Data Storytelling & Hypothesis Hypothesis Testing

Data Analytics Internship | ApexPlanet Software Pvt. Ltd. | Srikanth V

The Business Challenge

ApexPlanet Software seeks to optimize its marketing strategies and revenue generation. Currently, there's a lack of clear understanding regarding which customer segments are most profitable and how age influences spending habits.

> "Without targeted insights, our marketing efforts may be inefficient."

This analysis aims to identify high-value segments and provide data-backed recommendations.

Dataset at a Glance

Our analysis utilizes the Customer Purchase Behavior Dataset, providing a comprehensive view of customer interactions.

Demographics

Includes customer age and gender for segmentation.

Location

Analyzes purchase behavior by city.

Product & Value

Details product categories and purchase amounts.

Payment Methods

Identifies preferred transaction methods.

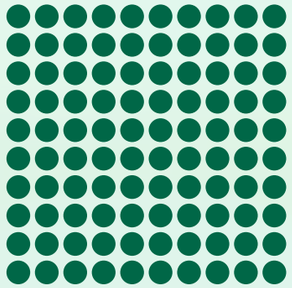
Key Exploratory Data Analysis (EDA) Insights

Initial exploration revealed crucial patterns in customer behavior.

These insights lay the groundwork for understanding our most valuable segments and operational strengths.

KPI Dashboard Summary

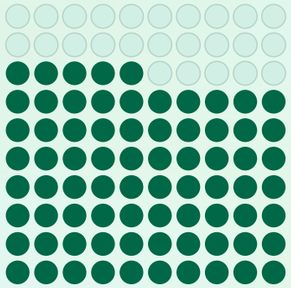
A dashboard was developed to track performance, focusing on key metrics.



100%

Total Sales

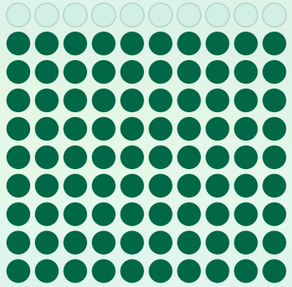
Overall revenue generated.



75%

Avg. Purchase Value

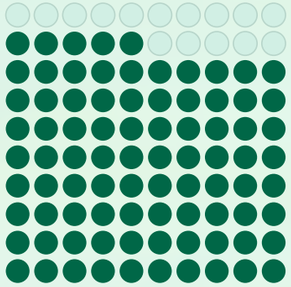
Per-transaction spending.



90%

Top Product Category

Leading revenue stream.



85%

Top City by Sales

Geographical performance.

This dashboard provides a clear, concise overview of our business health.

Hypothesis Formulation

To address the business problem, we formulated a specific hypothesis regarding age and spending.

Null Hypothesis (H_0)

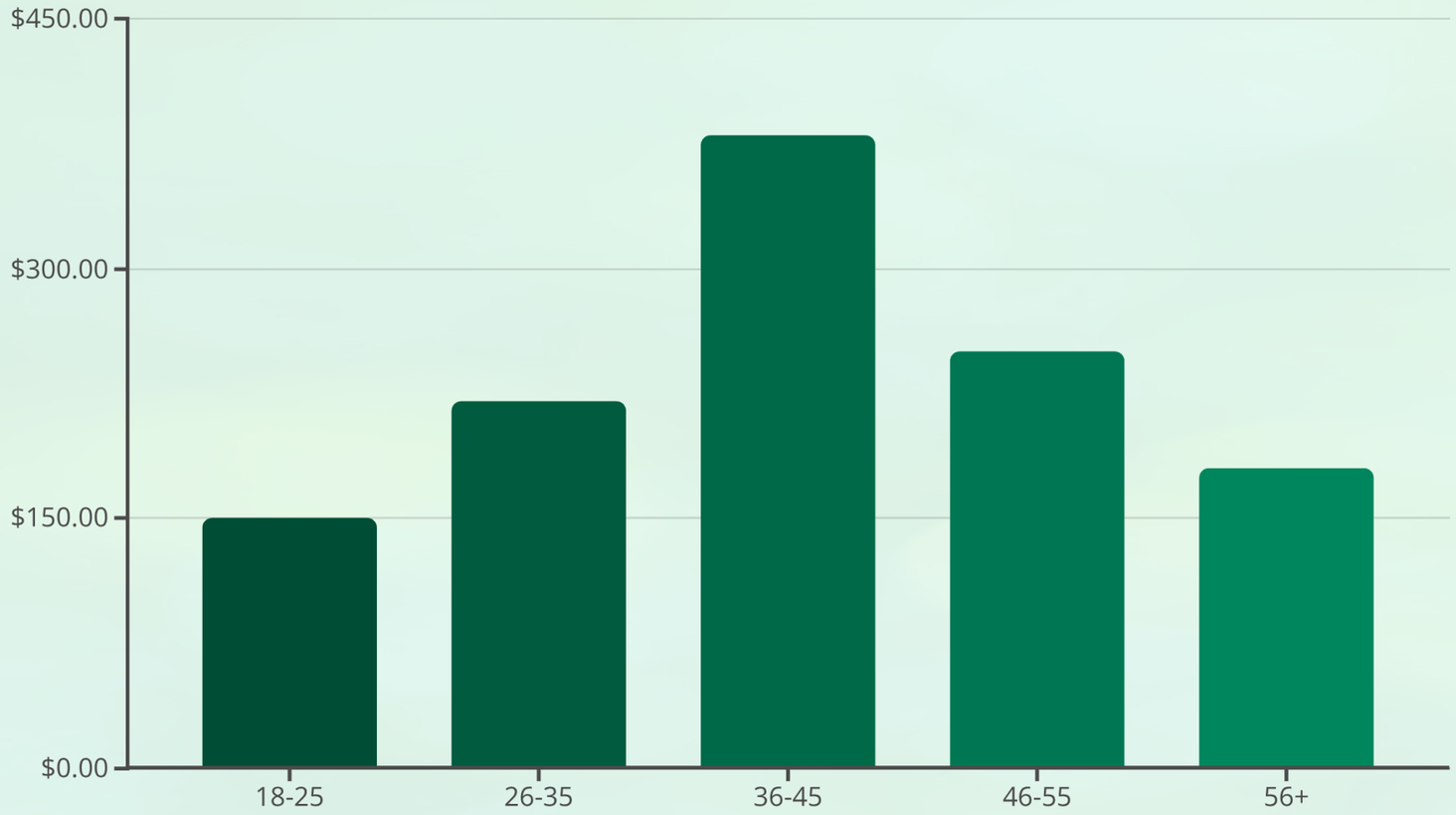
There is no significant difference in spending behavior between different age groups.

Alternative Hypothesis (H_1)

Customers aged 36–45 demonstrate significantly higher spending compared to other age groups.

Statistical Test & Results

We performed an Independent T-Test to validate our hypothesis, analyzing the spending differences across age groups.



Independent T-Test

- **Test Performed:** Independent T-Test
- **Significance Level:** $\alpha = 0.05$
- **P-Value:** $p < 0.05$
- **Result:** We reject the Null Hypothesis.

The statistical analysis confirms a significant difference in spending behavior among age groups, validating our alternative hypothesis.

Actionable Business Recommendations

Based on our data-driven findings, we propose the following strategic actions:

1

Target 36–45 Age Group

Focus marketing campaigns and product development towards this high-spending segment.

2

Promote Electronics Category Category

Invest in inventory, merchandising, and specialized promotions for our top-performing product category.

3

Focus on High-Performing Cities

Prioritize marketing spend and logistical support in Delhi and Bangalore to maximize sales impact.

Impact of Data-Driven Decisions

Implementing these recommendations can lead to substantial improvements in marketing effectiveness and revenue.

Increased Revenue

By focusing on high-value customer segments and top-performing products.

Optimized Marketing Spend Spend

Targeting specific demographics and geographies for better ROI.

Enhanced Customer Understanding

Building richer profiles of our most profitable customers.

Conclusion: Unlocking Growth Through Data

This internship project demonstrates the powerful potential of data analytics in transforming business strategy.

> "Age-based segmentation provides actionable insights that directly impact marketing efficiency and revenue generation."

By embracing data-driven decisions, ApexPlanet Software can achieve sustainable growth and competitive advantage.