

Hypothesis Testing Summary: Packaging Style vs Perceived Product Performance

Hypothesis (H1): Packaging with bold visual cues leads to higher perceived product performance than simpler packaging styles.

Objective: To evaluate whether packaging style (categorized as "Bold" or "Simple") influences perceived product performance using consumer ratings (1-5 Likert scale from the variable `Q7. Pack Uniqueness`).

Data Preparation:

- **Packaging Style Categorization:** A new binary variable was created where "Bold" = 1 and "Simple" = 0 based on design elements.
 - **Performance Score Variable:** `df_final['Q7. Pack Uniqueness']` used to represent perceived performance.
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Statistical Method Used:

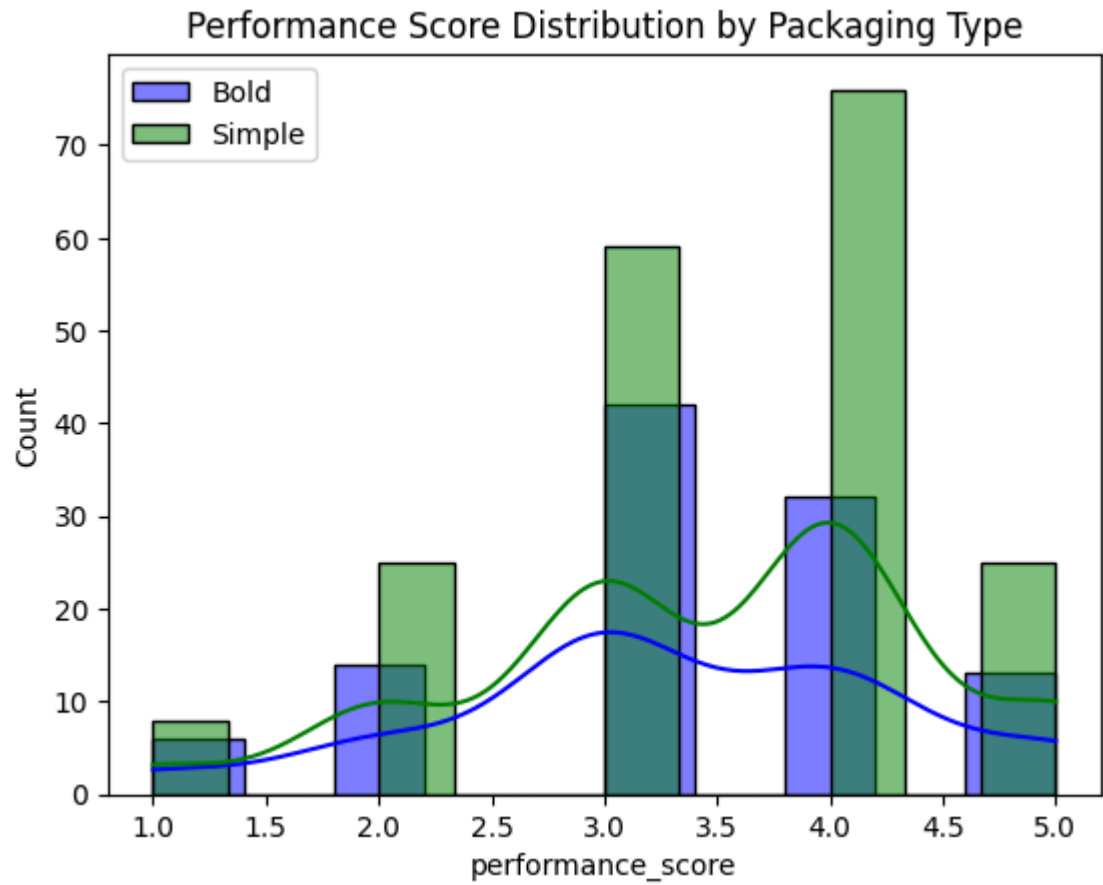
- **Independent Samples T-Test** comparing the mean perceived performance scores between the two packaging styles.
 - Normality visually inspected via distribution plot.
 - Boxplot and bar charts were used for visualization.
 - Effect size calculated using **Cohen's d**.
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Key Outputs:

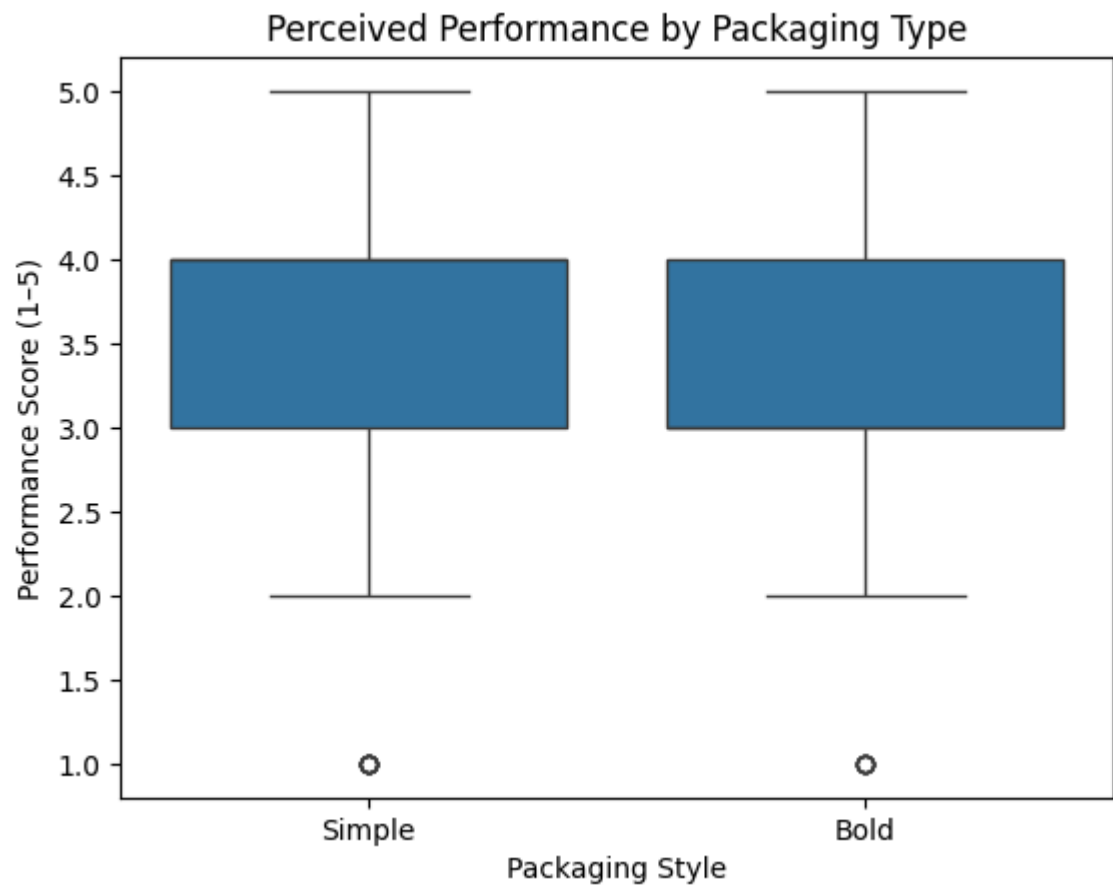
- **T-statistic:** -1.1469
 - **P-value:** 0.2527 (Not statistically significant at $p < 0.05$)
 - **Mean Performance Score (Bold):** 3.30
 - **Mean Performance Score (Simple):** 3.44
 - **Cohen's d (Effect Size):** -0.139 (Small effect size)
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Visualizations:

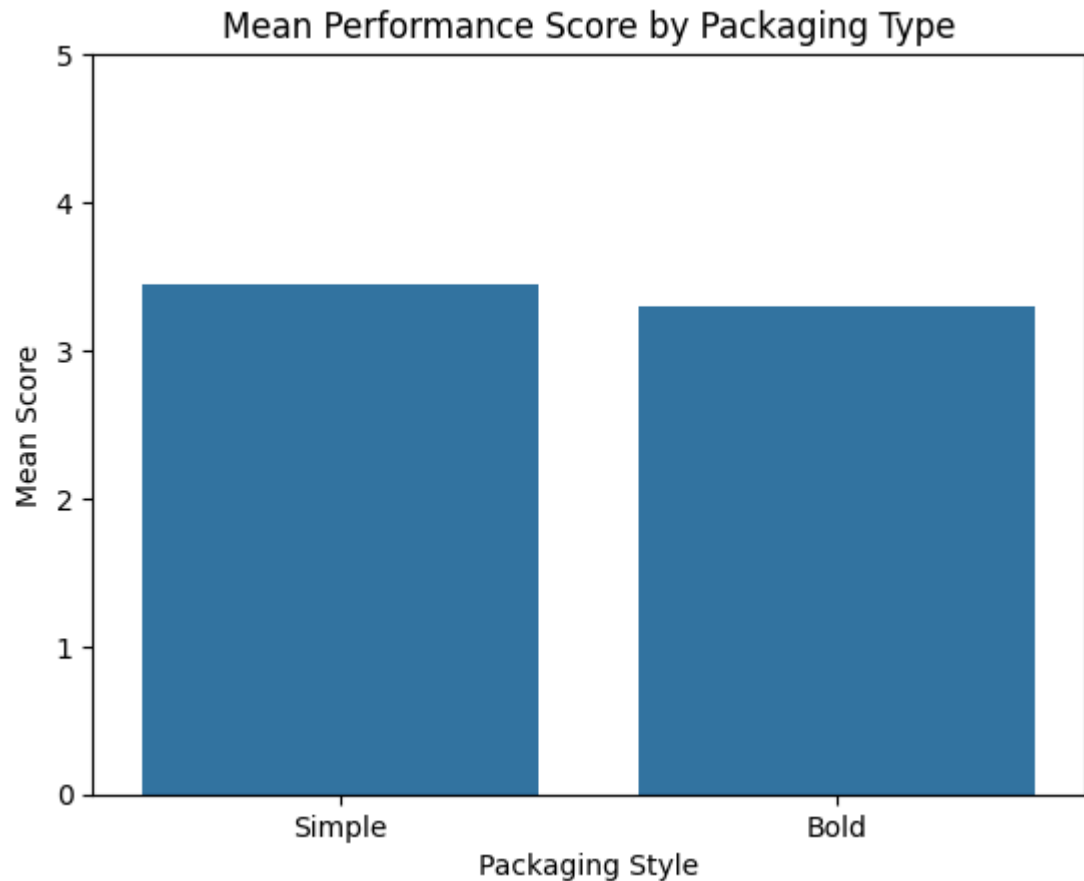
1. **Distribution Plot:** Shows overlapping distributions for both packaging styles.



2. **Boxplot:** Indicates similar median and spread.



3. **Mean Bar Chart:** Simple packaging slightly outperforms Bold in mean score.



Conclusion:

- The results do not support H1.
- There is no statistically significant difference in perceived product performance between Bold and Simple packaging styles.
- Simple packaging showed slightly higher average scores, but the difference is minimal and not significant.
- A small negative effect size suggests a slight preference toward simple packaging, but not enough to draw firm conclusions.

Recommendation: While bold packaging may draw attention, it does not necessarily enhance perceived performance in this context. Further qualitative feedback or packaging redesign iterations may be explored.