Tools for Effective Decision Making

Problem solving and decision-making are important skills for business and life. Problem-solving often involves decision-making, and decision-making is especially important for management and leadership. There are processes and techniques to improve decision-making and the quality of decisions. The following are just a few examples of decision making models.

Pareto Analysis
Choosing the Most Important Changes to Make

Pareto Analysis is a very simple technique that helps you choose the most effective changes to make.

It uses the Pareto principle - the idea that by doing 20% of the work you can generate 80% of the advantage of doing the entire job. Pareto analysis is a formal technique for finding the changes that will give the biggest benefits. It is useful where many possible courses of action are competing for your attention.

How to use the Pareto Analysis tool:
To start using this tool, write out a list of the changes you could make. If you have a long list, group it into related changes.

Then score the items or groups. The scoring method you use depends on the sort of problem you are trying to solve. For example, if you are trying to improve profitability, you would score options on the basis of the profit each group might generate. If you are trying to improve customer satisfaction, you might score on the basis of the number of complaints eliminated by each change.

The first change to tackle is the one that has the highest score. This one will give you the biggest benefit if you solve it.

The options with the lowest scores will probably not even be worth bothering with - solving these problems may cost you more than the solutions are worth.

Example:
A manager has taken over a failing service center. He commissions research to find out why customers think that service is poor.

He gets the following comments back from the customers:

1. Phones are only answered after many rings.
2. Staff seem distracted and under pressure.
3. Engineers do not appear to be well organized. They need second visits to bring extra parts. This means that customers have to take more holidays to be there a second time.
4. They do not know what time they will arrive. This means that customers may have to be in all day for an engineer to visit.
5. Staff members do not always seem to know what they are doing.
6. Sometimes when staff members arrive, the customer finds that the problem could have been solved over the phone.
The manager groups these problems together. He then scores each group by the number of complaints, and orders the list:

- Lack of staff training: items 5 and 6: 51 complaints
- Too few staff: items 1, 2 and 4: 21 complaints
- Poor organization and preparation: item 3: 2 complaints

By doing the Pareto analysis above, the manager can better see that the vast majority of problems (69%) can be solved by improving staff skills.

Once this is done, it may be worth looking at increasing the number of staff members. Alternatively, as staff members become more able to solve problems over the phone, maybe the need for new staff members may decline.

It looks as if comments on poor organization and preparation may be rare, and could be caused by problems beyond the manager's control.

By carrying out a Pareto Analysis, the manager is able to focus on training as an issue, rather than spreading effort over training, taking on new staff members, and possibly installing a new computer system.

**Key points:**
Pareto Analysis is a simple technique that helps you to identify the most important problem to solve.

To use it:
- List the problems you face, or the options you have available
- Group options where they are facets of the same larger problem
- Apply an appropriate score to each group
- Work on the group with the highest score

Pareto analysis not only shows you the most important problem to solve, it also gives you a score showing how severe the problem is.
Paired Comparison
Working Out the Relative Importance of Different Options

Paired Comparison Analysis helps you work out the importance of a number of options relative to each other. It is particularly useful where you do not have objective data on which to base this decision.

This makes it easy to choose the most important problem to solve, or select the solution that will give you the greatest advantage. Paired Comparison Analysis helps you set priorities where there are conflicting demands on your resources.

It is also an ideal tool for comparing "apples with oranges" - completely different options such as whether to invest in marketing, a new IT system or a new piece of machinery. These decisions are usually much harder than comparing three possible new IT systems, for example.

How to use the Paired Comparison worksheet tool:

For each comparison, you will decide which of the two options is most important, and then assign a score to show how much more important it is.

Follow these steps to use this technique:

1. List the options you will compare. Assign a letter to each option.
2. Mark the options as row and column headings on the worksheet.
3. Note that the cells on the table where you will be comparing an option with itself have been blocked out - there will never be a difference in these cells!
4. The cells on the table where you will be duplicating a comparison are also blocked out.
5. Within the remaining cells compare the option in the row with the one in the column. For each cell, decide which of the two options is more important. Write down the letter of the more important option in the cell, and score the difference in importance from 0 (no difference) to 3 (major difference).
6. Finally, consolidate the results by adding up the total of all the values for each of the options. You may want to convert these values into a percentage of the total score.

Example:
As a simple example, an entrepreneur is looking at ways in which she can expand her business. She has limited resources, but also has the options she lists below:

- Expand into overseas markets
- Expand in home markets
- Improve customer service
- Improve quality

First she draws up the Paired Comparison Analysis table in Figure 1:
Then she compares options, writes down the letter of the most important option, and scores their difference in importance. An example of how she might do this is shown in figure 2:

Finally she adds up the A, B, C and D values, and converts each into a percentage of the total. This gives these totals:

A = 3 (37.5%)
B = 1 (12.5%)
C = 4 (50%)
D = 0.

Here it is most important to improve customer service (C) and then to tackle export markets (A). Quality is not a high priority - perhaps it is good already.

**Key points:**
Paired Comparison Analysis is a good way of weighing the relative importance of different courses of action. It is useful where priorities are not clear, or are competing in importance.

This tool provides a framework for comparing each course of action against all others, and helps to show the difference in importance between factors.
Grid Analysis
Making a Choice Where Many Factors Must be Balanced

Grid Analysis (also known as Decision Matrix analysis) is most effective where you have a number of good alternatives and many factors to take into account.

How to use the Grid Analysis worksheet tool:

The first step is to list your options and then the factors that are important for making the decision. Lay the options out on the worksheet table, with options as the row labels, and factors as the column headings.

Next, work out the relative importance of the factors in your decision. Show these as numbers. We will use these to weight your preferences by the importance of the factor. These values may be obvious. If they are not, then use a technique such as Paired Comparison Analysis to estimate them.

The next step is to work your way across your table, scoring each option for each of the important factors in your decision. Score each option from 0 (poor) to 3 (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.

Now multiply each of your scores by the values for your relative importance. This will give them the correct overall weight in your decision.

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

Example:
A windsurfing enthusiast is about to replace his car. He needs one that not only carries a board and sails, but also that will be good for business travel. He has always loved open-topped sports cars. No car he can find is good for all three things.

His options are:

- A four wheel drive (4x4), hard topped vehicle
- A comfortable ‘family car’
- An estate car
- A sports car

Criteria that he wants to consider are:

- Cost
- Ability to carry a sail board at normal driving speed
- Ability to store sails and equipment securely
- Comfort over long distances
- Fun!
- Nice look and build

First, he draws up the table shown in Figure 1, and scores each option by how well it satisfies each factor:
Figure 1: Example Grid Analysis Showing Unweighted Assessment of How Each Type of Car Satisfies Each Factor

<table>
<thead>
<tr>
<th>Factors:</th>
<th>Cost</th>
<th>Board</th>
<th>Storage</th>
<th>Comfort</th>
<th>Fun</th>
<th>Look</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weights:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sports Car</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4x4</td>
<td>0</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Family Car</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Estate Car</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

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 Grid Analysis Showing Weighted Assessment of How Each Type of Car Satisfies Each Factor

<table>
<thead>
<tr>
<th>Factors:</th>
<th>Cost</th>
<th>Board</th>
<th>Storage</th>
<th>Comfort</th>
<th>Fun</th>
<th>Look</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weights:</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Sports Car</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>9</td>
<td>12</td>
<td>27</td>
</tr>
<tr>
<td>4x4</td>
<td>0</td>
<td>15</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>28</td>
</tr>
<tr>
<td>Family Car</td>
<td>8</td>
<td>10</td>
<td>1</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td>Estate Car</td>
<td>8</td>
<td>15</td>
<td>3</td>
<td>6</td>
<td>0</td>
<td>4</td>
<td>36</td>
</tr>
</tbody>
</table>

This gives an interesting result: Despite its lack of fun, an estate car may be the best choice.

If the wind-surfer still feels unhappy with the decision, maybe he has underestimated the importance of one of the factors. Perhaps he should weight ‘fun’ by 7!

**Key points:**

Grid Analysis helps you decide between several options, while taking many different factors into account.

To use this tool, lay out your options as rows on a table. Set up the columns to show your factors. Allocate weights to show the importance of each of these factors. Score each choice for each factor using numbers from 0 (poor) to 3 (very good). 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. Select the highest scoring option.
PMI
Weighing the Pros and Cons of a Decision

PMI stands for 'Plus/Minus/Interesting'. It is a valuable improvement to the 'weighing pros and cons' technique used for centuries.

PMI is particularly useful when used in conjunction with other decision making tools. Once you have arrived at a course of action using a decision making tool, you can then apply the PMI analysis to check that the decision is actually going to improve the situation.

How to use the PMI worksheet tool:
First set up column headings for Plus, Minus and Interesting.

In the column underneath 'Plus', write down all the positive results of taking the action. Underneath 'Minus' write down all the negative effects. In the 'Interesting' column write down the implications and possible outcomes of taking the action, whether positive, negative, or uncertain.

By this stage it may already be obvious whether or not you should implement the decision. If it is not, consider each of the points you have written down and assign a positive or negative score to it appropriately. The scores you assign may be quite subjective.

Once you have done this, add up the score. A strong positive score indicates that an action should be taken while a strong negative score indicates it should be avoided.

Example:
A young professional is deciding where to live. Her question is 'Should she move to the big city?'

She draws up the PMI table below:

<table>
<thead>
<tr>
<th>Plus</th>
<th>Minus</th>
<th>Interesting</th>
</tr>
</thead>
<tbody>
<tr>
<td>More going on (+5)</td>
<td>Have to sell house (-6)</td>
<td>Easier to find new job? (+1)</td>
</tr>
<tr>
<td>Easier to see friends (+5)</td>
<td>More pollution (-3)</td>
<td>Meet more people? (+2)</td>
</tr>
<tr>
<td>Easier to get places (+3)</td>
<td>Less space (-3)</td>
<td>More difficult to get own work done? (-4)</td>
</tr>
<tr>
<td></td>
<td>No countryside (-2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>More difficult to get to work? (-4)</td>
<td></td>
</tr>
<tr>
<td>+13</td>
<td>-18</td>
<td>-1</td>
</tr>
</tbody>
</table>

She scores the table as 13 (Plus) - 18 (Minus) - 1 (Interesting) = -6

For her, the comforts of a settled rural existence outweigh the call of the 'bright lights' - it would be much better for her to live outside the city, but close enough to travel in if necessary.

Key points:
PMI is a good way of weighing the pros, cons and implications of a decision. When you have selected a course of action, PMI is a good technique to use to check that it is worth taking.
To use the technique, draw up a table with three columns headed Plus, Minus and Interesting. Within the table write down all the positive points of following the course of action, all the negatives, and all the interesting implications and possible outcomes.

If the decision is still not obvious, you can then score the table to show the importance of individual items. The total score should show whether it is worth implementing the decision.
Cost/Benefit Analysis
Evaluating Quantitatively Whether to Follow a Course of Action

You may have been intensely creative in generating solutions to a problem, and rigorous in your selection of the best one available. However, this solution may still not be worth implementing, as you may invest a lot of time and money in solving a problem that is not worthy of this effort.

Cost Benefit Analysis is a relatively simple and widely used technique for deciding whether to make a change. As its name suggests, you simply add up the value of the benefits of a course of action, and subtract the costs associated with it.

Costs are either one-off, or may be ongoing. Benefits are most often received over time. We build this effect of time into our analysis by calculating a payback period. This is the time it takes for the benefits of a change to repay its costs. Many companies look for payback over a specified period of time, e.g. three years.

How to use the Cost/Benefit Analysis tool:
In its simple form, cost-benefit analysis is carried out using only financial costs and financial benefits. For example, a simple cost benefit ration for a road scheme would measure the cost of building the road, and subtract this from the economic benefit of improving transport links. It would not measure either the cost of environmental damage or the benefit of quicker and easier travel to work.

A more sophisticated approach to building a cost benefit model is to try to put a financial value on intangible costs and benefits. This can be highly subjective (for example: Is an historic water meadow worth $25,000, or is it worth $500,000 because if its environmental importance? What is the value of stress-free travel to work in the morning?)

These are all questions that people have to answer, and answers that people have to defend.

The version of the cost benefit approach we explain here is necessarily simple.

Example:
A sales director is deciding whether to implement a new computer-based contact management and sales processing system. His department has only a few computers, and his salespeople are not computer literate. He is aware that computerized sales forces are able to contact more customers and give a higher quality of reliability and service to those customers. They are more able to meet commitments, and can work more efficiently with fulfillment and delivery staff.

His financial cost/benefit analysis is shown below:

Costs:
New computer equipment:
10 network-ready PCs with supporting software @ $1,225 each
1 server @ $1,750
3 printers @ $600 each
Cabling & Installation @ $2300
Sales Support Software @ $7500
Training costs:
Computer introduction - 8 people @ $ 200 each
Keyboard skills - 8 people @ $ 200 each
Sales Support System - 12 people @ $350 each
Other costs:
Lost time: 40 man days @ $100 / day
Lost sales through disruption: estimate: $10,000
Lost sales through inefficiency during first months: estimate: $10,000
Total cost: $55,800

Benefits:
- Tripling of mail shot capacity: estimate: $20,000 / year
- Ability to sustain telesales campaigns: estimate: $10,000 / year
- Improved efficiency and reliability of follow-up: estimate: $25,000 / year
- Improved customer service and retention: estimate: $15,000 / year
- Improved accuracy of customer information: estimate: $5,000 / year
- More ability to manage sales effort: $15,000 / year

Total Benefit: $90,000/year

Payback time: $55,800 / $90,000 = 0.62 of a year = approx. 8 months

Tip:
The payback time is often known as the break even point. Sometimes this is more important than the overall benefit a project can deliver, for example because the organization has had to borrow to fund a new piece of machinery. The break even point can be found graphically by plotting costs and income on a graph of output quantity against $. Break even occurs at the point the two lines cross.

Inevitably the estimates of the benefit given by the new system are quite subjective. Despite this, the sales director is very likely to introduce it, given the short payback time.

Key points:
Cost/Benefit Analysis is a powerful, widely used and relatively easy tool for deciding whether to make a change.

To use the tool, first work out how much the change will cost to make. Then calculate the benefit you will receive from it.

Where costs or benefits are paid or received over time, work out the time it will take for the benefits to repay the costs.

Cost/Benefit Analysis can be carried out using only financial costs and financial benefits. You may, however, decide to include intangible items within the analysis. As you must estimate a value for these, this inevitably brings an element of subjectivity into the process.
SWOT Analysis
Identifying Strengths, Weaknesses, Opportunities and Threats

The SWOT analysis is an extremely useful tool for understanding and decision-making for all sorts of situations in business and organizations. SWOT is an acronym for Strengths, Weaknesses, Opportunities, and Threats. The SWOT analysis headings provide a good framework for reviewing strategy, position and direction of a company or business proposition, or any other idea. Completing a SWOT analysis is very simple. SWOT analysis also works well in brainstorming meetings. Use SWOT analysis for business planning, strategic planning, competitor evaluation, marketing, business and product development and research reports. You can also use SWOT analysis exercises for team building games.

A SWOT analysis is a subjective assessment of data which is organized by the SWOT format into a logical order that helps understanding, presentation, discussion and decision-making. The four dimensions are a useful extension of a basic two heading list of pro's and con's

SWOT analysis can be used for all sorts of decision-making, and the SWOT template enables proactive thinking, rather than relying on habitual or instinctive reactions.

The SWOT analysis template is normally presented as a grid, comprising four sections, one for each of the SWOT headings: Strengths, Weaknesses, Opportunities, and Threats. The SWOT template includes sample questions, whose answers are inserted into the relevant section of the SWOT grid. The questions are examples, or discussion points, and obviously can be altered depending on the subject of the SWOT analysis. Note that many of the SWOT questions are also talking points for other headings - use them as you find most helpful, and make up your own to suit the issue being analyzed. It is important to clearly identify the subject of a SWOT analysis because a SWOT analysis is a perspective of one thing, be it a company, a program, a proposition, an idea, a policy method, option, etc.

Be sure to describe the subject for the SWOT analysis clearly so that people can contribute to the analysis, and those seeing the finished SWOT analysis properly understand the purpose of the SWOT assessment and implications.
<table>
<thead>
<tr>
<th>strengths</th>
<th>weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advantages of proposition?</td>
<td>Disadvantages of proposition?</td>
</tr>
<tr>
<td>Capabilities?</td>
<td>Gaps in capabilities?</td>
</tr>
<tr>
<td>Competitive advantages?</td>
<td>Lack of competitive strength?</td>
</tr>
<tr>
<td>USP’s (unique selling points)?</td>
<td>Reputation, presence and reach?</td>
</tr>
<tr>
<td>Resources, Assets, People?</td>
<td>Financials?</td>
</tr>
<tr>
<td>Experience, knowledge, data?</td>
<td>Own known vulnerabilities?</td>
</tr>
<tr>
<td>Financial reserves, likely returns?</td>
<td>Timescales, deadlines and pressures?</td>
</tr>
<tr>
<td>Marketing - reach, distribution, awareness?</td>
<td>Cash flow, start-up cash-drain?</td>
</tr>
<tr>
<td>Innovative aspects?</td>
<td>Continuity, supply chain robustness?</td>
</tr>
<tr>
<td>Location and geographical?</td>
<td>Effects on core activities, distraction?</td>
</tr>
<tr>
<td>Price, value, quality?</td>
<td>Reliability of data, plan predictability?</td>
</tr>
<tr>
<td>Accreditations, qualifications, certifications?</td>
<td>Morale, commitment, leadership?</td>
</tr>
<tr>
<td>Processes, systems, IT, communications?</td>
<td>Accreditations, etc?</td>
</tr>
<tr>
<td>Cultural, attitudinal, behavioral?</td>
<td>Processes and systems, etc?</td>
</tr>
<tr>
<td>Management cover, succession?</td>
<td>Management cover, succession?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>opportunities</th>
<th>threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market developments?</td>
<td>Political effects?</td>
</tr>
<tr>
<td>Competitors’ vulnerabilities?</td>
<td>Legislative effects?</td>
</tr>
<tr>
<td>Industry or lifestyle trends?</td>
<td>Environmental effects?</td>
</tr>
<tr>
<td>Technology development and innovation?</td>
<td>IT developments?</td>
</tr>
<tr>
<td>Global influences?</td>
<td>Competitor intentions - various?</td>
</tr>
<tr>
<td>New markets, vertical, horizontal?</td>
<td>Market demand?</td>
</tr>
<tr>
<td>Niche target markets?</td>
<td>New technologies, services, ideas?</td>
</tr>
<tr>
<td>Geographical, export, import?</td>
<td>Vital contracts and partners?</td>
</tr>
<tr>
<td>New USP’s?</td>
<td>Sustaining internal capabilities?</td>
</tr>
<tr>
<td>Tactics - surprise, major contracts, etc?</td>
<td>Obstacles faced?</td>
</tr>
<tr>
<td>Business and product development?</td>
<td>Insurmountable weaknesses?</td>
</tr>
<tr>
<td>Information and research?</td>
<td>Loss of key staff?</td>
</tr>
<tr>
<td>Partnerships, agencies, distribution?</td>
<td>Sustainable financial backing?</td>
</tr>
<tr>
<td>Volumes, production, economies?</td>
<td>Economy - home, abroad?</td>
</tr>
<tr>
<td>Seasonal, weather, fashion influences?</td>
<td>Seasonality, weather effects?</td>
</tr>
</tbody>
</table>
The following SWOT analysis example is based on a business-to-business manufacturing company, who historically rely on distributors to take their products to the end user market. The opportunity, and therefore the subject for the SWOT analysis, is for the manufacturer to create a new company of its own to distribute its products direct to certain end-user sectors, which are not being covered or developed by its normal distributors.
### strengths
- End-user sales control and direction.
- Right products, quality and reliability.
- Superior product performance vs. competitors.
- Better product life and durability.
- Spare manufacturing capacity.
- Some staff has experience of end-user sector.
- Have customer lists.
- Direct delivery capability.
- Product innovations ongoing.
- Can serve from existing sites.
- Products have required accreditations.
- Processes and IT should cope.
- Management is committed and confident.

### weaknesses
- Customer lists not tested.
- Some gaps in range for certain sectors.
- We would be a small player.
- No direct marketing experience.
- We cannot supply end-users abroad.
- Need more sales people.
- Limited budget.
- No pilot or trial done yet.
- Don't have a detailed plan yet.
- Delivery-staff need training.
- Customer service staff needs training.
- Processes and systems, etc
- Management cover insufficient.

### opportunities
- Could develop new products.
- Local competitors have poor products.
- Profit margins will be good.
- End-users respond to new ideas.
- Could extend to overseas.
- New specialist applications.
- Can surprise competitors.
- Support core business economies.
- Could seek better supplier deals.

### threats
- Legislation could impact.
- Environmental effects would favor larger competitors.
- Existing core business distribution risk.
- Market demand very seasonal.
- Retention of key staff critical.
- Could distract from core business.
- Possible negative publicity.
- Vulnerable to reactive attack by major competitors.