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BQOM 2521
Assignment 3: Market Share Model
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Market Share Model: What is the relative market share of the small/compact SUV segment in the United States for the Subaru Forester, Honda CRV, and Toyota RAV4?

## 1. Summary

As a Subaru Forester owner, I researched several of the competing small SUVs on the market before making my purchase. Using my first-hand knowledge of the alternatives to the Forester (the Honda CRV and Toyota RAV4), I can attempt to estimate the market share of each vehicle using the Analytic Network Process (ANP) and the SuperDecisions Software.

The following report details the specifics of the model with an emphasis on the alternatives and the factors that are most pertinent to market share data. Following the overview of the methods used to create the model, I will review the results of the model and provide an assessment of the results against the actual market share data.

## 2. Methods

After selecting the topic, I researched the feasibility of determining the actual market data. Information on market data was available via total sales of SUVs in 2016 along with individual total sales data for each alternative. Next, I brainstormed the factors that contribute to the small SUV market. These factors were then split into categories. Each category, along with its nodes were input into the ANP model. Then, links were made between each of the alternatives and the relative factors. Factors were then evaluated to see if they should be linked back to the alternatives or between factors themselves. *Figure 1* below shows the overview of the ANP model.

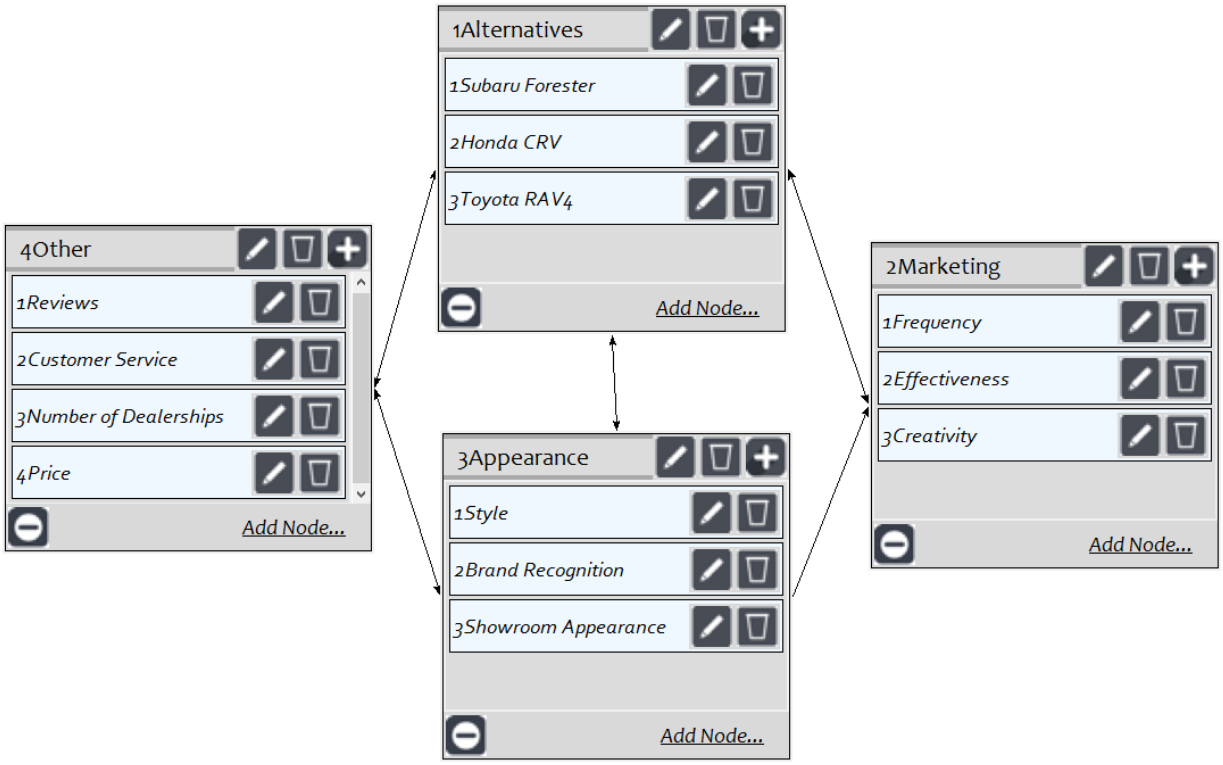


*Figure 1. Market Share Model*

Once all the appropriate links were made between the clusters, pairwise comparisons were made by using the judgements tab in the software. As I refined my judgements, I verified the inconsistency of the model; all the inconsistency measures were less than the permissible level of 0.10. I also completed a sanity check; there were no errors or warnings. The comparisons were then used to run the model synthesis to produce the results. An overview of the alternatives and the results of the model compared to the actual market data are provided in *Section 3* and *Section 4* below.

## 3. Alternatives

The alternatives for the market share model are shown below. Each of the alternatives fall within the small/compact SUV market segment and are often compared in critic reviews.

- Subaru Forester
- Honda CRV
- Toyota RAV4

## 4. Results Analysis: Synthesis & Saaty Compatibility Index

After completing the pairwise comparison judgements, I ran the synthesis. The results of the synthesis are shown below in *Figure 2*.

Here are the overall synthesized priorities for the alternatives. You synthesized from the network Main Network: Kirkpatrick_MarketShare_ANP_03272018.sdmod

| Name | Graphic | Ideals | Normals | Raw |
|---|---|---|---|---|
| 1Subaru Forester | | 1.000000 | 0.616344 | 0.274633 |
| 2Honda CRV | | 0.443595 | 0.273408 | 0.121826 |
| 3Toyota RAV4 | | 0.178874 | 0.110248 | 0.049125 |

*Figure 2. Overall Synthesis Priorities*

The ANP results show that the Subaru Forester, Honda CRV, and Toyota RAV4 should have market shares of 61.6%, 27.3%, and 11.0%, respectively. In addition, the Saaty Compatibility Index was used to analyze the consistency of the estimated market share results with the actual results. Since the Saaty Compatibility Index result was roughly 2.5, the estimated results are not compatible with the actual market share figures. The desired compatibility index is at or near 1.01; an index of 1.01 would show that the relative market share results are close to the actual market share. *Figure 3* shows a comparison of estimated and actual market share values.

| Competitor | ANP Results | Relative Market Share |
|---|---|---|
| Subaru Forester | 61.60% | 21.12% |
| Honda CRV | 27.30% | 33.63% |
| Toyota RAV4 | 11.00% | 45.24% |

*Figure 3. Comparison of Results to Actual Data*

I believe two items likely played a role in the inconsistent results from the model. Firstly, being that I completed the comparisons myself, there was likely bias introduced into the model. Secondly, there was limited information available for market share and the reliability of the data is questionable. These two factors likely contributed to the less than desirable synthesis and Saaty Compatibility Index results. To improve the effectiveness of the market share model, I would recommend working with a diverse group of individuals to create the model. By averaging the pairwise comparisons with the group throughout the model, the individual bias would be limited. Further, having a credible source of market share data would also likely improve the likelihood of consistent results between the estimated and actual market share data.