



# Data Storm v5.0

— Final Round —

Organized By  
Rotaract Club of University of Moratuwa

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## 1 Background To The Business

KJ Marketing is a leading retail chain in Sri Lanka, renowned for its extensive range of high-quality products, exceptional customer service, and competitive pricing. With multiple locations across the country, KJ Supermarket caters to a diverse customer base, providing everything from fresh produce to household essentials, organic products, and specialty items. The supermarket chain is committed to innovation, continuously seeking ways to enhance the shopping experience through technology and personalized services.



Figure 1: Sample Image

## 2 Background To The Problem

Following up on the previous customer segmentation conducted to identify the high-end customers, the company has decided to create marketing strategies that are effective in addressing the unique preferences and behaviors of their customers. The initial attempts on this by using traditional marketing strategies such as print advertising, broadcast advertising, and outdoor advertising gave little results, and therefore KJ Supermarket has decided to onboard more novel and rapidly growing technological solutions. After weighing on various options, the company has decided to invest in the implementation of Generative AI to create a personalized marketing strategy.

Generative AI refers to a class of artificial intelligence algorithms that can create new content, such as text, images, audio, and more. These algorithms can generate realistic and contextually relevant outputs based on the data they are trained on. Generative AI has revolutionized various industries by enabling the creation of content that mimics human creativity and intelligence. KJ Marketing has identified potential use cases of GenAI to optimize personalized marketing strategies and given below are some examples for identified use cases.

- Personalized product suggestions.
- Customized shopping lists.
- Personalized promotions.
- Chat-bots and virtual assistants.
- Food recipes suggestions.

The goal is to enhance the shopping experience for customers by offering tailored solutions that meet their specific needs and preferences. This approach not only aims to increase customer retention and satisfaction but also to boost overall sales and customer loyalty.

For this, KJ Marketing hopes to analyze the customer transaction data, and identify potential personalization categories to increase the effectiveness of personalized marketing. One such category that the company has identified focuses on customers who purchase fresh products such as vegetables and fruits, which they have named as 'fresh lover'.

In this round, your task is to develop a Gen AI-powered system that analyzes six months of grocery transaction data. The objective is to identify the personalization categories that the customers can be grouped into, and through that understand customer buying patterns, preferences, and behaviors. Based on these insights, the system should be capable of generating personalized shopping lists, product recommendations, and tailored promotions for individual customers. In addition, the system should be connected to a user interface for easier interactions.

### 3 Datasets and Variable Descriptions

You are provided with two types of datasets for your analysis as follows.

#### 1. **trx\_table.csv**

- **customer\_code**: Unique identifier of the customers.
- **transaction\_time**: Timestamp of the transactions.
- **item\_code**: Unique identifier of the items.
- **sales\_quantity**: Sales quantities of the items for a single transaction.

#### 2. **item\_info.csv**

- **item\_code**: Unique identifier of the items.
- **item\_category**: Categories of the items.
- **item\_name**: Names of the items.
- **item\_department**: Departments of the items.

## 4 Deliverables and Evaluation Matrices

### 4.1 Final Viva Presentation

During the viva session you will be given 10 minutes to present your solution and the business impact, and another 10 minutes to demonstrate your implementation. You are required to create a high-quality slide deck of your solution, with the following sections as mandatory components.

- **GenAI solution component** – Give a high-level description of your component, and why you decided on that solution. Justify the use of the tools and techniques you have used.
- **Marketing strategy** - Detail how the implemented solution will be used to generate value to the business.
- **Demonstration** - Present your final GenAI implementation which includes the back-end and front-end implementations.
  1. **Back-end** - You are free to use any preferred languages. (Recommended: Python)
  2. **Front-end (UI component)** - You are free to use any preferred language or tools including Streamlit.

### 4.2 Code Submission

You are required to submit your code base in the required file formats for evaluation. Below are some points to be considered:

- **Back-end and Front-end codes** - You are required to use the Open AI API keys which will be provided and any **other LLMs are not allowed**.

### 4.3 Video Submissions

You are required to submit 2 demo videos.

- In-detail walkthrough of the code base (maximum length of 10 minutes).
- Implementation and UI component (maximum length of 5 mins)

Please note that in-case you are unable to demo your solution during the viva, you will be allowed to play the Implementation demo video.