

Customer Personality Analysis Report

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Objective

The goal of this analysis is to explore and understand customer behavior based on demographic information, spending patterns, and responses to marketing campaigns. We applied several statistical hypothesis tests to uncover meaningful insights.

Q1: Education Level vs. Income

A Kruskal-Wallis H test was conducted to determine whether income levels differ significantly across different education categories.

Result:

- Test Statistic: 142.17
- P-value: 9.69e-30

Interpretation: There is a statistically significant difference in income among customers with different education levels.

Q2: Marketing Campaign vs. Spending Behavior

We compared the total spending of customers who responded to marketing campaigns to those who did not, using a Mann-Whitney U Test.

Result:

- Test Statistic: 434044.0
- P-value: 4.17e-29

Interpretation: Customers who responded to campaigns exhibit significantly different spending behaviors than those who did not.

Q3: Children Presence vs. Spending

To determine whether having children affects spending behavior, we used the Mann-Whitney U Test to compare spending between households with and without children.

Result:

- Test Statistic: 203274.0
- P-value: 3.75e-106

Interpretation: There is a highly significant difference in spending between customers with children and those without.

Q4: Spending Differences by Product Category

The Friedman test was applied to examine whether there is a significant difference in spending across six product categories.

Result:

- Test Statistic: 254.39
- P-value: 6.29e-53

Interpretation: Customers show clear preferences in their spending across different product categories.

Q5: Education Level vs. Campaign Acceptance

A Chi-Square Test of Independence was performed to determine whether education level influences the likelihood of accepting promotional campaigns.

Result:

- Test Statistic: 6.34
- P-value: 0.175

Interpretation: There is no statistically significant relationship between education level and acceptance of marketing campaigns.