PHASE – I

PROBLEM DEFINITION AND DESIGN THINKING

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| DATE | 26-09-2023 |
| TEAM ID / TEAM NAME | Proj\_224020\_Team\_1 |
| PROJECT NAME | Market Basket Insights |
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**Market Basket Insights**

**Introduction:**

Briefly introduce the concept of market basket analysis and its importance in retail.

Explain the objective of the document - to analyze customer purchasing behaviour and identify cross-selling opportunities.

Provide an overview of the Apriori algorithm as the chosen technique for this analysis.

**Problem Statement:**

Define the problem statement clearly: "To understand customer purchasing behavior and identify potential cross-selling opportunities for a retail business through market basket analysis."

Discuss the challenges and potential benefits of solving this problem.

**Design Thinking Approach:**

Describe the design thinking methodology used to approach this problem.Explain how empathy, ideation, prototyping, and testing were applied to gain insights into customer behaviour and develop solutions.

**Implementation:**

**1. Data Collection:**

-Explain the data sources and the dataset used for analysis.

-Discuss any data preprocessing steps, such as data cleaning and feature engineering.

2. **Data Preprocessing:**

Clean the data by removing duplicates, handling missing values, and ensuring that each transaction is properly formatted.

**3. Analysis:**

-Detail the steps involved in implementing the Apriori algorithm for association analysis.

-Provide code snippets or pseudocode for clarity.

**4. Insights Generation:**

-Present the findings from the market basket analysis.

-Highlight frequently co-occurring products and their significance.

**5. Visualization:**

Present your findings through visualizations like heatmaps, scatter plots, or tables. Create a comprehensive report for stakeholders, highlighting actionable recommendations**.**

**6. Business recommendation:**

Based on market basket insights derived from your analysis, here are some business recommendations to optimize your retail business:

-Cross-Selling Strategies

-Product Placement

-Targeted Marketing

**Actions:**

**-**Propose actionable strategies based on the insights obtained:

-Cross-selling opportunities: Suggest product pairings or promotions.

**1.Inventory management**:

- Recommend stocking related items together.

**2.Customer segmentation:**

**-**Identify distinct purchasing behavior groups.

**3.Marketing campaigns:**

**-**Tailor marketing efforts based on insights.

**Conclusion:**

Summarize the key findings and insights from the analysis.

Discuss the potential impact on the retail business.

Reflect on the significance of market basket analysis in understanding customer behaviour and improving business operations.

**References:**

List any sources, tools, or references used during the project.

Ensure that each section is detailed and well-structured, and use data visualizations to support your findings. This document will provide a comprehensive overview of your market basket analysis project, from problem statement to actionable