The Building Blocks of a Successful Contingency Plan

Part Two: Uncertainty Management in Construction Projects

Making informed decisions through data-driven insights can be the linchpin of a successful construction project. Now the dust has started to settle following the global COVID-19 pandemic, project owners should review the past and look to the future with fresh eyes to quantify and analyse risk in the right way. Here, Moj Kesheh, a construction delay and risk management expert at FTI Consulting in London, explains the methods that can be used to manage emerging uncertainties to create contingency plans for operational, strategic and commercial advantage.

Eyes Wide Open

Uncertainty exists in all construction projects, albeit in different shapes and sizes. The shorter the project duration, the less time there is for things to go wrong. The more innovative or complex the project, the greater the opportunity for the unexpected. We outline the key challenges of uncertainty management in part one of our article series here.

Through diligent project planning and robust uncertainty management, project owners can have greater control over the future, enabling them to take advantage of opportunities as they arise. But how can you efficiently identify prevailing uncertainties?

Recollection: Learning From the Past

Recollection enables us to review and examine past experiences within similar and non-similar situations. Through this process, you gain invaluable information about the early warning signals you had prior to those events, their cause and effect, and most importantly the actions that could have been taken to change the outcome.

Reference-class forecasting ("RCF") is one form of recollection, which has been described as "*the single most important piece of advice regarding how to increase accuracy in forecasting through improved methods.*"[1] Those involved in a project often pay little attention to past projects and fail to consider uncertainties and contingency plans. As Bent Flyvbjerg of Oxford Saïd Business argues, *"The thought of going out and gathering simple statistics about related projects seldom enters a planner's mind. Planners may consider building a subway and building an opera house to be completely different undertakings with little to gain from each other. In fact, the two may be – and often are – quite similar in statistical terms, for example, as regards to the size of cost overruns."*[2]

Through a proper reference-class forecasting exercise, you can identify potential black swan events that have an extreme impact and take you by surprise.[3] The COVID-19 pandemic was a wake-up call for everyone; it forced project owners to take recollection seriously and plan through a pessimistic lens. Although reference-class forecasting is essential, it is not enough on its own; it works in tandem with anticipation.

Anticipation: Predicting the Future

To effectively mitigate potential risks, you must understand the potential risks and uncertainties associated with future works; this can be achieved through scenario planning. By 'time travelling' you can identify a host of plausible reasons, early warnings, uncertainties and possibilities relating to the project's failure in advance. This provides the opportunity to build risk response, contingency and fallback plans and strategise for the future.

Scenario planning can be conducted using risk modelling tools that are available in the market. This exercise leverages the data generated from recollection to simulate a range of potential futures and assigns a probability to all potential risks and uncertainties to provide project owners with a more robust model. Some futures may have positive, successful and favourable outcomes, whilst others may be more unfavourable. Through a backcasting technique, it is possible to work backwards to identify issues and transform the ideal future into reality.

When used alongside recollection and backcasting, project owners can improve their ability to make more programmatic and rational decisions to increase the probability of project success.

Key Methods For Evaluating Project Risk

In addition to scenario planning, project owners need to conduct a qualitative and quantitative risk analysis process applying mature judgement.

Qualitative scoring methods

A qualitative risk analysis should be the initial step to open a discussion between the project team to identify and prioritise risks and uncertainties without relying on it too much to make decisions.

Qualitative risk analyses separate the risks you may ignore (i.e., those with low-risk rating) from those which require further attention to (i.e., those with high-risk rating), enabling the project team to focus their resources appropriately. Methods such as weighted risk score or heat and risk maps *"should be used with caution, and only with careful explanations of embedded judgements."*[4]

You may recall examples of where these risk matrices failed to benefit your decision-making in previous projects. An article on *"The Risk of Using Risk Matrices"*[5] issues a warning to those who focus purely on qualitative approaches of risk assessment without making any effort to assess risks quantitatively.

Qualitative risk analysis is merely the tip of the iceberg; it provides context and meaning to the information but cannot demonstrate the issues.

Quantitative method of risk analysis

A quantitative risk analysis helps you gain an accurate representation of reality by improving your understanding of the correlation and dependency between events. Uncertainty models can then be updated with the Bayesian method[6] to gather credible and unbiased information about four key risk areas:

- Project-specific (operational i.e., *"risk events and conditions affecting the specific project and plan."*)[7]
- Systemic (strategic or enterprise, i.e., *"artefacts of system attributes such as the internal project system, its maturity, company culture, complexity, bias and the project's interaction with external systems, such as regional, culture, political and regulatory systems."*)[8]
- Escalation (contextual or global risks driven by economics).[9]
- Stress factors (i.e., *"aggressive schedules, a challenging level of quality, ineffective or delayed decision-making."*)[10]

Confidential interviews and a risk workshop with the project team should be set up to understand the good, the bad, and the ugly truths about the project. When gathering information from the project team during these sessions, efforts should be made to avoid 'group think', whereby no one wants to rock the boat and speak up. Expressing uncertainties through data enables you to evidence risk and uncertainty explicitly.

Avoiding the Easy Way Out

Project uncertainty can be hard to grasp, but project owners who take calculated steps to get on top of these risks will reap the benefits. Prediction through a quantitative risk analysis is a must that can provide a myriad of alternatives and possibilities to make better, smarter and more informed decisions. Having the courage to push back on demands for a can-do attitude and over-optimistic approach without recognition of the risks can lead to better project outcomes for all.

Key Takeaways:

1. Projects should be carefully planned to account for uncertainty but flexible enough to take advantage of new opportunities.
2. Reference-class forecasting ("RCF") leverages experience to consider the impact of black swan events in future contingency plans.
3. Through anticipation and scenario planning, you can simulate a range of potential futures, risks and uncertainties and their chance of occurrence. This helps to shift from over-optimistic planning to probabilistic risk-adjusted planning.
4. Qualitative risk analysis is only the tip of the iceberg and should be used with caution. A quantitative risk analysis is needed to gain an accurate representation of reality.
5. A risk analysis should be performed in the right way to benefit from its outcomes.

FTI Consulting helps clients to improve profitability and decision-making in construction projects by using risk and uncertainty modelling. For more information, please contact Moj Kesheh on the details below.

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Endnotes

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6 Silver, N. (2012) *The Signal and the Noise: Why Some Predictions Fail, but Some Don't*, London: Penguin

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