MARKET-BASED CUSTOMER SEGMENTATION FOR A U.S. GROCERY CHAIN USING SPSS TWOSTEP CLUSTERING

1. Background and Problem Statement

A regional grocery chain in the United States, operating across five states, was experiencing stagnant revenue despite a steady inflow of loyalty program sign-ups. Store managers lacked clarity on who their customers were, how they behaved, and how to tailor promotions. Traditional demographic analysis had failed to uncover actionable groupings. The company decided to apply SPSS's TwoStep clustering to their loyalty card data to identify meaningful customer segments for targeting.

2. Objectives

- To segment customers using SPSS TwoStep clustering algorithm based on demographic, transactional, and behavioral data
- To create customer profiles that inform personalized marketing strategies
- To identify high-value segments and understand promotion sensitivity across different clusters
- To guide future product placement, promotion design, and inventory optimization decisions

3. Methodology

3.1 Data Collection

- Source: 18-month transaction and loyalty program database
- Sample Size: 6,842 customers
- Key Variables:
    - Age group
    - Total annual spending
    - Average basket size
    - Preferred shopping day (weekday/weekend)

- Use of coupons (binary)
- Purchase of private label goods (yes/no)
- Loyalty program tier (Gold, Silver, Bronze)

3.2 Data Preparation in SPSS

- Converted categorical variables (e.g., tier status) to nominal inputs in TwoStep
- Continuous variables standardized for consistency
- Removed outliers above the 99th percentile in spending and basket size
- Missing values handled using listwise deletion due to sufficient data volume

3.3 TwoStep Clustering in SPSS

- Automatic clustering option enabled for determining optimal number of clusters
- Log-likelihood distance measure used
- Bayesian Information Criterion (BIC) used to confirm 5-cluster solution
- Final segments visualized through cluster profile charts in SPSS

4. Results

Cluster Breakdown:

- **Cluster 1 – Premium Urban Professionals (16%)**
  - High spenders, mostly Gold tier, prefer weekends, buy gourmet and organic
  - Rarely use coupons; brand loyal
- **Cluster 2 – Budget-Focused Families (27%)**
  - Medium spending, large basket size, frequent use of coupons
  - Private label loyalists, prefer weekdays for shopping
- **Cluster 3 – Infrequent Shoppers (12%)**
  - Lowest spenders, low engagement, small baskets
  - Shopping behavior inconsistent, primarily Bronze tier
- **Cluster 4 – Convenience Shoppers (24%)**
  - Moderate spenders, high frequency, buy ready-to-eat items

    - Mix of Silver and Bronze tier users
- **Cluster 5 – Tech-Savvy Young Adults (21%)**
    - Mobile-first shoppers, strong app engagement, mostly shop during offers
    - Buy snacks, beverages, and trial items regularly

5. Interpretation and Insights

- Cluster 1 is price insensitive and brand-driven—ideal for gourmet product launches
- Cluster 2 responds well to discounts and combo offers
- Cluster 3 may churn—retargeting via mobile or email may recover some
- Cluster 4 values convenience—placement of quick meals and express checkouts should be optimized
- Cluster 5 is digitally engaged and experimental—ideal for new product testing and app-based campaigns

6. Recommendations

- Launch a premium weekend bundle exclusively for Cluster 1
- Target Cluster 2 with monthly discount days and high-utility family packs
- Design loyalty reactivation campaigns for Cluster 3 with personalized incentives
- Expand express self-checkout for Cluster 4 to reduce wait time
- Roll out in-app scratch cards and gamified discounts for Cluster 5

7. Future Work

- Integrate survey-based psychographic data with transactional data to enrich segmentation
- Run a discrete choice experiment (conjoint analysis) on product preferences by cluster
- Track conversion metrics of personalized campaigns by segment over the next quarter
- Evaluate segment mobility (e.g., Bronze to Silver) as a customer lifecycle metric

8. Stakeholder Relevance

Academic

- A practical example for applied business analytics, segmentation, and clustering algorithms using SPSS
- Valuable for instruction in marketing analytics and customer profiling coursework

Corporate

- Enables precision targeting and campaign ROI tracking
- Empowers retail decision-makers with actionable customer personas and resource allocation strategies