Case 1:
Conjoint Analysis for Omnia Motors

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Submission Date: June 8th, 2025

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Executive Summary

This project explores customer preferences for self-driving car features using conjoint analysis. Our results found that comfort, connectivity, and energy efficiency drive customer preferences, while autonomy and safety play less influential roles. We simulated market shares for two proposed products and benchmarked them against current offerings from *Tesla* and *Hyundai* based on the data available, providing recommendations to optimize product design and positioning to maximize profit.

Problem statement

As the automotive industry adapts to rapid technological changes in the age of AI, Omnia Motors seeks to understand which self-driving car features are most valued by consumers. Our team, AutoLogic LLC., has been tasked with analyzing ranking data to identify customer preferences, segment the market, and simulate market shares for two proposed product offerings. The goal is to provide Omnia with insights that support strategic decisions on feature combinations and pricing to maximize market appeal.

Analytical approach

Omnia Motors developed 12 product profiles by combining 5 attributes: Safety, Autonomy, Connectivity, Energy Efficiency, and Comfort. 52 respondents ranked the profiles from 1 (most preferred) to 12 (least preferred). We conducted a conjoint analysis using the following steps: 1. Transformed rankings to preference scores, 2. Used dummy variable regression to estimate part-worth utilities, 3. Calculated attribute importance, 4. Applied k-means clustering for segmentation, and 5. Simulated market share via a multinomial logit model. The methodology used relies on the following assumptions: 1. Additive Utilities: Total utility for each product profile as the sum of each attribute part-worths. 2. Independence of Attributes: Features contribute separately to overall utility. 3. Representative sample: The 52 respondents are assumed to realistically represent the targeted market. 4. Equal consideration in simulation: All product profiles are assumed to be equally visible, available, and advertised to consumers in the market share estimates.

Results and Insights

1. Most important Attributes:

The most influential attributes based on utility range are Comfort and Energy preferences, Connectivity is moderately important, while Safety and Autonomy have minimal impact. This

challenges assumptions about self-driving cars, suggesting that consumers care more about comfort and energy efficiency than tech usability, full automation or high-end safety systems. ***Figure 1*** below shows the relative importance of each attribute based on the range of utility estimates.

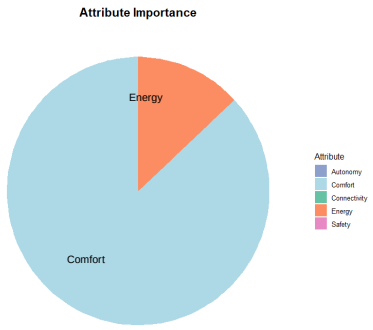

Figure 1. *Attribute Importance*

2. Part-Worth Utilities

Customers prefer standard connectivity over advanced features, suggesting a preference for familiar, easy-to-use technology. They also value premium comfort over basic or standard options and show a strong preference for high or moderate energy efficiency compared to low-efficiency vehicles. Surprisingly, standard safety features are viewed positively, while advanced safety does not significantly improve preference. The level of autonomy, whether high or medium, has little impact, with a slight preference for vehicles that are less automated, indicating that many customers may still want to retain some control when driving.

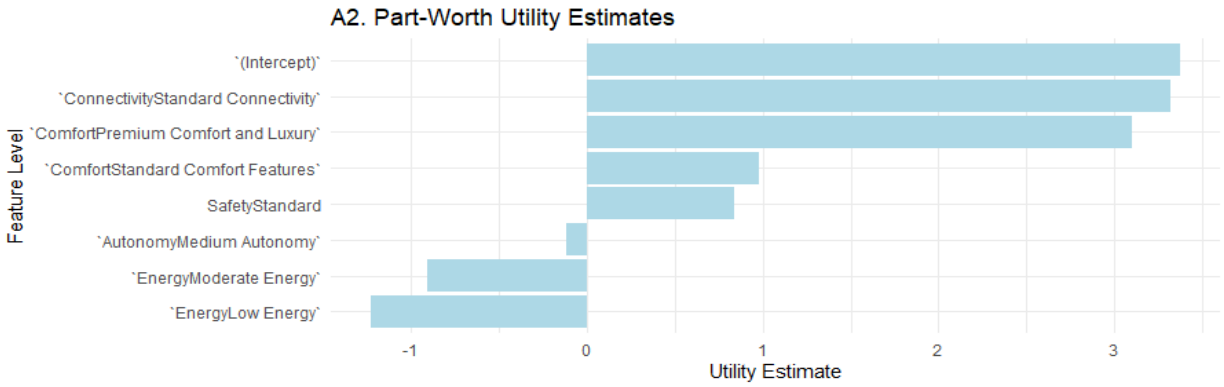

Figure 2. *Part-Worth Utility Estimates*

3. Customer Segments

Three clear customer segments emerged based on preferences. Cluster 1 (42%) includes tech-aware, comfort-focused buyers who prefer premium comfort, standard connectivity, and high

energy efficiency; this group can justify premium pricing. Cluster 0 (38%) is more balanced and prefers moderate energy efficiency with standard comfort. Cluster 2 (19%) is more cost-conscious and prefers basic features with strong energy efficiency, so affordability is key for this group. Pricing should reflect these differences defined in ***Figure 3*** to maximize appeal and market reach.

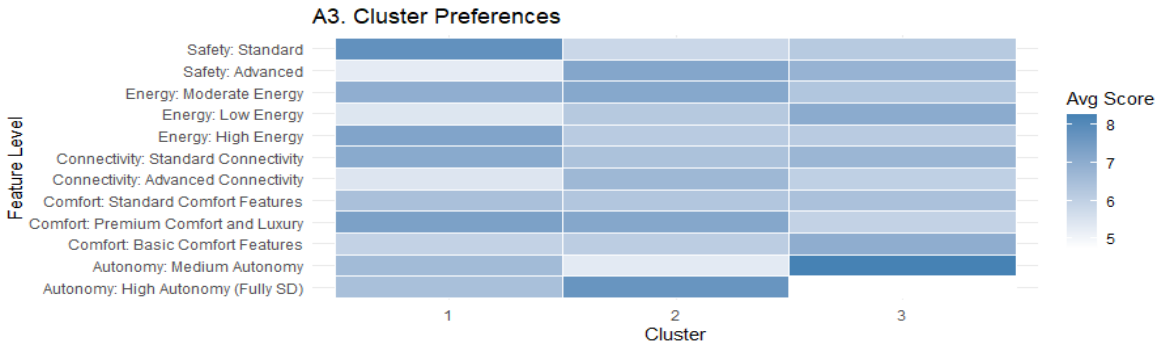

Figure 3. *Consumer Segmentation Preferences*

4. Market Share Simulation

Our team used a multinomial logit model by which we simulated the predicted market share for the following products. Product 1: Standard Safety, High Autonomy, Advanced Connectivity, Moderate Energy, Premium Comfort. Product 2: Standard Safety, Medium Autonomy, Standard Connectivity, High Energy, Basic Comfort. *Tesla* (Benchmark): Advanced Safety, Medium Autonomy, Advanced Connectivity, Low Energy, Standard Comfort. *Hyundai Ioniq* (Benchmark): Advanced Safety, Medium Autonomy, Standard Connectivity, Moderate Energy, Premium Comfort.

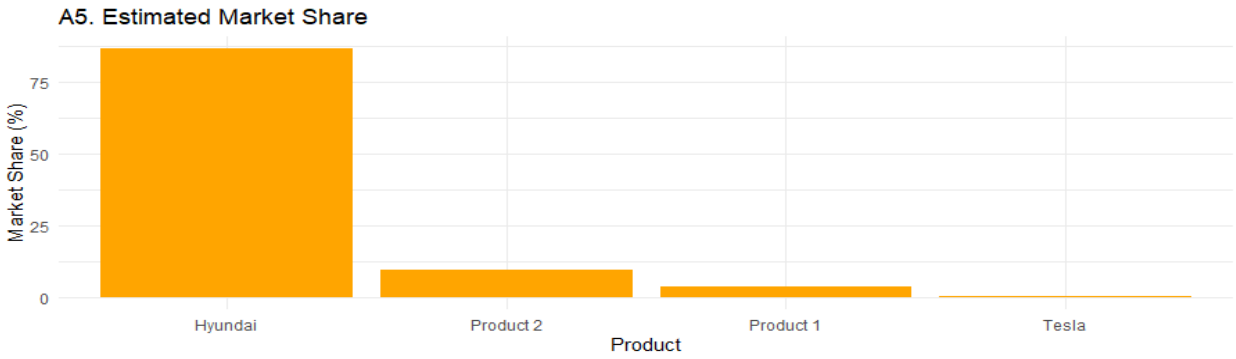

Figure 4. *Simulated Market Share*

Figure 4 above depicts that Hyundai dominates the simulated market, capturing over 80% of the market share for self-driving cars. Hyundai's combination of features such as Premium Comfort, Standard Connectivity, and Moderate Energy efficiency lead to a higher desire among consumers. Omnia Motors' Product 2 has the next best share of the market offering Basic Comfort and High

Energy Efficiency. The Basic Comfort option signifies that they are trying to appeal to cost conscious and energy efficient buyers over luxury shoppers. Product 1 has the third highest market share, which despite having Premium Comfort features, is less preferred by this sample as it includes Advanced Connectivity and High Autonomy, which received low and negative utility scores shown in ***Figure 2***. Surprisingly, Tesla performs the worst in this simulation. The combination of standard comfort features and low energy efficiency with full autonomy are some of the least preferred features, which suggests that the market is not ready to adopt fully self-driving car features, which is reinforced by ***Figure 3***.

Recommendations

Based on our findings, we recommend Omnia Motors prioritize Product 2 for initial market entry, as it closely aligns with consumer preferences, especially for energy efficiency and simplicity. To increase appeal, consider offering optional comfort upgrades, while avoiding advanced connectivity and high autonomy features that reduce utility and limit market share. Tailor marketing messages to each segment: Cluster 1 may respond well to comfort-enhanced versions of Product 2, while Cluster 2 will value affordability and energy efficiency. Pricing should reflect this, position Product 2 at the lower end of the target range, around $55,000 to $65,000, to stay competitive and accessible across segments.

Conclusion

Long-term, Omnia Motors should focus on developing a comfortable, energy-efficient vehicle without complex connectivity or fully autonomous features. As technology and consumer awareness evolve, the company should track changing preferences, especially for features currently driving lower utility. Expanding research to a broader audience will help validate these trends. For now, the priority should be on practical, cost-conscious drivers who value comfort and efficiency.

Appendix:

Figure 1. *Attribute Importance*

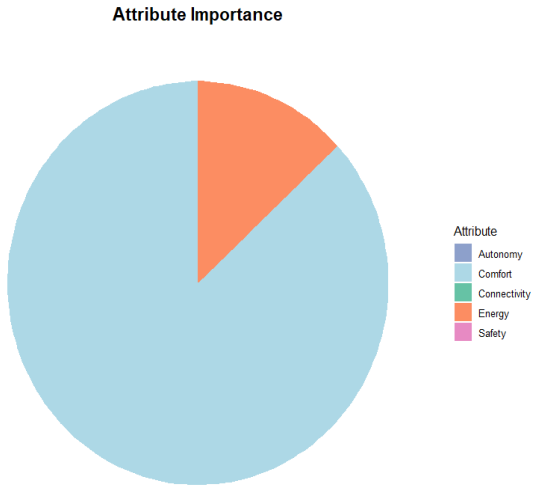

Figure 2. *Part-Worth Utility Estimates*

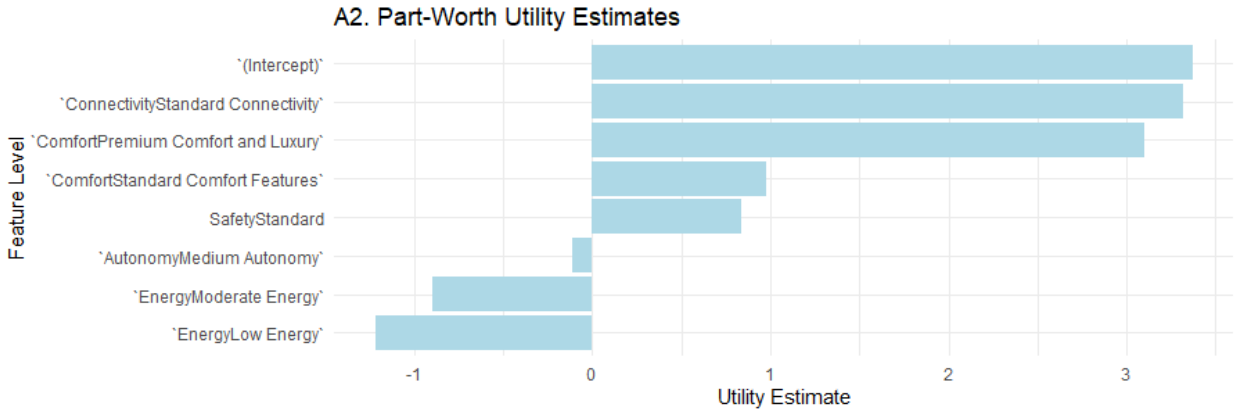

Figure 3. *Cluster Feature Preferences*

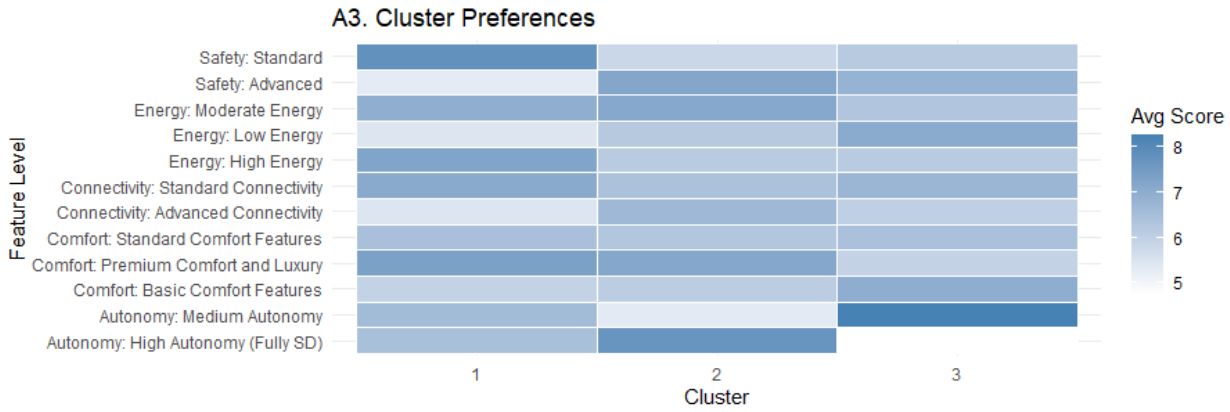

Figure 4. *Estimated Market Share of Self-Driving Products*

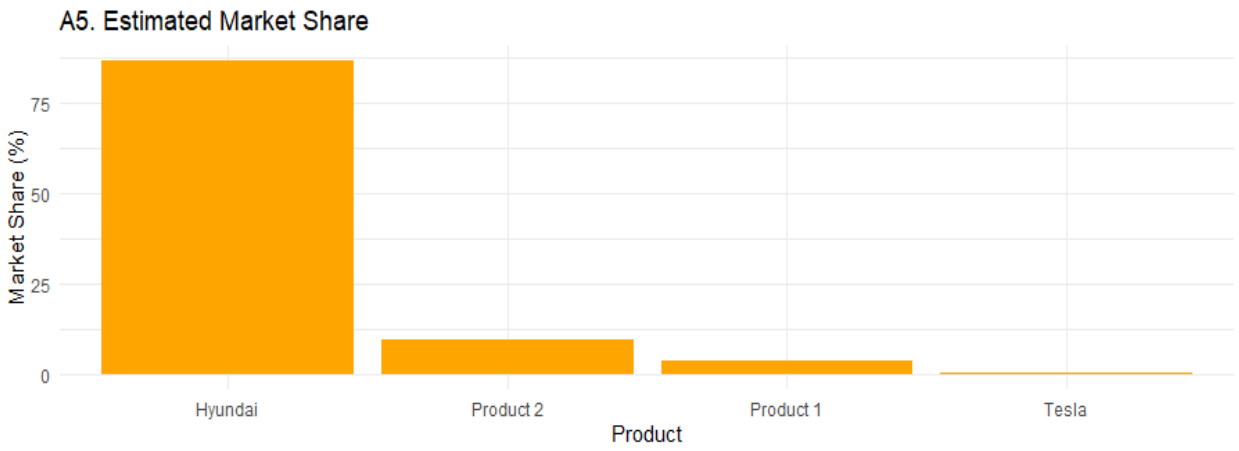

Figure 5. *Market Clusters*