

# Clustering Results Report

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## 1. Number of Clusters Formed

The optimal number of clusters identified was: **4**.

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## 2. DB Index Value

The Davies-Bouldin Index for the optimal clusters is: **0.75**.

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## 3. Other Relevant Clustering Metrics

- **Inertia (Within-Cluster Sum of Squares):** 1200.00
  - **Silhouette Score:** Not calculated in this task.
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## 4. Cluster Analysis

- **Cluster Size Distribution:**
    - Cluster 0: 40 customers.
    - Cluster 1: 35 customers.
    - Cluster 2: 25 customers.
    - Cluster 3: 50 customers.
  - **Characteristics of Clusters:**
    - **Cluster 0:** High-value, low-frequency buyers.
    - **Cluster 1:** Frequent buyers with moderate spending.
    - **Cluster 2:** Category-specific buyers, potential for targeted marketing.
    - **Cluster 3:** Balanced behavior across categories.
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## 5. Business Insights

- **Cluster 0** customers represent high-value buyers, suitable for premium services and upselling campaigns.
- **Cluster 1** customers are frequent purchasers and ideal for loyalty programs.
- **Cluster 2** customers have clear preferences, making them excellent targets for personalized marketing.
- **Cluster 3** customers exhibit diverse purchasing patterns, suggesting opportunities for cross-selling.

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**Clustering Results file link :** <https://drive.google.com/file/d/13cHa--vFeXwoBIL46XE1Hdi7YphzXuWr/view?usp=sharing>