PROJECT REPORT

Decoding Success: Business Intelligence in the Restaurant World

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Project GitHub link

TABLE OF CONTENTS

1 INTRODUCTION

Business focus

In the realm of business, making money is pretty important. Therefore, we thought focusing on topics linked to customer preferences, market trends, and operational efficiency seems a promising Idea because we can probably accomplish our main goal of "profitability" if we know what consumers want, what's popular, or how to make things run better. Due to this, our focus shifted to the “Restaurant” industry.

As everyone knows, restaurants are always changing which makes them an understanding ground to explore since people enjoy eating out, and restaurants need to keep up with what everyone likes. We wanted to take a behind-the-scenes look and figure out how they could be even better.

Data Gothering

Now, we require a huge data however finding the right dataset wasn't easy. we turned to Kaggle we searched for a dataset that was big enough to provide us with a wealth of information on how restaurants work. After some searching, we found the "Restaurants & Members & Orders Dataset." It looked perfect for our goals – a goldmine of info about customers, restaurants, and what people order.

Link to the dataset

Main Goals

What People Love to Order

Loyal Clients

Best-Selling Meals

Revenue Boosting Restaurants

Why It Matters: Equipped with findings, we can turn things around for underperforming spots, enhance the specialties of the well-liked dishes, and create marketing strategies that bring in new friends to our restaurant family and keep our loyal clients.

What People Love to Order

By knowing what people most love to order, we can make sure to have those dishes options available and make them customized, keeping customers coming back for more.

Identifying Our Loyal Clients

Loyal customers are like the heart of our restaurant family. Recognizing and valuing them can assist us.

Best-Selling Meals

Discover the superstar on our menu – the meal that everyone can't resist.

Revenue Boosting Restaurants

some places might be doing super well, and others might need a little boost. Understanding the revenue game helps us support all restaurants.

2 PHASES DESCRIPTIONS

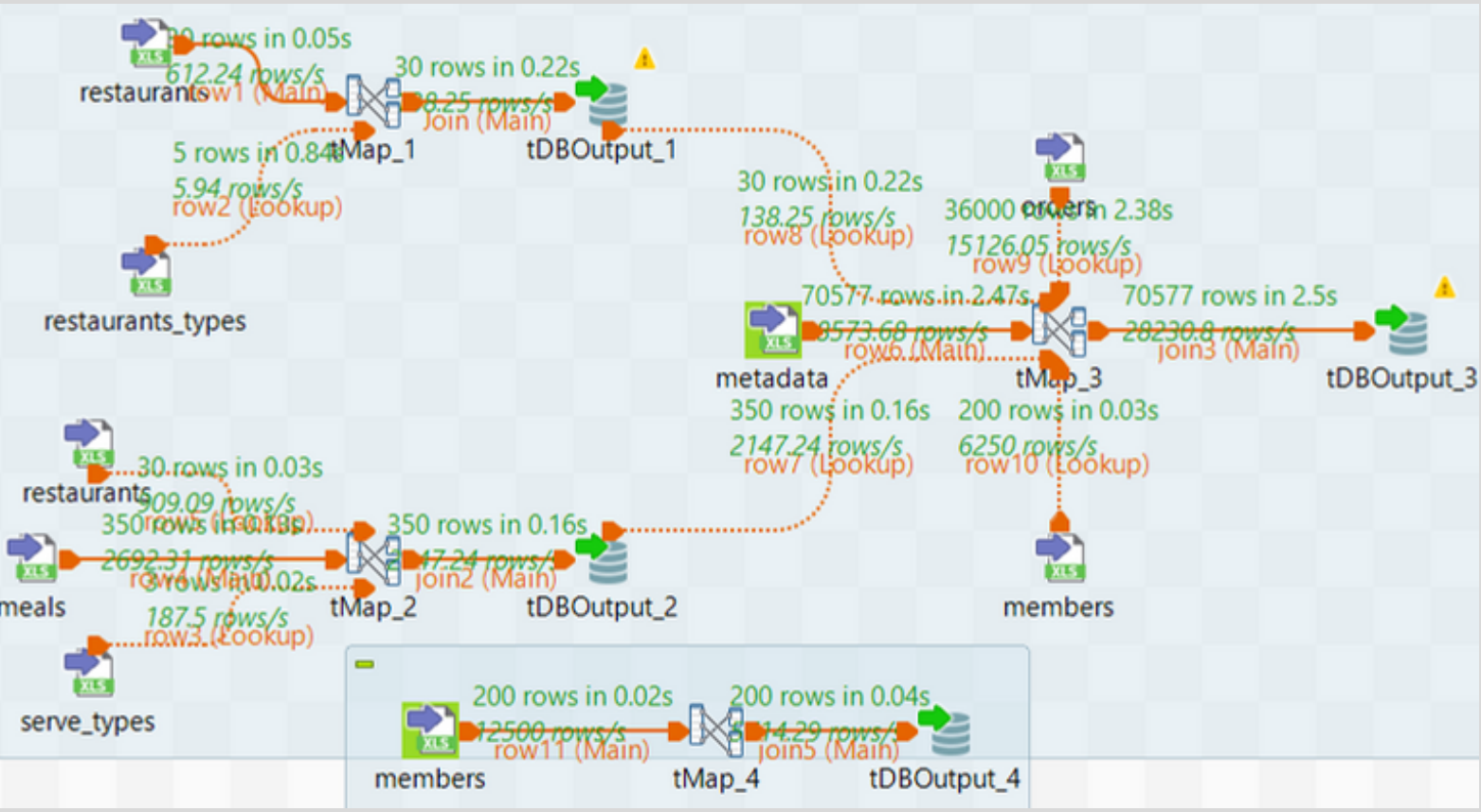
ETL_Process

Our mission was to make sense of ten messy and different Excel files – a bit of a puzzle, you could say. Armed with **Talend**, we focused on cleaning and preparing our data using ETL (Extract, Transform, Load) tool,.

With ten separate Excel files, we performed an offline full extraction, downloading the data and then integrating it into Talend's Excel metadata. By utilizing **InputexcelFile**, **Tmap**, and **MysqlDboutput** components, we perform transformation, loading process, and directing the data into our Data Warehouse (DWH) server **MySQL**. The DWH was named '**analysis**', emerged with four essential tables —Customers (housing customer details), Meals (encompassing all meal information), Restaurants (cataloging all chain restaurants), and Orders (a summarizing table amalgamating information from all tables).

Employing Tmap was for the purpose of merging related data sets. We united Orders with Order Details and the other excel files, Restaurants with Restaurant Types, and Meals with Serve Types, fostering cohesion among different facets. The key relationships between tables were established, creating a structured connection based on the relationships between their keys. Through thoughtful decision-making, we omitted certain data components that lacked logic, relevance, or sufficient explanation. This included abstaining from the use of Meal Type and Members Monthly Excel files. Similarly, the Cities table was discarded due to its focus on Israeli cities.

ETL_Process

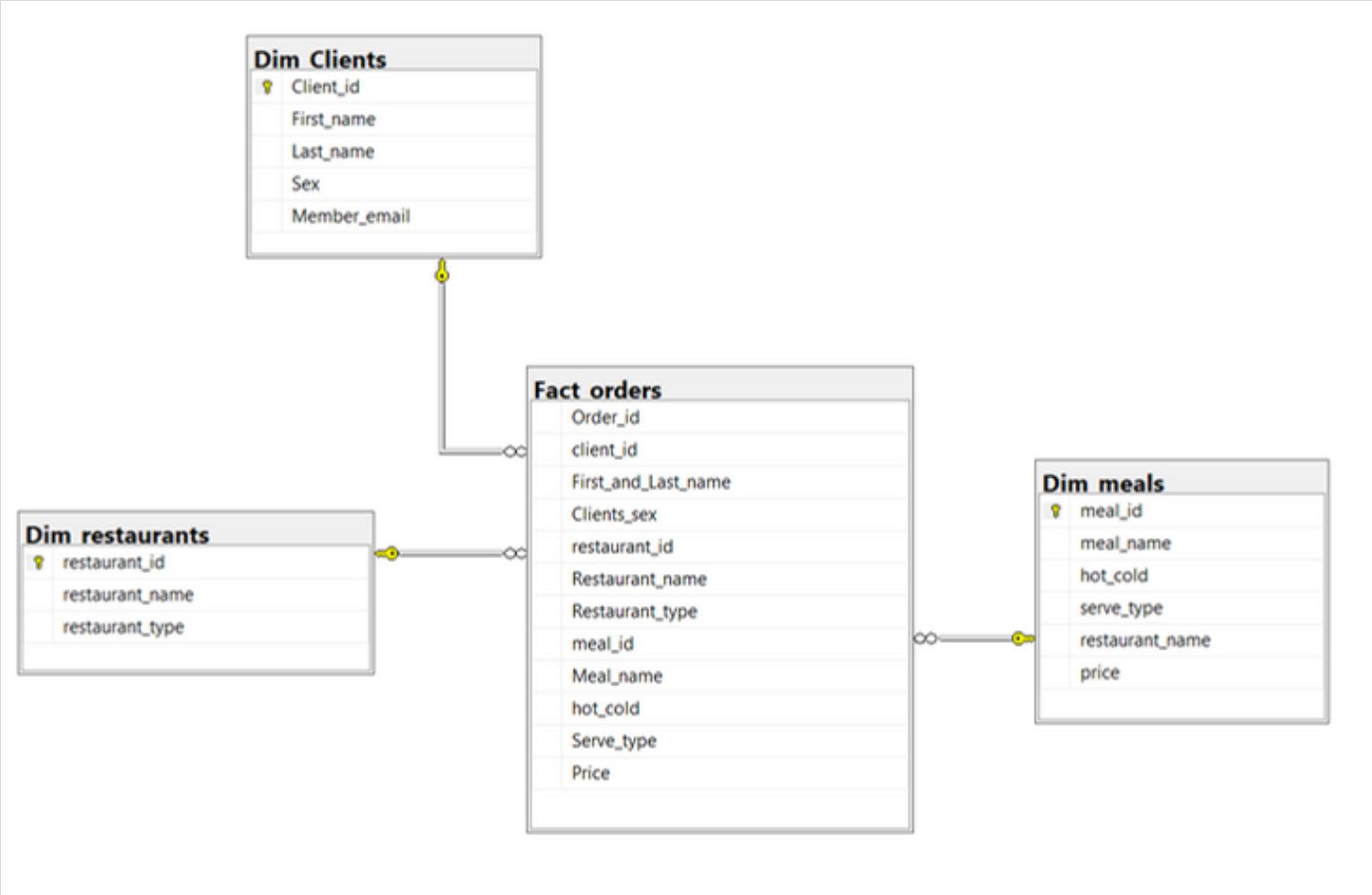


ETL process files (exported from talend)

DWH link

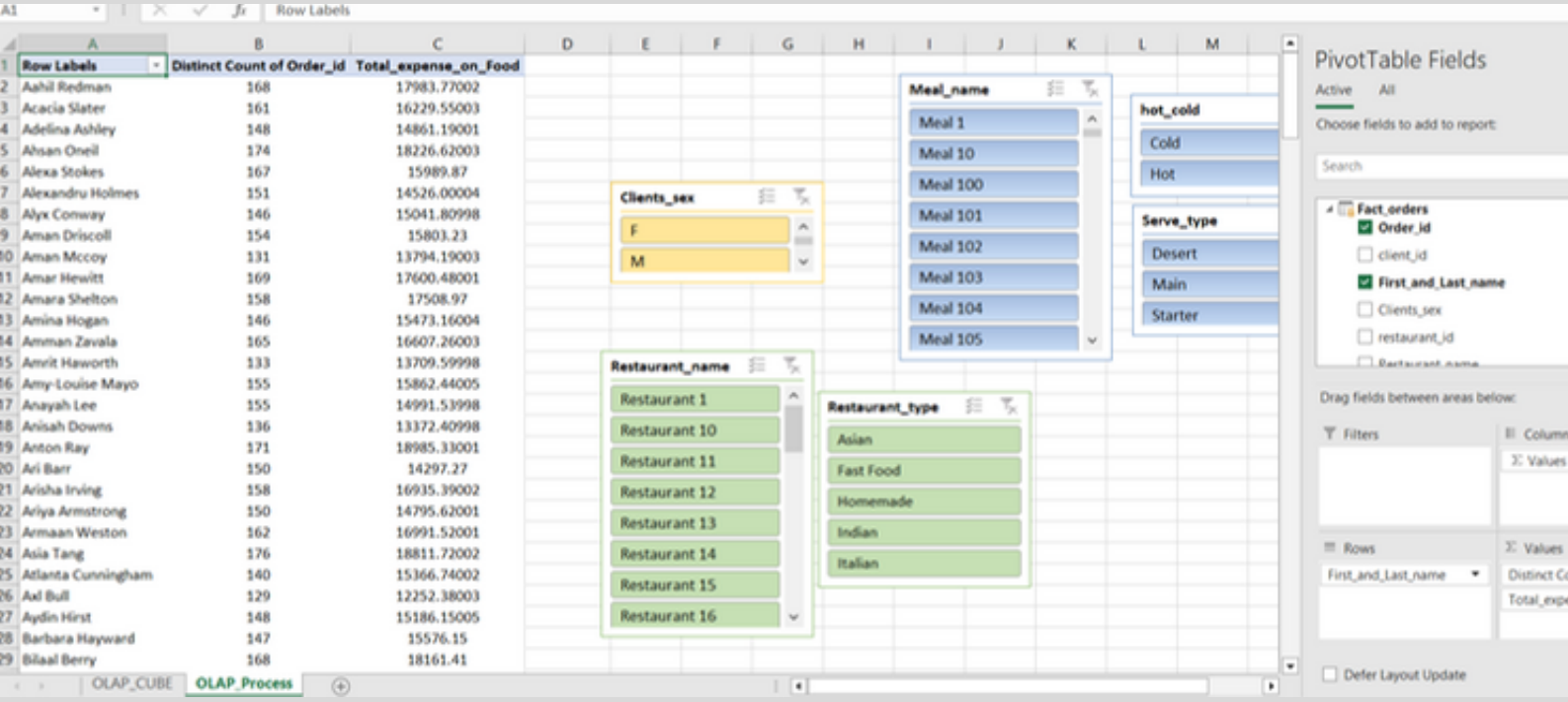
DWH Modeling

With our Data Warehouse all set and organized, it's time to shape the analysis by modeling it. Using Tmap in Talend (link to files exported from Talend), we identified the key tables: one Fact Table named "Orders" and three Dimension Tables: "Customers," "Restaurants," and "Meals." To make this clearer, we crafted a STAR diagram, a visual representation showcasing how these tables connect and interact. Imagine it like the heart (Orders) surrounded by three essential components (Customers, Restaurants, and Meals) forming the points of a star. This step was smoothly executed using SQL Server Management Studio, where we took advantage of its features to create Data Warehouse diagrams. The figure not only captures the essence of our structure but also provides a visual guide to better understand the relationships and attributes of each table.



OLAP_Process

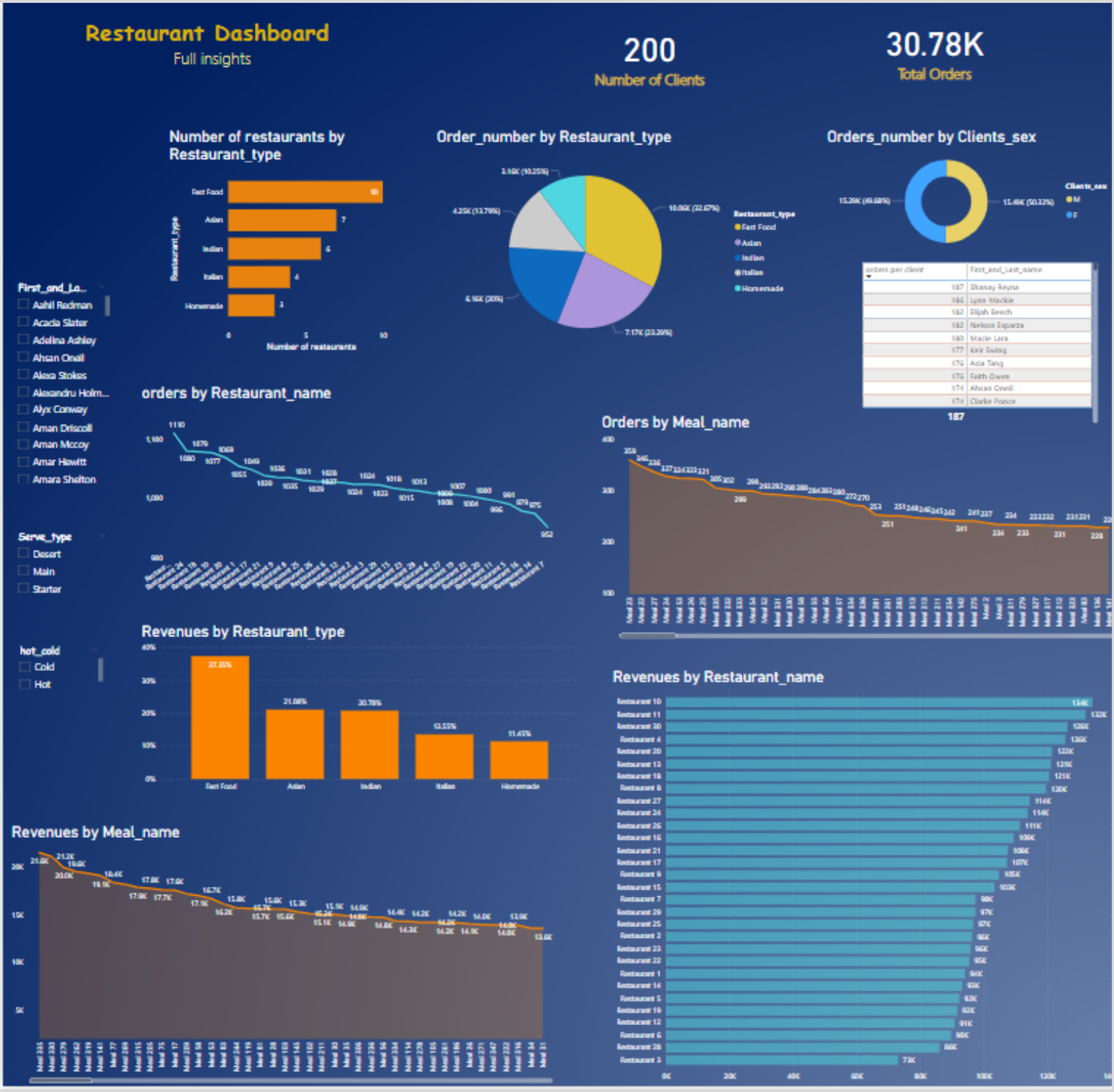
Moving on to the next step, we dived into the OLAP process to give our data a more insightful structure. Despite encountering some connection hurdles with servers like SSAQ, Pentaho Schema Workbench, Jasper Server, and Mondrian, we found a solution using Excel. After adding specific extensions and Add-ins, we successfully executed the OLAP process, creating a multidimensional OLAP cube. You can check out the visual representation of this in the figure or the OLAP_process Excel file.



[Link to The OLAP_Excel file]

Data Analysis

In the final phase of the project, I leveraged the power of Business Intelligence tools, specifically Power BI, to draw meaningful insights from the structured data. This step brings the project full circle, transforming raw data into actionable insights. I crafted a comprehensive dashboard that encapsulates all the key measurements essential for achieving our project goals. This dashboard serves as a visual representation of the data-based insights we aimed to uncover throughout the project. [Dashboard link]



3 Conclusion

In navigating several challenges emerged and valuable insights were uncovered. The journey from deciphering messy Excel files to creating a structured Data Warehouse and utilizing Business Intelligence tools has been both enlightening and transformative.

Challenges and Problem Solving

The project encountered challenges when attempting to connect with OLAP servers such as SSAQ, Pentaho Schema Workbench, Jasper Server, and Mondrian. Despite persistent efforts, these hurdles prompted a shift to a more accessible solution using Excel.

Possible Enhancements and Future Considerations

The project encountered challenges with various OLAP servers. Future enhancements could involve exploring alternative OLAP solutions that may provide more seamless connections and additional features.
To further enhance the project's scope and depth, continuous efforts could be directed towards enriching the dataset. This may involve integrating additional dimensions or expanding the dataset to encompass a broader timeframe.

Reflection and Learnings

Equipped with actionable insights from the Power BI dashboard, the project stands ready to empower decision-makers in the restaurant industry. The identified goals of understanding customer preferences, recognizing loyal clients, identifying best-selling meals, and boosting restaurant revenues are now within reach.

In conclusion, while challenges were encountered, the project's resilience and adaptability have paved the way for a comprehensive and impactful data-driven solution.

THANKS FOR YOUR ATTENTION