

Building decision-making capabilities for the “Decisive Decade”

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Abstract

We all know that decision-making is pretty important in asset management. And many organisations are investing fortunes in better data systems, analytics and investment planning tools or processes. But what about the thousands of day-to-day decisions that people make in every organisation? How can we establish good habits and consistent value criteria? How can we reduce bias and the effects of conflicting agendas? And how can we help people to treat the risk, reputation, social responsibility and sustainability implications of their decisions more actively and appropriately. This paper shares some of the leading international research into building better decision-makers within an asset-intensive organisation. It explores the mix of process disciplines, education, tools and motivations/culture that are needed to establish better, and more consistent, “distributed” decision-making. And it will share case studies of what can be achieved.

Keywords: Asset management, decision-making, life cycle, value, risk, optimisation, strategy, culture, consensus, stakeholders.



Climate change

COVID-19

Geopolitics

Demographics

Aging assets

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Introduction

We all know that major changes are needed in the face of rapidly developing global challenges. The next 10 years have been described as the “Decisive Decade”. What we choose to do, or not do, in the next few years will have great consequences for centuries or millennia to come.

But it is hard to make the practical connections between ‘big issue’ agendas (such as climate change, energy transition, geopolitics, sustainability and social responsibility) and our day-to-day actions, priorities and habits. This applies both in the workplace and in our personal lives. Deciding what and how much to sacrifice in the short term, for the benefit of the long term – and perhaps a multi-generational long term – is very difficult. And this is especially so if every day is already being spent in trying to keep multiple interests happy, within tight resource, financial and time constraints. The problems have several manifestations:

- How do we identify *which* changes or adjustments would have *real effect* on sustainability etc (without unintended negative consequences)?
- How can we *quantify the value* of long-term motivations so that they can be incorporated into business case justifications and more consistently managed against other priorities?
- How can we *communicate* such value effectively to those who have conflicting agendas?

In tackling such challenges, research² has shown

- a) how good disciplines and processes can be established to force *the right questions to be asked*,
- b) how we can put a *quantified value* on even the difficult topics of risk, sustainability and intangibles such as reputation and social responsibility,
- c) better ways to handle *trade-offs* and compromises,
- d) how to deal with *uncertainty* in a safe and transparent manner, and
- e) how to *build consensus* between stakeholders.

These sorts of attributes are increasingly recognised to be a necessary part of a structured “Decision-Making Framework” – in addition to the more governance determinations of who has what authority and responsibility to make what sort of decisions, using what processes and value criteria.

Last year, at AMPEAK, I introduced some of the key elements of an effective framework for asset management decision-making. Here we now consider some of the challenges in effective *implementation* - to establish better decision-making capabilities across the whole organisation. This involves tackling some aspects that many organisations find particularly difficult. These ‘tricky’ areas include:



Human factors:

the knowledge, expertise, psychology, egos, tribalism, conscious and unconscious biases, vested interests and cultural contexts



Uncertainties & Volatilities:

Assumptions, influences, considerations and decision criteria that are particularly difficult to quantify in terms of significance (e.g. risk, sustainability, reputation, environmental and social responsibility)

² See www.SALVOproject.org



Complexities & Trade-offs:

Determining the best value compromise between multiple, interacting, uncertain and changing factors, objectives, opportunities and constraints



“Big data”:

Coping with the twin problems of knowing that we need new/better information to make better decisions, but trying also to avoid being swamped by the volume and ‘noisiness’ of collectable data (and the fancy analytics).

We have not time or space to cover all of these in this paper, so I will focus on one area, namely how we can help everyone to incorporate *long-termism* better into their decision-making. This is a very common example of the second area above (Uncertainties and Volatilities) and is also encountered when trying to handle Trade-offs (e.g. between short-term and long-term impacts). These are also issues that are particularly relevant to the global and strategic challenges that we face i.e. how to take account of large but very uncertain future consequences within the priorities, constraints and opportunities of today’s decisions.

Handling the scale and uncertainty of future impacts

When considering sustainability, environmental and other, often uncertain, future consequences, we need to recognise that these are ‘business drivers’ like the more commonly mentioned costs, risks and performance. The fact that they represent time-delayed effects does not mean that they can be ignored in the short term. Just kicking the can down the road (deferring their consideration and putting off the decisions) is not acceptable. The compound effect of such deliberate or unconscious deferral is going to be catastrophic, and we are increasingly and rightly accountable for the consequences that we create for future generations.



The good news is that such factors can and must be incorporated into a structured framework in which “value” is recognised by the organisation. This requires us to attribute scales of significance to such responsibilities, so that they can be included in cost/benefit evaluations, in investment justifications and for fair comparisons between different options, strategies and priorities. Unfortunately, however, the long-term future impacts are much more uncertain in scale and timing compared to the more immediate financial or operational performance impacts. Therefore, just like the consideration of risks (whose probabilities and consequences may also be very uncertain), we need to recognise and handle the uncertainty itself as part of the decision-making process. The uncertainty can be ‘priced’ with the evaluation techniques³, and this monetized vulnerability then used as the basis for contingency planning and the justification of flexibility, to allow for emerging changes or adjustments as information improves.



Given the time lag before sustainability, environmental or other long-term consequences will be manifested, they are also extremely difficult to measure. Success or failure will not be evident until it is too late. So, in addition to the incorporation of such factors into the value and decision-making framework, we also need to consider how best to recognise progress and ‘success’ while still on the road to delivering such outcomes. This is where correlations need to be understood – so that activities and observable

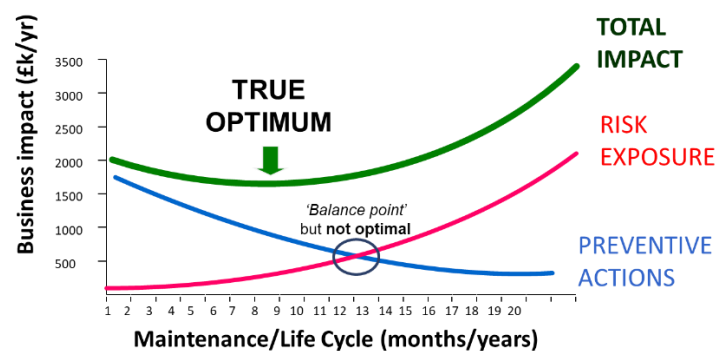
³ SALVO research showed how a the ‘cost of uncertainty’ can be quantified through sensitivity analysis with modern cost/risk modelling tools.

symptoms can be used as ‘predictive’ or leading indicators. Carbon emissions are a good example. Greenhouse gas emissions are generally recognised to be well-correlated to the global warming. So we can both include a ‘cost of carbon’ into our decision-making to represent the importance of our environmental consequences, and also use this as a measure of our effectiveness in addressing this ‘business driver’. Other long-termism considerations have similar progress-measurable symptoms, and these can be used as a proxy for the longer horizon outcomes that we seek to influence.

Trade-offs between short term and long-term impacts

Almost every asset management decision involves some sort of trade-off. The most familiar ones are quoted in terms of the tensions between Capex and Opex, between costs, risks and performance and between short-term and long-term benefits (or other impacts). There are even trade-offs between the strategic environmental priorities. Strategic investments in better storm drainage facilities (to mitigate a growing expectation of intense rainfall events) means that more water goes straight to rivers or sea. This might conflict with another strategic responsibility to sustain groundwater stocks (aquifer levels) and water supplies for future generations.

An example of the learning that is needed lies in a common conceptual mistake when handling trade-offs and compromise. Just think how often you hear the reference to trying to ‘balance’ costs, risks and performance. Yet this is NOT what we should be trying to do. Balancing seeks a point of equality, where the pain equals the gain, or the costs/risks are the same as the benefits. The optimal (best value) decision is quite different: it is a maximum degree of *imbalance* of benefits to costs and risks. In other words, it is the highest ‘gain to pain’ ratio, where all stakeholder impacts, positive and negative, have been included, and over a time horizon in which they will occur. This difference is often illustrated correctly (see figure below) but the concept is still widely mis-applied in day-to-day decision-making. Asset interventions and expenditures are, for example, targeted on the level of the risk that is perceived, instead of the correct ‘bang per buck’ *ratio* (the degree of potential risk *reduction* to the (preventive) \$\$ being spent). The same conceptual adjustment is needed for other decision influences. Short-term and long-term impacts represent similar trade-offs. Investments to build resilience against flooding may need to be traded against strategic priorities to conserve groundwater levels. Reductions in greenhouse gas emissions need to be traded against costs and short-term performance goals. In all cases, our decision-making needs to seek the combined effect or ‘total impact’ – what is the ‘least worst’ combination, corresponding to the best value option, scenario or plan.



Putting a price/value on the future

Of course, future impacts are already considered in many evaluation and decision-making processes. We use discounted cashflow to convert future costs and benefits into today’s equivalent value. But can we apply these same methods for the mega-trends, potentially existential risks and fundamental sustainability concerns? The effect of discounting tend to reduce the (present day) significance of future cashflows or impacts. A dollar/pound/yen in the hand today is worth more than one we might receive in 10 years’ time. But what if the benefits of waiting (such as the value to future generations) need to be given escalated importance? Should we be considering, perhaps, a form of ‘negative discounting’ to force a positive long-termism bias into our evaluations and justifications?

This is not such a crazy idea: there is good precedent in the discipline of safety risk management. At the extremes of low probability, high consequence events (potential major catastrophes), the UK Health and Safety Executive requires, in ‘safety case’ legislation⁴, an ALARP⁵ approach to the risk. And, recognising that low probabilities and high consequences are inherently uncertain in their estimation, the precautionary principle also applies. We have to be conservative when faced with greater uncertainties. A similar approach can therefore be used for the big uncertainties and existential threats of global warming, environmental impact and sustainability. By establishing similar ‘rules of the game’, therefore, within an organisation’s value and decision-making framework, we can introduce a proportionate and appropriate influence upon asset management decisions, investments and priorities.

Of course, many organisations already include sustainability in their core values and strategic priorities. However, the degree of priority and significance remains a tricky subject to quantify or monetize in a form that can then be traded against other goals, priorities and opportunities. The SALVO research has shown us how this can indeed be done. It is gratifying to see how many organisations around the world are using such a structured approach to provide consistency, transparency and accountability to their asset management decisions. And this includes quantified effects on reputation, environmental responsibility, sustainability and other ‘intangibles’. Similarly, the current and growing enthusiasm for special studies and modelling of asset investment plans has stimulated good thinking about how to incorporate such strategic business drivers.

The next challenge for many organisations, however, is to extend from ‘special case’ strategies and major investment decisions into the wider area of *distributed* decision-making; helping to improve the day-to-day decisions in operations, design, construction, procurement, maintenance, resourcing etc. These too need to be more holistic and value-based, including the long-term impacts and secondary consequences. And such rollout of capabilities involves education, processes, tools, culture change and changes to the ways in which success is recognised.

Summary and conclusions

The scale of the issues, the great uncertainties and our competing priorities make it imperative that our decision-making capabilities are given a boost. And I don’t mean just the ‘big decisions’ about strategy and capital investment. The most profound global effects are likely to come from groundswell adjustments in the many small decisions that are being made daily by everyone. These can certainly be improved by development and dissemination of a clear, understandable and proportionate decision-making framework to define value and decision-making criteria, governance responsibilities and accountabilities, required consultations, collaborations and evaluation processes. But alongside such desirable rigour, there are also competencies and capabilities that we can all learn and practice. The lessons learnt by the SALVO community included how we can do better in:

- a) clearer **identification** of the *real* issues and options,
- b) **quantification** (or scaling) of significance, *including intangibles and long-term outcomes*,
- c) cost/benefit **evaluation** and optimisation (*resolving trade-offs*),
- d) handling of **uncertainty** and
- e) **communications** skills to achieve understanding and acceptance by those affected.

These capabilities need to be developed both formally, in our organisations, and informally, in our personal choices, values and habits. One thing we can be sure of, however, is that our decision-making will be in the spotlight during the ‘decisive decade’.

⁴ UK Control of Major Accidents and Hazards (CoMAH) regulations <https://www.hse.gov.uk/comah/>

⁵ **As Low As Reasonably Practicable**: further risk reduction must be shown to be ‘disproportionately’ expensive.