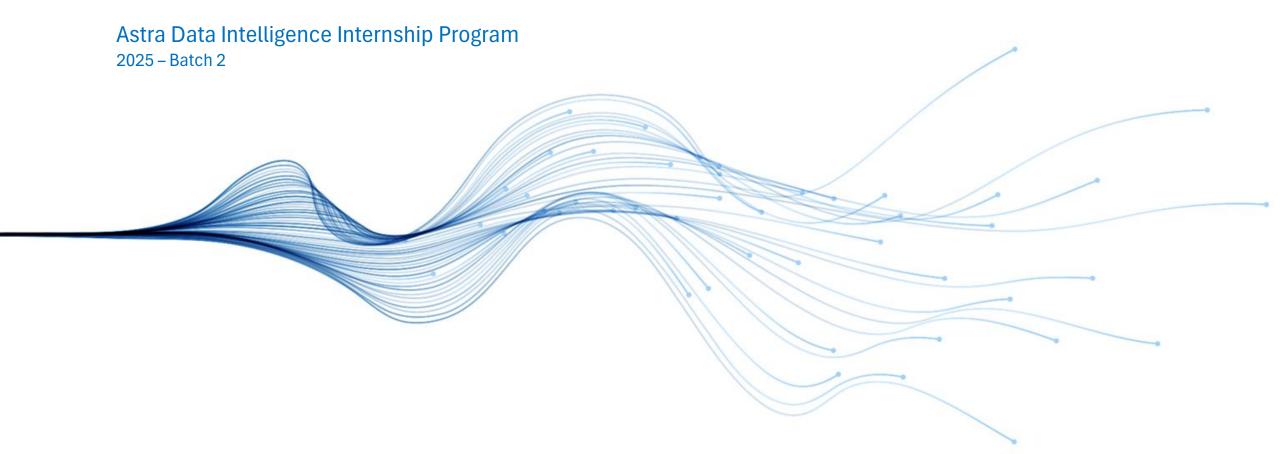
# **Project Capstone**



# **Capstone Project**

Interns must finish their project within 5-6 weeks then present the result on last week of September. There will be 2 mentors that will accompany interns through the Capstone Project.

	Product Substitutability
Description	Build a product substitutability framework and visualize the result for Spare Part retail company
Expected Output	<ul> <li>Market Analysis (Potential Market, Competitor Analysist)</li> <li>Dashboard to visualize product substitutability framework result.</li> <li>Project documentation.</li> </ul>
Data Source	Gather data from open sources or generate synthetic data for model training
Mentor	<ol> <li>Faizah Dayu U.</li> <li>Katherine Gozali</li> </ol>
Team	<ol> <li>Yoel Dinata Suwito</li> <li>Matthew Owen</li> <li>Ilhan Rafif Nagata</li> <li>Tiva Adhisti</li> <li>Muhammad Salman Al Farisi</li> </ol>

# **Product Substitutability - Background**

## Background

#### 1. Pricing Without Insight

Businesses often ignore how price changes affect demand, leading to missed opportunities to maximize profits with smarter pricing and promotions.

#### 2. Bad Bundles Mean Lost Sales

Without data-driven insights, companies create weak product bundles and miss chances to boost sales during key promotional periods.

#### 3. Out-of-Stock Items Lead to Missed Revenue

If a customer can't find the product they want, they often leave without buying anything — costing retailers' sales and damaging customer loyalty.

## Objectives

#### 1. Set Smarter Prices

Utilize historical data to analyze price impact on demand, optimizing pricing and discounts to maximize sales during peak and seasonal periods.

- 2. Boost Sales with Product Bundling & Cross Selling
  Leverage analytics to identify optimal product combinations that
  maximize sales, enhance customer satisfaction, and boost transactions.
- 3. Drive Revenue with Intelligent Substitution
   Leverage data insights to recommend substitutes products, boosting basket size and enhancing customer experience, particularly during promotions.

#### Solution

## **Price Elasticity**

- 1. Promotion recommendation:
  Identify the optimal promotions
  based on the number of
  transactions. Prioritize products and
  strategies that generate more
  transactions to maximize returns.
- 2. **Pricing Calculator:** Develop model for each item to understand simulation on price changes toward sales quantity and revenue.

### **Product Substitution**

- 1. Product Similarity Analysis:
  Analyze product attributes to
  determine which products are
  similar enough to be substituted.
- 2. Product Recommendation:
  Suggest alternatives items that are available for out-of-stock items.

### **Product Bundling**

- Market Basket Analysis: Analyzed frequently co-purchased items to identify optimal bundle combinations.
- 2. Inventory Optimization: Identify slow-moving items and pair them with fast-moving products in a bundle to clear stock.

## **Product Substitutability - Background**



#### **Definition**

Substitutability refers to the degree to which **one item can be used in place of another**, either completely or partially, without significantly impacting the desired outcome or preference.





#### Method

- · Define the product that you want to substitute (Find why we must substitute the product?)
- Calculate a substitutability score (Please explore the method that can be used for calculating the score)
- Create a visualization that easy to understand by business user (For example, you can visualize using 2-dimensional diagram called a dendogram or tree)

## **Product Substitutability - Example**

We need to analyse related products to understand 'why' customers are substituting and what constitutes a 'customers need'. This could be a result of;

- Products grouped by brand, i.e. customers substituting within a brand
- Products grouped by type, e.g. flavour, format or packaging type etc.
- Products grouped by price point, e.g. budget or value products together

