**Project Title:** Evaluating Sales Decline and Management Enhancements in Pizza Cafe.
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## Declaration Statement

I am working on a Project titled "Evaluating Sales Decline and Management Enhancements in Pizza Cafe.". I am doing this project on secondary data . I have obtained the dataset from the Github website .
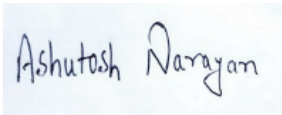
Additionally, I affirm that all procedures employed for the purpose of data collection and analysis have been duly explained in this report. The outcomes and inferences derived from the data are an accurate depiction of the findings acquired through thorough analytical procedures.

I am dedicated to adhering to the information of academic honesty and integrity, and I am receptive to any additional examination or validation of the data contained in this project report.

I understand that the execution of this project is intended for individual completion and is not to be undertaken collectively. I thus affirm that I am not engaged in any form of collaboration with other individuals, and that all the work undertaken has been solely conducted by me. In the event that plagiarism is detected in the report at any stage of the project's completion, I am fully aware and prepared to accept disciplinary measures imposed by the relevant authority.

I agree that all the recommendations are business-specific and limited to this project exclusively, and cannot be utilized for any other purpose with an IIT Madras tag. I understand that
IIT Madras does not endorse this.

Signature of Candidate

Ashutosh Narayan

Name: Ashutosh Narayan
Date: 10/08/2024

## 1.Executive Summary

**Pizz The Cafe** is a pizza cafe offering a variety of pizza types to its customers. For this project, I have gathered data from GitHub. As a B2C (business-to-consumer) operation, Pizz The Cafe provides its services directly to its customers.

The cafe is currently facing its most significant challenge: a decline in revenue.The cafe is losing revenue with each passing quarter of the year making the last quarter as the lowest revenue generating time period.

The cafe offers a diverse range of products, making inventory and staff management a complex and challenging task. This complexity presents significant opportunities for improvement, as optimizing these areas can lead to more efficient operations, better stock control, and more effective staffing. By addressing these challenges, the cafe can enhance overall performance and better meet customer needs.

Using the sales dataset from January to December, my primary objective is to thoroughly investigate and identify the issues causing the revenue decline. Following this analysis, I will implement strategic initiatives to minimize losses and drive sustainable improvement. Additionally, I will focus on optimizing staffing and inventory management by aligning staffing levels with customer demand and refining inventory processes. This approach aims to enhance service efficiency, reduce costs, and ultimately increase revenue.

## 2. Organizational background

The organization I am working with is a pizza cafe that operates consistently throughout the entire year. In the previous year it made a total revenue of **Rs 6,73,63,354** from January to December.It opens its doors to customers daily from 10:00 AM in the morning until 11:00 PM at night, providing a broad window of time for visitors to enjoy its diverse range of pizza offerings.

The cafe offers pizzas organized into four distinct categories namely **Chicken,Classic,Supreme** and **Veggie** each carefully crafted to appeal to a wide array of customer tastes and preferences. This strategic selection takes into account the diverse palates of its clientele, as well as the competitive dynamics of the pizza industry.

Among the four categories, the Classic category stands out as the top performer in terms of sales and revenue generation. Within this category, **"The Classic Deluxe Pizza"** is the highest-selling item. Additionally, from the Chicken category, **"The Thai Chicken Pizza"** is the leading revenue generator.

### 3. Problem Statement

1. <u>Understanding Revenue Decline</u>: What Are the Principal Factors Contributing to the Continuous Decrease in Revenue Each Quarter, and How Can They Be Addressed?
2. <u>Management issue</u> : In What Ways Can Enhanced Planning of Inventory and Staffing Can Contribute to Improved Business Performance and Efficiency?

### 4. Background of the Problem

- <u>Understanding Revenue Decline</u>

  The cafe has been experiencing a gradual decline in revenue as the year progresses. In the first quarter, the cafe generated a total revenue of Rs. 1,69,46,000 from selling 12,454 pizzas. In the following quarter, there was a slight increase in revenue to Rs. 1,71,37,835, with a total of 12,586 pizzas sold. However, this positive trend did not continue, as the third quarter saw a decrease in both revenue and pizza sales, with total revenue falling to Rs. 1,68,93,597 and the number of pizzas sold dropping to 12,450. The downward trend persisted into the fourth quarter, where revenue further declined to Rs. 1,63,85,922, accompanied by a reduction in pizza sales to 12,084 pizzas.

  "As a result, the revenue in the last two quarters failed to reach the level achieved in the first quarter."

- <u>Management issue</u>

  Since the cafe operates year-round, it experiences recurring patterns and trends, such as peak hours and low-revenue Sundays. By analyzing these trends, we can adjust staffing levels to better match customer demand, ensuring optimal service during peak times and efficient resource management during slower periods. Additionally, understanding these patterns improves inventory management by helping us maintain appropriate stock levels for common ingredients and reduce waste for those specific to fewer menu items.

## 5. Problem Solving Approach

- Data Collection

  For my project, I used secondary data from GitHub, sourced through extensive manual searches on Kaggle and GitHub. I selected datasets that closely align with my project's objectives. I created a Python template in Google Colab to analyze these datasets, providing insights into essential details like info, descriptive statistics, unique values, and null values, all without altering the code.

- Pre Analysis Method

  After confirming the suitability of the Pizza Cafe dataset, I conducted a preliminary analysis using Excel's pivot table tool. This analysis revealed issues such as a quarterly decline in sales, which gave me a clearer initial understanding of the challenges the café is facing.

- Intended Data Collection

  The intended data for the project includes following tables

  1. Orders : It contains the order id and date and time of the order.
  2. Order Details:It contains more information about the orders like pizza type ,pizza size and quantity ordered.
  3. Pizzas :It has information about the details of the pizza.
  4. Pizza types: It encompasses the detailed inventory information that is essential for the preparation and creation of a variety of different pizza types.

- Analysis approach

  To gain insight into the declining revenue, I intend to conduct a comprehensive **Time Series Analysis**. This will allow me to track and examine the changes in sales trends over time, specifically focusing on identifying which categories or products have experienced a decrease in sales. By analyzing these patterns, I aim to pinpoint the areas where sales are declining and better understand the underlying factors contributing to the overall revenue decline.

  To enhance the management of inventory levels, I intend to perform an **FSN analysis.** This approach will help in better controlling and optimizing the use of ingredients by categorizing them based on their frequency of usage.
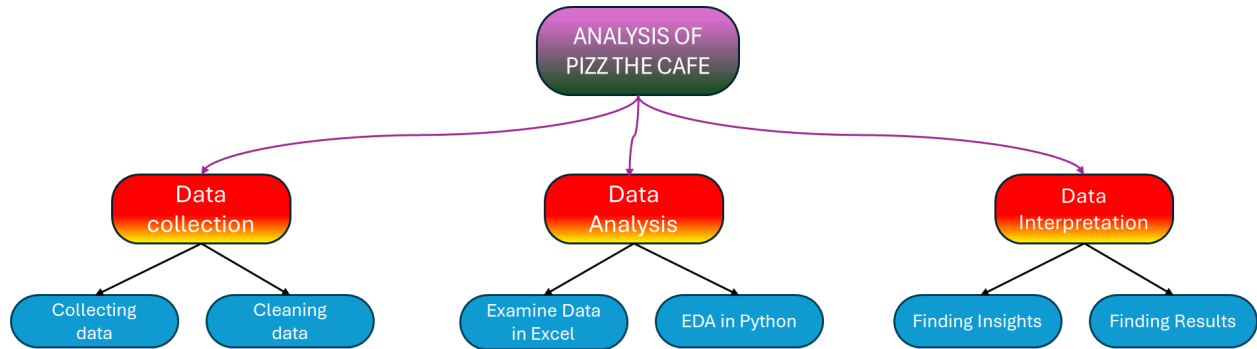
- Tools Used

  Microsoft Excel will be used to analyze the basic trends and to draw basic graphs like line charts to analyze basic trends.
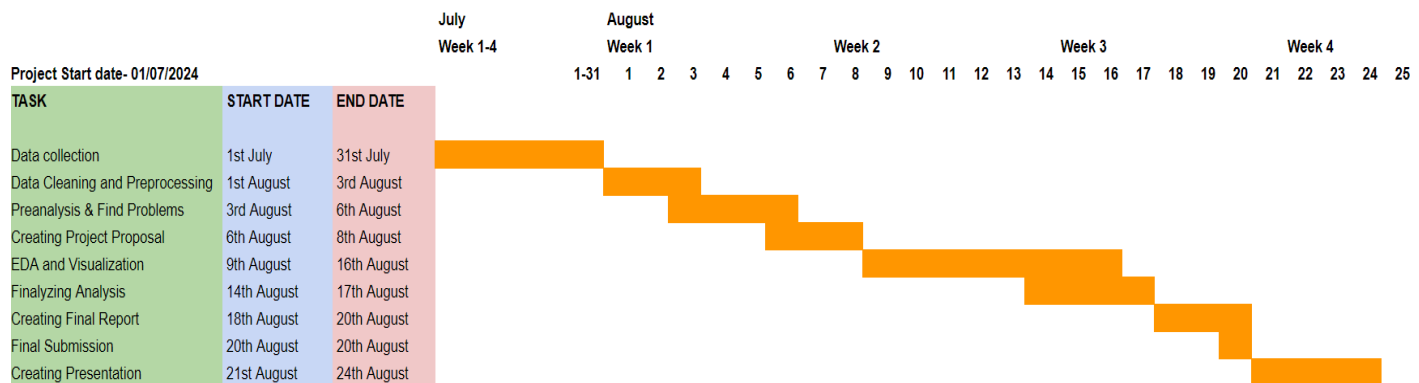
Python will be used to analyze trends from the Excel data, providing deeper insights into the analysis like creating heatmaps ,creating combinations of items sold together and more .Plotly like library will be used for better data visualization.

## 6.Expected timeline
1. Work Breakdown Structure



2. Gantt Chart



| TASK | START DATE | END DATE |
|---|---|---|
| Data collection | 1st July | 31st July |
| Data Cleaning and Preprocessing | 1st August | 3rd August |
| Preanalysis & Find Problems | 3rd August | 6th August |
| Creating Project Proposal | 6th August | 8th August |
| EDA and Visualization | 9th August | 16th August |
| Finalyzing Analysis | 14th August | 17th August |
| Creating Final Report | 18th August | 20th August |
| Final Submission | 20th August | 20th August |
| Creating Presentation | 21st August | 24th August |

Project Start date- 01/07/2024

## 7. Expected Outcomes
1. First and foremost, my foremost objective is to thoroughly investigate and identify the specific issues contributing to decline in revenue. Subsequently, I aim to implement strategic initiatives aimed at minimizing these losses and fostering sustainable improvement in those areas.
2. Additionally, I will focus on optimizing staffing and inventory management practices. This will involve adjusting staffing levels to better align with customer demand and refining inventory processes to ensure appropriate stock levels. By doing so, I aim to enhance overall service efficiency, reduce operational costs, and create opportunities for increased revenue.