CUSTOMER SEGMENT-SPECIFIC BUNDLING FOR AN ONLINE GROCERY PLATFORM

1. Background and Problem Statement:

An online grocery delivery platform serving urban customers across five cities faced declining basket sizes despite increasing user acquisition. Broad promotions and static combos failed to appeal to diverse customer types. The company lacked a structured bundling strategy based on user behavior. They initiated a **customer segmentation and product bundling project** to personalize offerings and increase customer lifetime value (CLV) by recommending high-utility product combinations aligned with each segment's lifestyle.

2. Objectives:

- To segment customers based on purchase behavior and demographics

- To identify product bundle opportunities tailored to each customer group

- To develop targeted campaigns promoting these bundles

- To measure impact on basket size, repurchase rate, and promotional ROI

3. Methodology:

Data Collection:

- 9 months of transaction history (~210,000 orders)

- Customer profiles with order frequency, average basket value, zip code, and preferred delivery time

- Product metadata: category, perishability, brand, price

Segmentation Strategy:

- Applied **RFM analysis** (Recency, Frequency, Monetary)

- Clustered users using **K-means clustering** into 4 customer segments:

    1. **Health-Focused Singles**

    2. **Busy Families**

    3. **Budget-Conscious Bulk Buyers**

    4. **Occasional Shoppers**

Product Bundling Logic:

- Market basket analysis within each segment using **association rules (Apriori)**

- Metrics used: Support > 0.03, Confidence > 0.5, Lift > 1.2

- Tools: **R (arules, dplyr)** and **Excel dashboard**

4. Results:

- Created 3–5 product bundles for each customer segment

- **Examples:**

    o Health-Focused Singles → "Almond Milk + Granola + Fresh Berries" (Lift: 2.4)

    o Busy Families → "Diapers + Milk + Bread + Cereal" (Lift: 1.9)

    o Bulk Buyers → "Lentils (5kg) + Rice (10kg) + Cooking Oil (5L)" (Lift: 2.2)

- Bundles showed **32% higher add-to-cart rate** in A/B tested campaign vs. general discounts

- Basket size increased by **18.7%** among targeted users over a 4-week pilot

- Repurchase rate improved by **11.5%** in the Family and Bulk segments

5. Interpretation and Insights:

- Segment-specific bundling outperformed generic combo deals across all KPIs

- Budget buyers preferred **value-pack bundles**, while health-focused users prioritized **curated combos**

- Time-sensitive promotions (e.g., 6–9 PM for busy families) increased visibility and conversions

- User loyalty improved when bundles aligned with personal needs and buying patterns

6. Recommendations:

- Scale segment-based bundle promotions with periodic refresh based on seasonality

- Integrate dynamic bundle engine into the platform backend

- Add tags like "Perfect for Families" or "Wellness Pack" to promote relevance

- Use segmentation logic in push notifications and email workflows

- Offer limited-time bundle-based loyalty points to reinforce repeat behavior

7. Future Work:

- Introduce personalization at the SKU level within bundles (substitute options)

- Link nutrition score metadata to bundle design for health-conscious users

- Enable bundle-based cart saving and "Buy Again" functionality for high-frequency users

8. Stakeholder Relevance:

Academic:

- Demonstrates integration of clustering, RFM, and market basket analysis for personalization

- Suitable for marketing analytics, retail segmentation, and predictive behavior modeling courses

Corporate:

- Provides a scalable model for grocery platforms to increase AOV and retention

- Shows how segment-specific offers outperform broad, undifferentiated discounting