C745: Vehicle Assessment

Taylor Van Daff

Despite the company’s criteria, which prioritized safety features, maintenance costs, and price in that order, I believe a more robust picture of the vehicles can be obtained when also considering my personal ordered criteria of fuel economy, insurance costs, and resale value. When considering only company criteria, the best vehicle is the 2017 Ford Escape. However, looking at my personal criteria it is the 2017 Toyota Rav-4, and in view of all six criteria as a whole, it is evident that the 2017 Honda CR-V far exceeds peers. In order to scrape this data, I primarily used the kbb website for current vehicle values; I utilized finder.com to estimate insurance rates; and finally used cars.usnews.com to find the remaining information on price, maintenance cost, etc. In order to scrape the data I used Beautiful Soup in python to code from the page sources based on the respective tag and class location within the page. I based the code off of the Advanced Visualization web-scraping lab in the course material.

I used several charts to make these points evident in the Tableau dashboard I created to coincide with the written response. I utilized parallel charts to show how each vehicle rated amongst its peers. This was an easy choice due to the different scales of each of the criteria. I believed the parallel charts Min-Max y-axis would be the best tool to demonstrate all three criteria for each vehicle under both the company and personal criteria. Multiple criteria are able to be represented in a parallel chart despite different scales because the axis is rescaled as a Min-Max axis. Therefore, this chart was selected. In order to finagle Tableau to produce a parallel chart, I first needed to create a calculated value in excel with the equation “100\*(AVG([Current Cost])-TOTAL(MIN([Current Cost]))) /(TOTAL(MAX([Current Cost]))-TOTAL(MIN([Current Cost])))” (BzST, Shmueli). This equation allowed the values to be relocated on a scale from 1 to 100 so all three criteria could be located on the same axis. I created two similar charts based on the company criteria and personal criteria. After placing them on the dashboard, the reader can see the path of each vehicle through its respective criteria.

I also noticed that the weighting for price was incorrect. I mistakenly valued a higher price over a lower one when originally producing the charts. Using a SUMPRODUCT function in excel I created an inverse weighting scale in order to value lower prices and vehicles with lower insurance rates over those with higher. I utilized this function in conjunction with the parallel chart axis function in Tableau to revalue the axes with the proper weights and reassess the rating scheme.

I then chose two circle charts to round out my dashboard. I used the first circle chart to show the company characteristics and compare across each vehicle. I annotated the sections of the graph to show how the vehicle stood up in each category. Finally I utilized a vertical circle chart to show how the vehicles’ weighted-average rankings according to my personal criteria, company criteria, and finally the total criteria (all six categories). This chart is where the weights of each element become evident. In order to create a final sum of where each vehicle stood, I used the SUMPRODUCT function in excel to multiply each value by its respective weight, and then divide by the summation of the weights. To represent them on the circle chart, I rescaled the axis with the aforementioned Min-Max scale. The company can follow each of the ratings and parallel charts to show that, in the end, the best overall vehicle is clearly the 2017 Honda CR-V.

Source

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