

Decision Matrix Analysis

Making a Decision By Weighing Up Different Factors

(Also known as Grid Analysis, Pugh Matrix Analysis, and Multi-Attribute Utility Theory)

Imagine that your boss has put you in charge of taking on a new outsourced IT supplier. You've already identified several different suppliers, and you now need to decide which one to use.

You could decide to go with the low-cost option. But you don't want to make your decision on cost alone – factors such as contract length, underlying technology, and service levels need to be taken into consideration. So how can you make sure you make the best decision, while taking all of these different factors into account?

Decision Matrix Analysis is a useful technique to use for making a decision. It's particularly powerful where you have a number of good alternatives to choose from, and many different factors to take into account. This makes it a great technique to use in almost any important decision where there isn't a clear and obvious preferred option.

Being able to use Decision Matrix Analysis means that you can take decisions confidently and rationally, at a time when other people might be struggling to make a decision.

How to Use the Tool

Decision Matrix Analysis works by getting you to list your options as rows on a table, and the factors you need consider as columns. You then score each option/factor combination, weight this score by the relative importance of the factor, and add these scores up to give an overall score for each option.

While this sounds complex, this technique is actually quite easy to use. Here's a step-by-step guide with an example. Start by downloading our [free worksheet](#). Then work through these steps.

Step 1

List all of your options as the row labels on the table, and list the factors that you need to consider as the column headings. For example, if you were buying a new laptop, factors to consider might be cost, dimensions, and hard disk size.

Step 2

Next, work your way down the columns of your table, scoring each option for each of the factors in your decision. Score each option from 0 (poor) to 5 (very good). Note that you do not have to have a different score for each option – if none of them are good for a particular factor in your decision, then all options should score 0.

Step 3

The next step is to work out the relative importance of the factors in your decision. Show these as numbers from, say, 0 to 5, where 0 means that the factor is absolutely unimportant in the final decision, and 5 means that it is very important. (It's perfectly acceptable to have factors with the same importance.)



Use Decision Matrix Analysis to make better decisions.

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Tip:

These values may be obvious. If they are not, then use a technique such as [Paired Comparison Analysis](#) to

estimate them.

Step 4

Now multiply each of your scores from step 2 by the values for relative importance of the factor that you calculated in step 3. This will give you weighted scores for each option/factor combination.

Step 5

Finally, add up these weighted scores for each of your options. The option that scores the highest wins!

Tip:

If your intuition tells you that the top scoring option isn't the best one, then reflect on the scores and weightings that you've applied. This may be a sign that certain factors are more important to you than you initially thought.

Also, if an option scores very poorly for a factor, decide whether this rules it out altogether.

Example

A caterer needs to find a new supplier for his basic ingredients. He has four options.

Factors that he wants to consider are:

- Cost.
- Quality.
- Location.
- Reliability.
- Payment options.

Firstly he draws up the table shown in Figure 1, and scores each option by how well it satisfies each factor:

Figure 1: Example Decision Matrix Analysis Showing Unweighted Assessment of How Each Supplier Satisfies Each Factor

Factors:	Cost	Quality	Location	Reliability	Payment Options	Total
Weights:						
Supplier 1	1	0	0	1	3	
Supplier 2	0	3	2	2	1	
Supplier 3	2	2	1	3	0	
Supplier 4	2	3	3	3	0	

Next he decides the relative weights for each of the factors. He multiplies these by the scores already entered, and totals them. This is shown in Figure 2:

Figure 2: Example Decision Matrix Analysis Showing Weighted Assessment of How Each Supplier Satisfies Each Factor

Factors:	Cost	Quality	Location	Reliability	Payment	Total
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					Options	
Weights:	4	5	1	2	3	
Supplier 1	4	0	0	2	9	15
Supplier 2	0	15	2	4	3	24
Supplier 3	8	10	1	6	0	25
Supplier 4	8	15	3	6	0	32

This makes it clear to the caterer that Supplier 4 is the best option, despite the lack of flexibility of its payment options.

Key Points

Decision Matrix Analysis helps you to decide between several options, where you need to take many different factors into account.

To use the tool, lay out your options as rows on a table. Set up the columns to show the factors you need to consider. Score each choice for each factor using numbers from 0 (poor) to 5 (very good), and then allocate weights to show the importance of each of these factors.

Multiply each score by the weight of the factor, to show its contribution to the overall selection. Finally add up the total scores for each option. The highest scoring option will be the best option.

Note:

Decision Matrix Analysis is the simplest form of Multiple Criteria Decision Analysis (MCDA), also known as Multiple Criteria Decision Aid or Multiple Criteria Decision Management (MCDM). Sophisticated MCDA can involve highly complex modelling of different potential scenarios, using advanced mathematics.

A lot of business decision making, however, is based on approximate or subjective data. Where this is the case, Decision Matrix Analysis may be all that's needed.

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