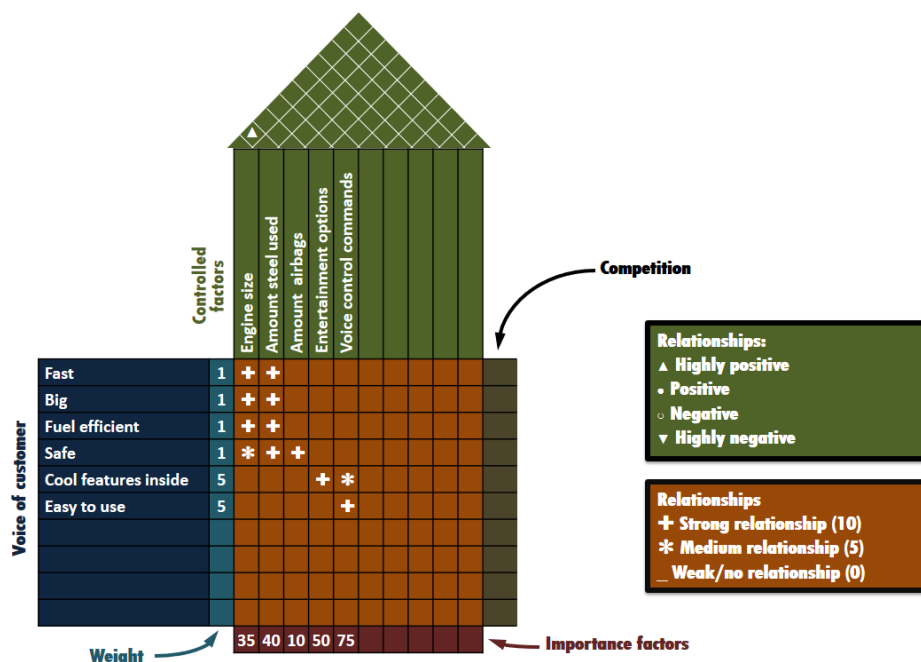


Exercise Topic: Quality Function Deployment

Exercise: Quality function deployment involves more than simply building the House of Quality, but that house is the most important part of it. Assume that you work for TATA Motors, an Indian automotive company. Assume that the company intends to launch a new SUV vehicle, especially designed for the South East Asia market. The House of Quality should play an integral part in that design. The House of Quality below is what you ended up with. Do note that is for sure not complete. More can be added, but for the sake of overview, we leave it as it is and do not add too much. How many can there be added? As much as you wish, but we generally limit it to 10 factors max in order to not lose the big picture. Please try to answer the following questions below. Please note that the answers are provided at the end of the document.



QUESTION 1: Please explain why the value 35 is written below 'engine size.'

QUESTION 2: What is the main conclusion that you can draw from this House of Quality? Please note, the data itself is just a fictional example. In real life, surely other data might roll out. Please just focus on this case.

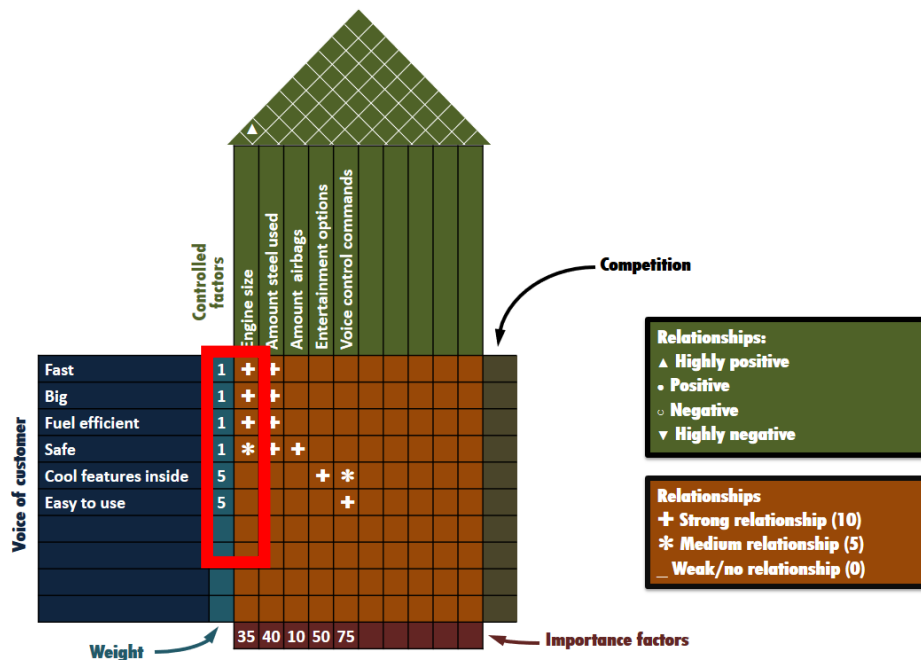
QUESTION 3: What other 'controlled factors' can you name that might be suitable to include in this House of Quality's roof?

QUESTION 4: In the top part of the roof, we show the relationships between the factors which we control. Why is a triangle used to indicate the relationship between engine size and amount of steel used? How should we interpret this?

For answers, please check the bottom of the document.

ANSWERS

QUESTION 1:



We multiply the weights of the corresponding 'voice of customer' elements on the left with the symbol weights below the column 'engine size.' From top to bottom we have:

1 x cross + 1 x cross + 1 x cross + 1 x asterisk.

A cross has the value of 10 and an asterisk has the value of 5. As such, we obtain:

$$(1 \times 10) + (1 \times 10) + (1 \times 10) + (1 \times 5) = 35.$$

QUESTION 2: It seems that the controlled factors that contribute most to satisfying the customer, are the number of entertainment options and the amount of voice controlled features. They get the highest scores (50 and 75). Does this mean that we can neglect the other controlled factors? Absolutely not. But it does show us where the focus should lie when designing this car.

QUESTION 3: There are many other factors which we can name. Please notice that in real life, we are quite pragmatic. There are literally hundreds of factors that you control in a car, from the diameter of the screws, to the size of the hood ornament. But we do not mention them all. We focus on the things we find most important. Typically, between 5-10 controlled factors are included in the House of Quality. Furthermore, we often try to cluster factors. For instance, there is nothing wrong with clustering audio features and video features under one factor, namely 'entertainment features.' This being said, possible important factors include:

- production cost
- wheel size
- grams of carbon used for the exterior

- grams of synthetics used for exterior
- number of safety features apart from airbags etc.

QUESTION 4: This one is likely to stir a debate amongst your group. This is just part of the game. Remember that you must fill this in with a multidisciplinary group so that there is less personal bias. Why is there likely to be a debate? Some might argue that a bigger engine means that you are dealing with a bigger car and this requires more steel. They would argue that there is a strong positive relationship between these two and would opt for the triangle pointing up. Others might argue that while a bigger engine usually entails a bigger car, it does not always have to entail a bigger car. You could install a big engine on a relatively small car and thus enjoy benefits such as increased horsepower without having negative drawbacks such as high fuel consumption. Eventually, your group might settle on a compromise and characterize this relationship as just a normal positive relationship and use the circle with solid fill (second from the top in the picture above) as a symbol. Please note that this is just part of the game. You are not solving a mathematical puzzle here. You are using a tool which has given great benefits for decades, but is nevertheless dependent on your inputs. We compromise all the time when dealing with these tools. Compromise is good. It means that we do not let one person's personal bias dictate the process.