**Company Background:**

Consider a clothing store named "TrendElite" that specializes in a diverse range of apparel and accessories. TrendElite operates both physical stores and an online e-commerce platform. The company aims to enhance its revenue and market competitiveness by optimizing its pricing strategy.

**Challenges Faced:**

TrendElite encounters various challenges in effectively pricing its products:

1. **Competitive Landscape:** The retail industry is fiercely competitive, with numerous rivals offering similar products. TrendElite seeks to differentiate itself by providing appealing prices while maintaining profitability.
2. **Inventory Management:** Effective inventory management is crucial for TrendElite, requiring pricing strategies that balance supply and demand. Optimization based on inventory levels helps prevent overstocking or understocking of products.
3. **Seasonal and Trend Variations:** Rapid changes in fashion trends and fluctuating demand throughout the year pose challenges for TrendElite. Adapting prices to reflect seasonal and trend variations is essential to capitalize on sales opportunities.

**Solution:** Price Optimization.

**Dataset description:** The data contains the demand and corresponding average unit price at a product - month\_year level

**Variable Description:**

1. product\_id: A unique identifier for each product in the dataset.
2. product\_category\_name: The name of the product category to which the product belongs.
3. month\_year: The month and year of the retail transaction or data recording.
4. qty: The quantity of the product sold or purchased in a given transaction.
5. total\_price: The total price of the product, including any applicable taxes or discounts.Calculated using qty\*unit\_price
6. freight\_price: The average freight price associated with the product.
7. unit\_price: The average unit price of a single unit of the product.
8. product\_name\_length: The length of the product name in terms of the number of characters.
9. product\_description\_length: The length of the product description in terms of the number of characters.
10. product\_photos\_qty: The number of photos available for the product in the dataset.
11. product\_weight\_g: The weight of the product in grams.
12. product\_score: average product rating associated with the product’s quality, popularity, or other relevant factors.
13. customers: The number of customers who purchased the product in a given category.
14. weekday: Number of weekdays in that month.
15. weekend: number of weekends in that month.
16. holiday: Number of holidays in that month.
17. month: The month in which the transaction occurred.
18. year: The year in which the transaction occurred.
19. s: the effect of seasonality
20. Volume: Product Volume
21. Comp\_1: competitor1 price
22. Ps1: competitor1 product rating
23. Fp1: competitor1 freight price
24. Comp\_2: competitor2 price
25. Ps2: competitor2 product rating
26. Fp2: competitor2 freight price
27. Comp\_3: competitor3 price
28. Ps3: competitor3 product rating
29. Fp3: competitor3 freight price
30. Lag\_price : previous month price of the product