Impact of risks: *don't be surprised.*

When you are responsible for a project you want to deliver the agreed scope, by the planned timelines within budget. I have seen the disappointment in the eyes of the project sponsor and project managers when they realize that the end-product is different from initial scope, timelines are exceeded and/or more budget was required. I know from experience that even if proper scoping, planning and budgeting was done at the project start, 'things happen' along the way that have impact on the end-product, timelines and/or budget. This results in disappointment when it comes as 'surprise'. When we look back we will probably see that we should not be 'surprised' as we identified risks during our project (a number already at the start); some needed effort to mitigate and some resulted (anyway) in issues impacting our project. When we not only identify risks, but also recognise and manage the impact risks have on the project scope, timelines and budget, we will not be surprised with disappointment. In this article I describe how to recognise and manage the impact of risks on a project.

Recognise and manage the impact of project risks

Within the world of project management it is customary to recognize risks. If we do this properly, we indicate the probability that the risks materialize, when this materialization may happen and what the impact is when it happens. If we use the common terminology, we indicate a risk that has materialized as an issue, we indicate the impact the issue has on the project and we indicate the time we expect the issue to last. We often do this by indicating whether the probability of a risk is *low* / *medium* / *high* and - in the same way - whether the possible impact (i.e. for the issue the actual impact) is *low* / *medium* / *high*. In this article, I will only mention risks, because issues can be considered as risks with a 100% certainty.

In my experience it may be difficult to arouse enthusiasm among all the people involved in a project (project team members, delivery manager, sponsor) for the 'handling' of risks, if one does not translate the possible impact of those risks into one of the three project variables: *cost*, *time* and *quality*. When we take the risks into account and we indicate the probability and impact, but also calculate them in terms of budget (costs), delay (time) and a lesser quality of the end product (quality), then the real outcome of the project will be clear to everyone.

Clarity is obtained by adding in a budget overview (actual + estimated) risks to the values of the milestones for 'planning' and the 'product description', in order to compare them to the values without risks. The following describes how this can be achieved.

It is common to indicate per risk what the probability is that this risk materializes (happens). In order to be able to calculate, we must determine, with all parties involved, which values we attach to *low*, *medium* and *high*. It is important that we always do this in the same way (for every risk in the project). For example, we could decide that 30% = *low*, 60% = *medium* and 90% = *high* (and 100% = an issue, for then the risk has materialized).

We also have to make an estimate of when the risk will materialize. Perhaps it will be difficult to give an exact date, especially at the start of the project when we are identifying the risk and it still is a long time away. That is not a problem; the date can always be adjusted when the time draws nearer. It may therefore be a rough estimate; we just need a date to calculate with.

The impact that we are used to describe in terms of quality must now be quantified. We must therefore answer the following questions for the event that the risk does materialize:

- Costs: what would be the extra costs that must be incurred to realize the result (possibly adjusted and possibly later)?
- Planning: what would be the delay to deliver the (possibly adjusted) result against the (possibly adjusted) costs?
- Quality: what would be the decreased value of the result, if it is delivered against the (possibly adjusted) costs on the (possibly adjusted) date?

Additional costs can be determined by converting extra deployment of project team members into costs and taking into account any additional external costs.
Delay speaks for itself; what will be the date without impact of the risk and what would be the date if the risk materializes?

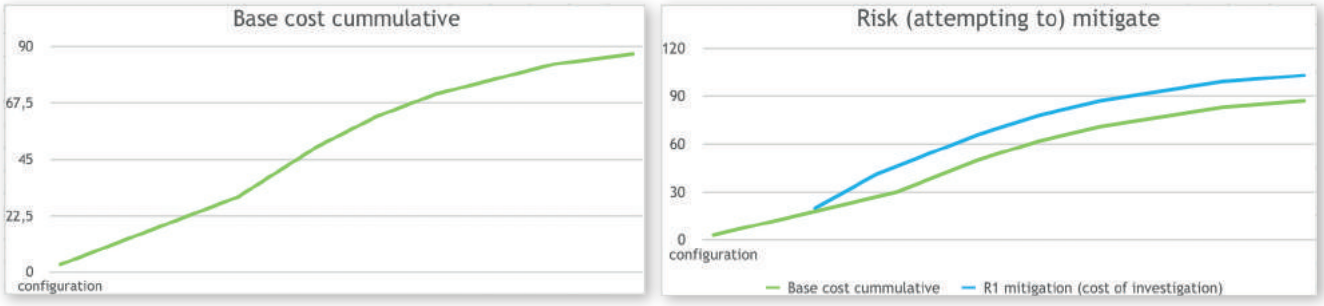
Quality is a little more complicated. If a business case has been drawn up for the project, a value has been given to the products of the project. If no business case has been drawn up, this can still be done (at least for the products that are affected by the risk). Another way is to ask the client what value of economic 'loss' he connects to the product if the product changes due to the impact of the risk. The loss often has to do with the so-called 'scope'. We expect the product to deliver a certain value (gain of efficiency or effectiveness) for a certain number of employees and/or for certain work processes; because of the risk we now expect it will deliver only part of the efficiency or effectiveness gain, for example, for only a part of the employees(no benefit for the other employees). We will have to indicate what the 'devaluation' of the end product will be (the product would now be of lesser quality due to the risk) if the risk materializes.

In order to illustrate the decisions regarding the handling of risks, we will use the implementation of a software package as an example project, with its configuration, implementation and aftercare phases. In this example, we treat a risk that merely has an impact on the project costs. As indicated, you can convert the impact on lead time or quality also into costs, in which case you would follow a similar decision process.

Case: implementation of a software package

During configuration, it becomes clear that the requirements that are set for supporting a specific work process cannot be configured. To find a solution extra research is needed (costs). If it turns out that a work process cannot be supported, an extra module will have to be purchased (costs). Initially we assume the turnaround time will not be affected by this risk[1] and that the lower quality[2] (not supporting the work process) is not acceptable.

Project costs are calculated as part of the project plan. The graph indicates that the project and its three phases will last 30 weeks and will have an expected cost of 87. This is part of the client's approval before the start of the project.

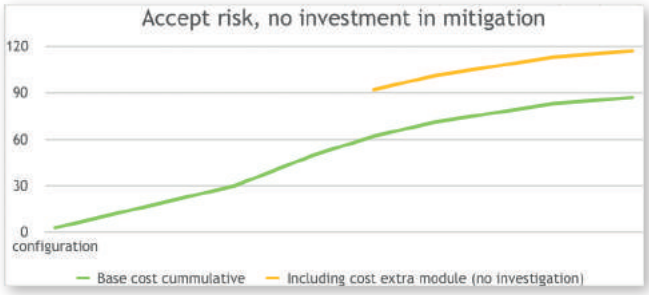


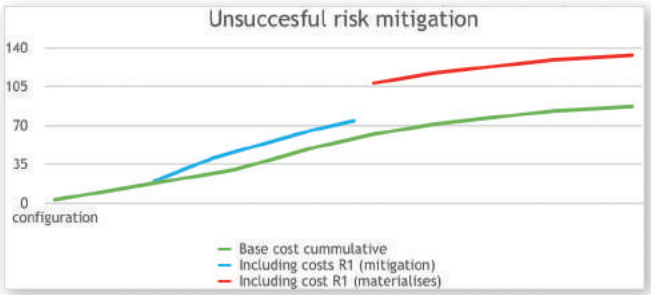
1 If a risk does have an impact on the lead time, this often translates into higher project costs (the duration of project expenses is stretched).
2 If the impact on quality is not significantly higher than the extra project costs, then this must be taken into consideration. This can be done by including the cost of the lesser quality in the valuation of options; how to do this is also indicated in this example.

In our example 5 weeks of research are required with a total cost[3] of 16. The graph shows what this means for the final costs of the project; instead of 87, the costs with the research (mitigation) amount to 103.

Although it is good that project costs become clearer this way, it is not sufficient to make a substantiated decision; this also requires viewing these costs in relation to the costs of purchasing the extra module if it turns out that the issue cannot be solved (without this extra module).

The graph on the left below, shows what the project costs[4] will be in case the decision is taken to not further investigate (to not mitigate the risk, but to accept it) and to purchase (and implement) the extra module. In order to be able to make the decision whether it is 'worth' to carry out the research, you must also take into account the possibility that after the research the extra module must be purchased; then costs amount to 133 (see graph on the right).

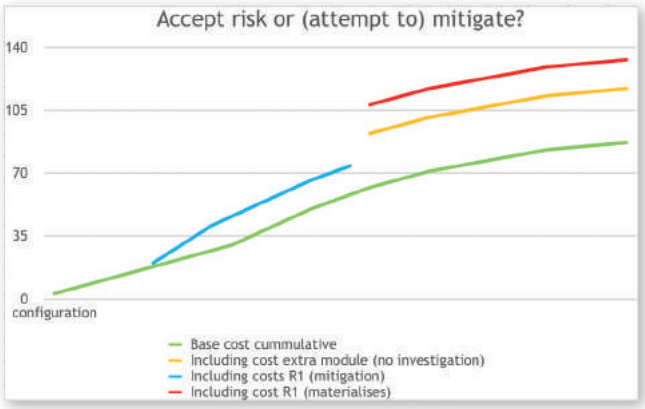




Whether you should investigate (mitigate risk) depends on the odds that the research is not successful. If this chance is *low* enough, the research can be justified. The question is therefore: is the chance of a non-successful research (cost = 16) worth trying to mitigate the extra costs of 30 for the extra module.

One could also approach this 'scientifically' by including the probability into the calculation for the consideration:

- Probability low (30%): 10 (= 30% x 30)
- Probability medium (60%): 18 (= 60% x 30)
- Probability high (90%): 27 (= 90%)



So if the probability that the risk cannot be mitigated (that the research does not lead to a good solution and the extra module is needed) is *low*, the research must be carried out; if the probability is high, the research does not make sense ('wasted money'). For a *medium* risk the decision is difficult (weighted costs of the extra module are almost equal to research costs). In the latter case, it is a good idea to keep monitoring the probability that the risk mitigates during the research and stop the research immediately if the probability becomes *high*.

3 If the quality is less affected than the costs of the research (the impact on the unsupported process is small), then you should not carry out the research (and of course you do not purchase the extra module) and accept the lesser quality of the solution.

4 If the quality is less affected than the costs of the extra module (the impact on the unsupported process is not very large), then you do not purchase the extra module. Because the impact on the quality is greater than the research costs (otherwise you had already decided not to carry out the research in a previous stage), you will carry out the research. In case of an unsuccessful outcome of the investigation, you accept the lesser quality of the solution and do not purchase the extra module.