

DECISION ANALYSIS

SMART: Buy A Car with Sensitivity Analysis

Terri Donovan

recorded: January, 2010

Now the nice thing about a spreadsheet is that it's very easy for you to perform a Sensitivity Analysis. And as Tony talked about, we can do a Sensitivity Analysis on any of the model inputs. These are the model inputs. But as Tony had also described, these are things that you would find in a book, like a Blue Book value of a particular thing. Or go out and find some kind of reputable source that would provide information to fill in these particular numbers.

Since most of you work in the natural resource field, some of these numbers would come about by, you know, some kind of an analysis of data. And there may be some uncertainty in those numbers, but for this particular exercise, we're going to assume that these are the values, and we're not really going to debate those values.

What we can debate, though, is to see how these choices would change depending on what these model weights would be. And so if the teenager says, "Well I think that cool should be ranked 100." Then you can simply select cell G10 and enter 100 in there and see if that effects your decision in any way. And in this case, even if the cool factor was ranked very high, the Honda still wins out - followed by the Focus, the pickup, and the Mustang in last.

So that's the basic idea behind the SMART technique. You come up with lots of different objectives. You think creatively about what your alternatives are. For each objective, you need to understand whether your goal is to minimize that objective, or maximize that. Then the next step is to go ahead and set up another table where the attributes are all standardized, and therefore, all in the same scale between 0 and 100. You apply some weights to those values, and then you compute your final scores based on those.

The weighting is, perhaps, the most difficult part of this exercise, and there are a number of different methods for arriving at these weights. Some methods are 'direct elicitation', 'swing weighting' and 'analytical hierarchy process' - which we won't go into today. But this will just give you an idea of how this overall technique works, and how you can apply it to decision-making problems. That's it for this exercise.

< 00:03:23 END >