# Pizza Place Sales Analytics - Project Report


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- ➔ Problem & background
- ➔ Solution
- ➔ Methodology & Project scope
- ➔ Goals & KPIs
- ➔ Concepts Used
- ➔ Conclusion
- ➔ Project owner


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## Problem & background

We are given sales data over the year of 2015, from January 2015 to December 2015 which is gathered from the pizza place joint. As a data analyst, it is required to find the trends and patterns within the dataset provided. We are doing the analysis to provide a better perspective and insight so that it helps to solve some business problems faced by the pizza place joint by answering a few business-related questions asked by the management.

**Recommended Analysis (As per requirement of Management of Pizza Place Joint)**

1. How many customers do we have each day? Are there any peak hours?

2. How many pizzas are typically in order? Do we have any bestsellers?

3. How much money did we make this year? Can we identify any seasonality in the sales?

4. Are there any pizzas we should take off the menu, or any promotions we could leverage?

**Overall Structure of the Dataset (provided as Raw Data):**

There are 4 separate spreadsheets within the Raw Data file. These sheets or tables are in a tabular format having rows and columns structure.

Here are those sheets or tables with respective column fields and data rows.

1. **order_details - |** order_details_id, order_id, pizza_id, quantity **| [** total 48620 data rows **]**
2. **orders - |** order_id, date, time **| [** total 21350 data rows **]**
3. **pizza_types - |** pizza_type_id, name, category, ingredients **| [** total 32 data rows **]**
4. **pizzas - |** pizza_id, pizza_type_id, size, price **| [** total 96 data rows **]**

The Sales team of Pizza Place have collected raw data on customer orders from the billing system. The billing section had already recorded order_id along with the date and time of order taken, the pizza_id, name of pizza, the quantity of pizza ordered by customers, and the size of pizza. Also, the unit price of each pizza was available from the bill generated at the time of sale occurred. Apart from it, the pizza category and ingredients of pizzas were collected.

Then, they created a spreadsheet database on Microsoft Excel in an organised way with a vision to gain valuable insights from the dataset and utilise them in their business gain and to better serve their loyal customer base.

This analysis is strategic and tactical in nature.

By keeping in mind that customers play a very crucial role in pizza place joint's business growth, the goal is to provide data-driven insights to the management thus to help them to make better business decisions.

# Solution

An overview of some of the solutions that we got from our analysis are as follows:

- ➔ On average, **136** customers visit the pizza place joint per day
- ➔ There are hours identified as peak time of business, giving most sales. Customers love to visit the pizza place on that time
  - ◆ **12pm to 1pm** at afternoon time
  - ◆ **5pm to 6pm** at evening time
- ➔ We found 2 pizzas as bestsellers
  - ◆ In terms of number of orders & total quantity served, **big_meat_s** or the big meat pizza of small size falling under the classic category
  - ◆ In terms of sales revenue generation, **thai_ckn_l** or the thai chicken pizza of large size falling under the chicken category
- ➔ The least selling pizza is **the_greek_xxl** or the greek pizza of double extra large size falling under the classic category
- ➔ On average **2** pizzas were sold per order
- ➔ In 2015, for the whole year, the pizza place joint has made a total sales revenue of **INR 8,01,944.70**
- ➔ In 2015, the months of April to June (3 months) were the highest selling months, when the most of the sales happened, a total of **INR 2,04,021.85** revenue generated from sales, **25.36%** of total sales in 2015. In India, this is the Summer season.
- ➔ We should take off **the_greek_xxl (The Greek Pizza)** from the menu. Reason behind this decision is due to the lowest sales revenue generated (INR 1006.6) and also the lowest number of orders (only 28) served with this pizza item.

- ➔ The top 5 pizzas that are selling high, or we can say there are huge demand of these 5 pizzas during the SUMMER season -
    - ◆ big_meat_s
    - ◆ five_cheese_l,
    - ◆ thai_ckn_l
    - ◆ four_cheese_l
    - ◆ Spicy_ital_l
- ➔ The bottom 5 or lowest selling pizzas throughout all seasons are
    - ◆ the_greek_xxl (it could be taken off from menu)
    - ◆ green_garden_l
    - ◆ ckn_alfredo_s
    - ◆ calabrese_s
    - ◆ mexicana_s
- ➔ One business strategy we can make is to simply provide promotional discounts for the lowest selling pizzas. Also, we can introduce a buy-one-get-one offer during the SUMMER season, when any of the highest selling pizzas are sold, one lowest selling pizza of our choice is offered at no cost or at discounted rate.

# Methodology & Project scope

The following steps were executed in a methodological manner to reach the project's goal.

- Collected raw data is imported to MS Excel software to have an overall look over the entire dataset and the required analysis to perform. The raw data was in .csv(comma-separated value) format. Upon importing, the Excel software created a connection with the raw dataset. Then, raw data was loaded into a worksheet of the project workbook.
- Raw data files were converted to a range of cells of the Excel worksheet.
- Then, all 4 tables were combined using the MS Excel vlookup(vertical lookup) formula. The dataset was checked for any duplicate entries, NULL values, or empty cells.  The whole

dataset was organised in a way to better understand the correlations and patterns between data fields(columns) or the variables.

- All required initial formatting was done for the dataset.
- To perform data analysis and answer questions asked by the management, separate worksheets were created within the same project workbook file according to the need. It helped to simplify the analytical process as well.
- Many pivot tables were used for all required analyses on each business question.
- Different Excel functions and formulas were applied to perform the tasks. Calculations were made accordingly to find answers.
- To effectively communicate and clearly see the results, many visualisations like charts, graphs, and plots were incorporated into the analysis. Used pivot charts, linked with the data within pivot tables. Required sorting and filtering of data were done as per need. Several important pieces of information were visually represented like the number of customers each day on average, the hourly trend of total orders, and the best and least selling pizzas, numbers of orders, and quantity & sales revenue generated by the top 10 pizzas, and sales by pizza size and category, etc.
- We are now able to display the results in graphical form and communicate the findings of the analysis to the stakeholders related to the business through our developed pizza sales dashboard. Also, users can filter the data according to months, dates, years, etc.

# Goals & KPIs

➔ **Goal 1:**

- *To get customer volume on each day* – 136 customers visit on average each day
- *Identify the peak hours of business* – In terms of sales happened and most ordered placed, 2 peak hours were identified
    - 12:00 pm to 1:00 pm

- 5:00 pm to 6:00 pm

➔ **Goal 2:**

- *Finding out the number of pizzas served per order* – 2 pizzas per order
- *Identify bestseller pizzas* –
  - big_meat_s, in terms of no of orders and total quantity served
  - thai_ckn_l, in terms of total sales revenue generated

➔ **Goal 3:**

- *Total money made (total sales revenue) by Pizza Place Joint in that year* – in 2015, from January 2015 to December 2015, a total of INR 8,01,944.70 was generated as revenue.
- *Determine the seasonality in sales* – 3 months, from April to June of 2015 were identified as peak season with a total of INR 2,04,021.85 as revenue which is 25.36% of total sales of 2015.

➔ **Goal 4:**

It is time to help the management to make some business decisions for the improvement of the pizza place joint's overall sales by solving some related questions thrown by the management team.

- *Any of the pizzas that need to be taken off the menu* – We should take off **the_greek_xxl (The Greek Pizza)**from the menu due to the lowest sales revenue generated (INR 1006.6) and also the lowest number of orders (only 28) served with this pizza item.
- *Can we make some promotional offers or discounts to the customer* – During Summer, from April to June, most sales happened. So we could leverage a buy-one-get-one offer to our customers. With this offer, we may promote lowest selling pizzas at a discounted rate when any of the highest-selling pizzas are sold, to generate more sales revenue for the next year.

# Concepts Used

- **Concept 1:** Used data cleaning methods to fix data inconsistency and formatting techniques including date/time formatting
- **Concept 2:** Used functions and formulas like vlookup, sum, average, max, round, mid, find, etc.
- **Concept 3:** Applied absolute and relative cell referencing tricks.
- **Concept 4:** Extensively used pivot tables for analysis. Applied sorting methods and filtering techniques into pivot tables as well.
- **Concept 5:** Created normal graphs and pivot charts for effective data visualisation and presentation purposes. Clustered column charts, stacked column charts, line charts with markers, pie chart, doughnut chart, and funnel chart were used to visualise the findings.
- **Concept 6:** To make the dashboard interactive, a few slicers are applied as filtering options where the user can navigate through the months, dates, and hours of the 2015 business year to find out their desired amount of data for a specific period of time and also on the basis of other factors like pizza category and pizza size.

# Conclusion

The raw dataset provided contains years' worth of sales of 2015 from a fictitious pizza place joint, including the date and time of each order and the pizzas served, with additional details on the type, size, quantity, price, and ingredients.

The recommended analysis was performed to generate business insights so that it's helpful for the management to take informed business decisions. The clear goal is to get more business in the next year i.e. 2016.

The analysis tried to obtain answers to some key questions such as

1. Number of customers each day and peak hours of business
2. Typically how many pizzas were served per customer order?
3. Which pizzas are considered bestsellers?
4. In 2015, how much sales revenue was made by the company?
5. Which season of 2015 witnessed the highest sales?
6. Are there any pizzas to take off the menu? And why?
7. Can we leverage some promotional offers and discounts to our customers? How will it impact the business?

After the required amount of detailed analysis, we found related KPI(s) or Key Performance Indicators that have an impact on the business performance. Those are

- Daily customer count, on average
- Peak hours of 2015 business
- Bestseller pizzas
- Peak season of business in 2015
- Sales revenue generated for the whole year & for the peak season

These KPIs can surely be utilised by management of pizza places to make better business by taking effective informed business decisions like applying promotional strategies for customer satisfaction and increment of sales revenue.

## Project owner

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