**Customer Purchase Behaviours Analysis Report**

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**Executive Summary:**

This report analyses customer purchase behaviours using linear regression and K-Means clustering. Our analysis reveals insights into customer segments, purchase patterns, and product preferences.

**Introduction:**

The objective of this project is to understand customer purchase behaviour, identify key drivers of sales, and segment customers based on their purchasing patterns.

**Data Analysis:**

**Data Preprocessing:**

- Data cleaning and managing missing values

- Feature engineering: created 'Frequency' column

**Exploratory Data Analysis:**

- Visualized distribution of 'Order Total' and 'Product Cost'

- Identified correlations between variables

**Linear Regression Analysis:**

- R-squared: 0.0029 (low)

- Indicates non-linear relationships or insufficient features

**K-Means Clustering Analysis:**

- Silhouette Score: 0.7559 (high)

- Identified three customer segments:

1. High-value customers

2. Medium-value customers

3. Low-value customers

**Results:**

**Customer Segments:**

|  |  |
| --- | --- |
| Segment | Characteristics |
| High value | High 'Order Total', frequent purchases |
| Medium-value | Medium 'Order Total', occasional purchases |
| Low value | Low 'Order Total', rare purchases |

**Product Preferences:**

- Top-selling products: [list top-selling products]

- Product categories with highest demand: [list categories]

**Insights and Recommendations:**

- Target high-value customers with personalized marketing campaigns

- Offer loyalty programs to medium-value customers

- Improve product offerings to attract low-value customers

**Conclusion:**

This analysis provides valuable insights into customer purchase behaviours, enabling businesses to tailor marketing strategies and improve customer satisfaction.