehensive understanding of the data and stakeholder needs. The KPIs provided measurable metrics to evaluate the performance of different divisions and assess progress towards gender balance at the executive management level.

## 5. Calculating Measures

Using Data Analysis Expressions (DAX) in Power BI, measures were calculated that were important for each KPI. These measures allowed for accurate calculations and comparisons based on the defined KPIs.

## 6. Visualization

To present the findings and insights effectively, four dashboards were created. Three of these dashboards contained visualizations for the KPIs, while the fourth served as a welcome page providing a summary of the KPIs. The visualizations included line graphs, tables, ribbon charts, and other relevant visual representations.

# Insights

The following insights were derived from the analysis of the data:

## KPI #1: Sales Trend by Division

The total sales for the Japanese division amounted to $144 million, followed by the American division with $118 million, the Indian division with $47 million, and the English division with $118 million. The total sales for all divisions summed up to $348.04 million.

A line graph was created to compare the sales trend between each division. The line trends of all divisions followed a similar pattern, with the Japanese division having the highest sales, followed by the American division, the Indian division, and finally the English division.

There was a slight decline in sales during May, which may be attributed to the remaining 7-8 days left in the month or other factors.

## KPI #2: Sales Comparison by Time

The sales of each division were compared based on the current week, previous week, and previous month using a table visualization.

Similar to KPI #1, the Japanese division showed the highest sales in all time comparisons, followed by the American division, the Indian division, and finally the English division.

The sales for the previous month amounted to $78 million, the sales for the current week were approximately $16.8 million, and the sales for the previous week were around $16.5 million.

## KPI #3: Sales vs Budget

This KPI focused on comparing actual sales versus budgeted sales for each division and month.

The visualizations included a comparison between actual sales and budget sales for each month and a ribbon chart comparing actual sales and budget sales for each division.

The actual sales and budgeted sales were mostly aligned across all months and divisions.

## KPI #4: Top Performers vs Worst Performers

This KPI aimed to compare the top performers versus the worst performers among the divisions.

There were four divisions: Japanese, American, Indian, and English.

The Japanese division contributed approximately $143.77 million in actual sales, which accounted for 41.31% of the total sales. The American division contributed around $117.9 million (33.88% of total sales), the Indian division contributed approximately $47.17 million (31.55% of total sales), and the English division contributed around $39.19 million (11.26% of total sales).

## KPI #5: Delivery Sales Trend

This KPI focused on visualizing the delivery sales trend for each division and month.

The total delivery sales amounted to $40.82 million. The Japanese division had delivery sales of approximately $18 million, the American division had around $11 million, the Indian division had around $6 million, and the English division also had around $6 million. The percentages of sales for each division need to be calculated for better representation.

The delivery sales trend showed a decline from March to May, decreasing from $9.31 million to $6.23 million. The reasons behind this decline need to be analyzed and suggested based on further investigation.

# Recommendations

Based on the insights gained from the data analysis, the following recommendations are provided:

## Focus on the Japanese division:

Given its consistently high sales performance, there may be valuable lessons to learn from the Japanese division's strategies and practices. Identify and analyze the factors contributing to its success, and consider implementing those strategies in other divisions.

## Assess the decline in sales during May:

Investigate the reasons behind the decline in sales during May, particularly the impact of the remaining days in the month. Evaluate whether the decline is a temporary trend or indicative of larger issues that need to be addressed.

## Identify and address performance gaps:

Analyze the performance of the worst-performing divisions and identify the root causes for their underperformance. Develop targeted strategies to improve their sales and overall contribution.

## Investigate delivery sales decline:

Determine the factors contributing to the decline in delivery sales from March to May. Examine potential causes such as changes in customer preferences, operational issues, or external factors affecting the industry. Based on the analysis, develop strategies to reverse the declining trend and improve delivery sales.

## Conduct further analysis on budgeting:

Evaluate the accuracy and effectiveness of the budgeting process. Determine whether there are discrepancies between actual sales and budgeted sales and identify the reasons behind any deviations. Adjust the budgeting process if necessary to ensure better alignment with actual sales.

## Promote cross-division knowledge sharing:

Encourage collaboration and knowledge sharing between divisions to foster best practices and innovative ideas. Facilitate regular meetings or workshops where successful strategies can be shared among division leaders and implemented in other divisions.

## Continuously monitor and track progress:

Implement a robust tracking system to monitor the progress of diversity and inclusion initiatives. Regularly assess key metrics, including gender representation in executive management, and adjust strategies accordingly to ensure progress is being made.

## Foster an inclusive company culture:

Create awareness and provide education on the importance of diversity and inclusion throughout the organization. Develop training programs and workshops to promote inclusive behaviors and values among employees at all levels.

# Conclusion

The Restaurant Industry Data Analytics Project provided valuable insights into the performance of different divisions within the company. Through the analysis of key performance indicators, trends, and comparisons, potential areas for improvement were identified. The recommendations outlined above aim to address the root causes of slow progress in achieving gender balance at the executive management level and promote a more inclusive and successful organization.