Analyzing Swiggy:
Bangalore Delivery Outlet

High-Level Design (HLD)

Soumyadip Tikader

Version: 1.0

Date:21-11-2022

Project Title	Analyzing Swiggy: Bangalore delivery outlet data
Technologies	Business Intelligence
Domain	Food Industry
Project Difficulties Level	Advance

Document Version Control

Date Issued	Version	Description	Author
21-11-2022	1.0	First Version on complete HLD	Soumyadip Tikader

Abstract

The online food ordering market includes food prepared by restaurants, prepared by independent people, and groceries ordered online and then picked up or delivered. The first online food ordering service, Worldwide Waiter (now known as Waiter.com), was founded in 1995. Online food ordering is the process of ordering food from a website or other application. The product can be either ready-to-eat food or food that has not been specially prepared for direct consumption.

In the world of rising new technology and innovation, the Food industry is advancing with the role of Data Science and Analytics. Data analysis can help them to understand their business in a quite different manner and helps to improve the quality of the service by identifying the weak areas of the business. This study demonstrates how different analysis help to make better business decisions and help analyze customer trends and satisfaction, which can lead to new and better products and services. Different analyses were performed such as Exploratory Data Analysis and Descriptive Analysis on a variety of use cases to get the key insights from this data based on which business decisions will be taken.

This dataset provides a huge amount of information on the best hotels and best cuisines in, India by rating and by price. Based on the Information the ultimate goal would be to predict the best hotels for common people and find important insights highlighting key indicators and metrics that influence customer choice.

Table of Contents

1. Introduction

1.1 Why this High-Level Design Document?

The purpose of this High-Level Design (HLD) Document is to add the necessary detail to the current project description to represent a suitable model for coding.

This document is also intended to help detect contradictions prior to coding and can be used as a reference manual for how the modules interact at a high level.

The HLD will:

- Present all the design aspects and define them in detail.
- Describe the user interface being implemented.
- Describe the hardware and software interfaces.
- Describe the performance requirements.
- Include design features and the architecture of the project.
- List and describe the non-functional attributes like
    - Security
    - Reliability
    - Maintainability
    - Portability
    - Reusability
    - Application compatibility
    - Resource utilization
    - Serviceability

1.2 Scope

The HLD documentation presents the structure of the system, such as the database architecture, application architecture (layers), application flow (Navigation), and technology architecture. The HLD uses non-technical to mildly technical terms which should be understandable to the administrators of the system.

1.3 Definitions

- ETL – Extract, Transform, Load
- EDA – Exploratory Data Analysis

- CSV file – Comma-separated values file, opened in MS Excel
- Fair Share – An administratively set data rate per time frame that is considered fair.
- Postgres SQL Server – A database management system.
- Power Query – With Power Query, you can connect to many different data sources and transform the data into the shape you want.
- ER – Entity Relation Diagram
- Power BI - An interactive data visualization software company focused on business intelligence.

2. General Descriptions

2.1 Product Perspective and Problem Statement

Food industries are having an important reflection of the economy for past few decades. Online food ordering is the process of ordering food from a website or other application. The product can be either ready-to-eat food or food that has not been specially prepared for direct consumption.

In this project, we are analyzing the various aspects with different use cases which covers many aspects of Swiggy Food Delivery Service. It helps in not only understanding the meaningful relationships between attributes, but it also allows us to do our own research and come-up with our findings.

The objective of the project is to perform an exploratory data analysis, data pre-processing, & data cleaning and at the end, apply different Data Visualization techniques to get meaningful insight from the given data. This project aims to apply some amazing Power BI visuals which will give a boost to our visual understanding of the data.

2.2 Tools Used

a. Microsoft Excel

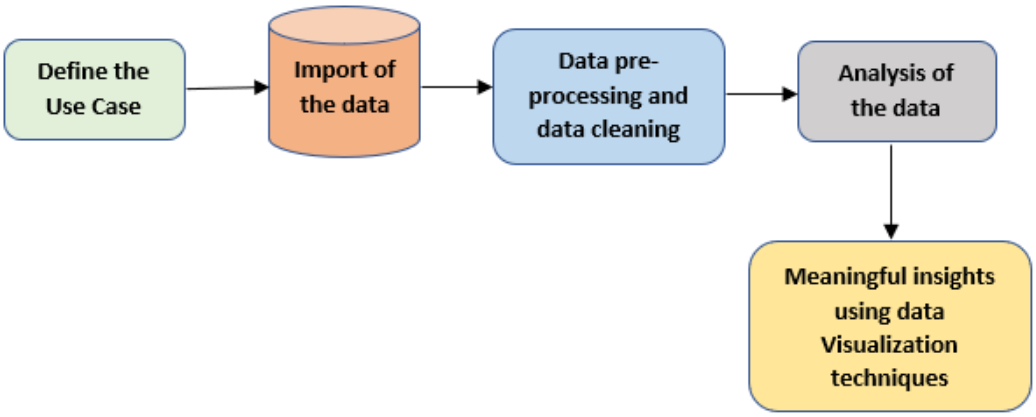
Microsoft Excel is a spreadsheet developed by Microsoft for Windows, macOS, Android and iOS. It features calculation or computation capabilities, graphing tools, pivot tables, and a macro programming language called Visual Basic for Applications. Excel forms part of the Microsoft Office suite of software.
Microsoft Excel is used for loading the data in CSV format, basic data cleaning and filter operations to execute the program.
MS Excel file was loaded into Power BI software.

b. Microsoft Power BI

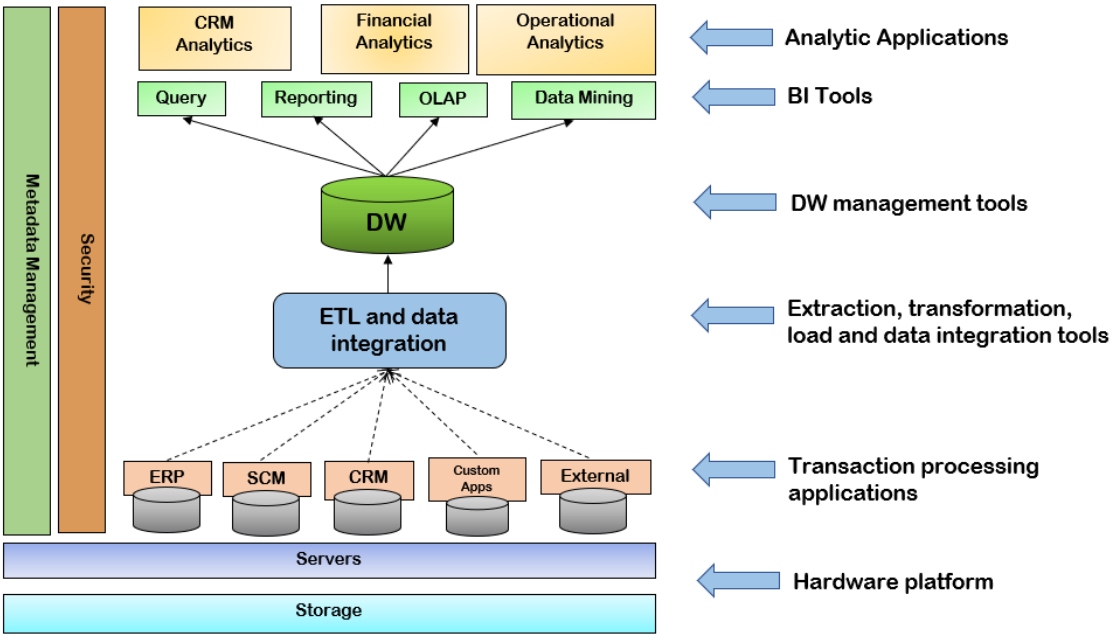
Power BI is an interactive data visualization software product developed by Microsoft with a primary focus on business intelligence. It is part of the Microsoft Power Platform. Power BI is a collection of software services, apps, and connectors that work together to turn unrelated sources of data into coherent, visually immersive, and interactive insights. Data may be input by reading directly from a database, webpage, or structured files such as spreadsheets, CSV, XML, and JSON.
With the help of Power BI, we have done the complete analysis and visualization.

3. Design Details

3.1 Process Flow



3.2 Functional Architecture



The current business environment is constantly evolving. The global economic scenario is providing opportunities as well as challenges. The factors affecting the business environment are consumer needs, globalization, and government policies, etc.

In such a business environment, an organization basically has four action steps. The organization can be reactive, anticipative, adaptive, or/and proactive. For this, the organization can develop a new strategy, get into partnerships, etc.

Today most the businesses are having computerized business support. This support is in form of a decision support system, business analysis, etc.
The main objective of business intelligence is to bridge the gap between an organization's current status and its desired position. Business intelligence helps the organization achieve commercial success along with sound financial management.

Business intelligence is a framework designed to support the decision-making process. This framework combines architecture, database, analytical tools and applications.

Business analytics forms an integral part of business intelligence.
Framework of Business Intelligence.
More and more businesses are moving towards business intelligence. The reason for this movement is the business environment. Organizations are forced to capture, store and interpret data. This data is at the core of business success.
Organizations require correct information for any decision-making process.

Business intelligence combines data warehousing, business analytics, performance, strategy and user interface. Business receives data from various sources. This data is capture in the data warehouse where it is stored, organized and summarized as per further utilization. Authorized users can access this data and work on it to get desired results. This result than are shared to executives for decision-making process. These data results can be published through dashboards or share points.

Business Intelligence Architecture and Components
The main components of business intelligence are data warehouse, business analytics and business performance management and user interface.
Data warehouse holds data obtained from internal sources as well as external sources. The internal sources include various operational systems.

Business analytics creates a report as and when required through queries and rules. Data mining is also another important aspect of business analytics.

Business performance management is a linkage of data with business objectives for efficient tracking. This business performance is then broadcasted to an executive decision- making body through dashboards and share-point.

Benefit of Business Intelligence

The benefits of Business intelligence are as follows:

- Business intelligence is faster more accurate process of reporting critical information.
- Business intelligence facilitates better and efficient decision-making process.
- Business intelligence provides timely information for better customer relationship management.
- Business intelligence improves profitability of the company.
- Business intelligence provides a facility of assessing organization's readiness in meeting new business challenges.
- Business intelligence supports usage of best practices and identifies every hidden cost.

Business intelligence usage can be optimized by identifying key projects on which company would like to focus. This process of highlighting key projects is called business intelligence governance.

3.3 Optimization

Our data strategy drives performance

- Minimize the number of fields
- Minimize the number of records
- Optimize extracts to speed up future queries by materializing calculations, removing columns and the use of accelerated views

Reduce the marks (data points) in our view

- Practice guided analytics. There's no need to fit everything you plan to show in a single view. Compile related views and connect them with action filters to travel from overview to highly granular views at the speed of thought.
- Remove unneeded dimensions from the detail shelf.
- Explore. Try displaying your data in different types of views.

Limit your filters by number and type

- Reduce the number of filters in use. Excessive filters on a view will create a more complex query, which takes longer to return results. Double-check your filters and remove any that aren't necessary.
- Use an include filter. Exclude filters load the entire domain of a dimension, while include filters do not. An include filter runs much faster than an exclude filter, especially for dimensions with many members.
- Use a continuous date filter. Continuous date filters (relative and range-of-date filters) can take advantage of the indexing properties in your database and are faster than discrete date filters.
- Use Boolean or numeric filters. Computers process integers and Booleans (t/f)

much faster than strings.

- Use parameters and action filters. These reduce the query load (and work across data sources).

Optimize and materialize your calculations

- Perform calculations in the database
- Reduce the number of nested calculations.
- Reduce the granularity of LOD or table calculations in the view. The more granular the calculation, the longer it takes. o LODs - Look at the number of unique dimension members in the

calculations

- Table Calculations - the more marks in the view, the longer it will take to calculate. Where possible, use MIN or MAX instead of AVG. AVG requires more processing than MIN or MAX. Often rows will be duplicated and display the same result with MIN, MAX, or AVG

4. KPI's

Dashboards will be implemented to display and indicate certain KPIs and relevant indicators for the disease. As and when the system starts to capture the historical/periodic data for a user, the dashboards will be included to display charts over time with progress on various indicators or factors.

KPIs (Key Performance Indicators)

Key indicators displaying a summary of the Crop Production area and production information based on various parameters –

- Name of Shops/Hotels in Bangalore, India.
- Name of Cuisines corresponding to hotel.
- Address/Location of the hotels in Bangalore.
- Rating - It refers to the rating starting from 3.6 to 4.8
- Cost_for_Two - It simply refers to the bill amount for 2 persons

5. Deployment

Prioritizing data and analytics couldn't come at a better time. Your company, no matter what size, is already collecting data and most likely analyzing just a portion of it to solve business problems, gain competitive advantages, and drive enterprise transformation. With the explosive growth of enterprise data, database technologies, and the high demand for analytical skills, today's most effective IT organizations have shifted their focus to enabling self-service by deploying and operating Power BI Visualization at scale, as well as organizing, orchestrating, and unifying disparate sources of data for business users and experts alike to author and consume content.

- **Patterns in business operations:** Data visualization techniques help us to determine the patterns of business operations. By understanding the problem statement and identifying the solutions in terms of pattering and applying them to eliminate one or more of the inherent problems.
- **Identify business trends and relate to data:** These techniques help us identify market trends by collecting the data on Day-To-Day business activities and preparing trend reports, which help track the business how influences on the market. So that we could understand the competitors and customers. Certainly, this helps to long-term perspective.
- **Storytelling and Decision making:** Knowledge of storytelling from available data is one of the niche skills for business communication, specifically for the Data Science domain which is playing a vital role. Using the best visualization this role can be enhanced much better way and reach the objectives of business problems.
- **Understand the current business insights and set the goals:** Businesses can understand the insight of the business KPIs, finding tangible goals and business strategy planning, therefore they could optimize the data for business strategy plans for ongoing activities.
- **Operational and Performance analysis:** Increase productivity with the help of visualization techniques the clarity of KPIs depicting the trends of the productivity of the manufacturing unit, and guiding were to improve the productivity of the plant.

6. References

- https://en.wikipedia.org/wiki/Swiggy
- https://www.tristatetechnology.com/blog/how-swiggy-business-model-works-and-make-money/
- https://www.feedough.com/swiggy-business-model-how-swiggy-works-makes-money/