

The value of information in an imperfect world

Many managers mistakenly believe that information always adds value. It's an easy argument that if we can get our hands on enough data, we can make our decisions with confidence. Sometimes this is true; often, it is not.

Information is almost never perfect. You can test your prototype, survey your customers, and gather all kinds of data, but there will always be a probability that you will get erroneous or misleading results. Managers need to be able to determine whether information has value in a given situation, and how to usefully estimate that value.

Let's say you are planning to develop and produce a new widget. You must decide how big a manufacturing facility to build, how to establish your supply chain and agreements with suppliers, what your sales channels will be and the logistical methods you will use to service them, your target consumer/customer, the best price point to extract maximum rents, etc. The general (usual) management assumption is these decisions must be made either now or in the very near future with available information.

But this is rarely the case. Management have another decision to make: Should we spend time and money to acquire new information to help us make this decision? If so, just how much should we be willing to spend?

Market research, additional prototyping or trials, expert opinion on political and/or sovereign risk in the foreign target market chosen for the new manufacturing base – additional information on any or all of these subjects *might* enable better evaluation and decision on a multi-million dollar business case. But how do you know if there is value in the extra resource and cash expense to find out?

The straightforward approach to answering the 'value of information' question is known as Bayesian transformation. This is the method a **decision analyst** will use to calculate the value of information.

But a **decision maker** (the manager; you) doesn't need to know how to perform this calculation, providing he trusts the analyst. He just needs to be aware of the **nature** of value-of-information calculations.

The value of any piece of information is the difference between the expected value of the project (or asset, or portfolio) **with** the information, and the expected value **without it**. The Bayesian transformation is merely the tool used for calculating that difference.

The following nine (9) issues have significant bearing on the value of information, so project and business managers must be aware of the following:

1. Information has value only if you would potentially alter a decision based on the information that you obtain (would it change your decision to invest in a new project or the size of the investment?)

If the information wouldn't influence your decision it has no value.

This may sound incredibly obvious but it is often overlooked. People make decisions based on non-critical information all the time.

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2. Information that would cause you to make a different decision only under circumstances that have a zero or near-zero probability of occurrence has no value.
3. Corollary to Number 1 above: By itself, *increased confidence* has no economic value. Greater confidence might mean something to the manager making the decision (you), but it means *absolutely nothing* to the shareholders.
4. Corollary to 3 above: If the cost of information exceeds the calculated value you are better off deciding without it, *regardless of how uncertain you are*.

Put another way, if the new analysis costs more than it will save you and doesn't resolve the uncertainty, fuhgeddaboudit. You're just postponing a decision you don't want to make because it makes you uncomfortable.

5. Perfect information is exceedingly rare – after all, markets *do* fail. Don't ever forget that and be wary of everyone who claims to have complete information.
6. Despite what is said in #5 above, the value of perfect information can often be calculated, and this number IS useful. It represents the absolute maximum amount you should be prepared to pay to acquire the information, and only if it's *really good*. You should almost always pay less than the calculated value of perfect information.
7. The value of imperfect information can sometimes be estimated (note the difference from 'calculated' mentioned in 6 above), depending on how much we know about the reliability of this information. When this calculation is done it yields a better (and always lower) estimate of the maximum amount you should be willing to pay for the information.
8. If your company is in the business of searching for something extremely rare (anti-cancer drugs, the next hit movie/tv series/book, a low-carbohydrate beer with flavour) then even extremely reliable information needs to be thought about very carefully.

It might not be telling you what you think it is telling you because of existing heuristics and biases that affect decision making under conditions of uncertainty.

9. The value of information increases with:
 - a. The probability of making a wrong decision without any new information;
 - b. The cost of being wrong (including lost opportunity cost); and
 - c. Increasing the reliability of the information.

The above points are only intended as brief thought prompts, offered to provide a different perspective on the value of information as it pertains to decision making in an uncertain business or project environment.

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