Final Report Summary

Project Title:

Analyzing Customer Purchasing Behaviour Using Association Rule Mining for Retail Optimization

---

1. **Introduction**

This project applies Association Rule Mining to retail transaction data to uncover patterns in customer purchases. The goal is to improve product bundling, layout strategies, and promotional planning.

---

2. **Objective**

Find frequent item combinations using the Apriori algorithm

Generate strong association rules

Recommend strategies to improve sales and customer experience

---

3. **Dataset Details**

Source: Kaggle

Type: Structured, transactional data

Size: ~50,000 records

Fields: InvoiceNo, Description, Quantity, Price, Date, Country

---

4. **Tools Used**

Python (pandas, mlxtend)

Google Colab

Matplotlib & Seaborn for visualization

---

5. **Key Insights**

Products like “Gift wrap” and “Candles” often appear together

UK transactions dominate the dataset

Many strong rules with lift > 2.5 and confidence > 0.8

---

6. **Recommendations**

Short-Term: Bundle popular items; promote associated products

Long-Term: Use a rule-based recommendation system in-store or online

---

7. **Conclusion**

Association Rule Mining helped uncover hidden product relationships. These insights can be used to improve sales strategies and enhance customer satisfaction.