

Manage risk, improve productivity

Why are infrastructure projects often less likely to be plagued by troubles than large building projects? Is risk managed better on the horizontal side of construction than in the vertical sector, and what lessons can be learned?

ORDER-BASED PRODUCTION, low-task repetition and site-specific operations are some of the specific challenges contributing to low productivity in the construction sector.

Poor risk management can also play a part in low productivity through inefficient resource usage, time wasting and ineffective problem solving.

Ongoing construction quality issues and high enterprise failure rates are signs that the sector is currently not managing risk as effectively as it could.

Learning from infrastructure successes

Some parts of the construction sector appear to be doing better than others. The recent success of infrastructure projects such as the Northern Toll Road Gateway, Waterview Project and Christchurch Infrastructure Recovery contrast ongoing challenges faced by the construction sector.

The aim of a BRANZ-funded project is to uncover core differences between the horizontal (for example, pipes, roads and cables) and vertical (buildings) construction sectors

and identify opportunities for cross-sectoral learning. In particular, we are focusing on the role risk management plays in improving sector productivity.

Extensive interviews with representatives from across the construction industry have been carried out.

The preliminary findings suggest many risks emerge in the process of project pricing, design and construction, but there are also several wider sector trends that impact risk management practices and productivity.

Buildings – risky lowest-cost tenders

In the vertical construction sector, there is a focus on winning contracts, and many main contractors will take the risk of losing money on a project rather than pricing contracts in terms of ‘what if it all went wrong?’. High competition in the market and the prevalence of lowest-cost tender processes are driving this risky behaviour.

Sector representatives interviewed felt that there were a number of factors in the vertical construction sector that introduced risk and

impacted their ability to price things right. These include:

- the fragmented nature of the sector - projects often involve a large number of subcontractors, operating on very small margins, with low risk maturity
- team variability - the specialised and often bespoke nature of vertical construction projects means site teams are frequently changing, and people are continually having to adapt to working in different teams
- instability in project workflow - uncertainty in future workstreams and low project margins makes it challenging for organisations to invest in and retain staff
- high staff turnover in the sector (linked to the previous factors) impacts the level of experience and risk maturity within organisations.

Horizontal sector – effective risk management strategies

In comparison with the vertical sector, the horizontal construction sector tends to have less-complex projects with lower numbers

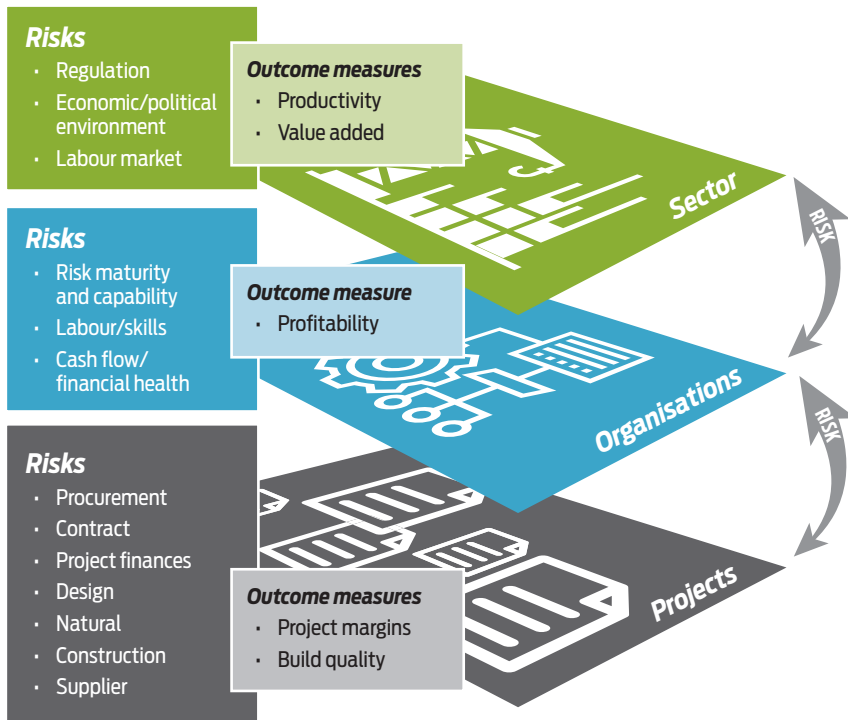


Figure 1: Model schematic of risk flow in the construction sector.

of subcontractors, a reasonably consistent set of clients and a relatively less-competitive market. A steady workflow and higher profit margins on projects allow the sector to have a more stable workforce that is progressively educated on and experienced in risk management.

Additionally, the horizontal sector employs effective risk management strategies to reduce project risks. Several best practices were identified by sector representatives:

- Early contractor involvement (ECI) - most interviewees highlighted the importance of ECI in the pre-tender stage to assist the client and other parties to understand the project and its potential risks better. This is also a mechanism for contractors to be more proactive in considering the most cost-effective mitigation measures. There are also increased efforts to involve

contractors early in the design process to mitigate construction risks.

- Integrated project delivery models - shared models such as alliances have also become common for large projects, enabling a sharing of risk across all project stakeholders, in contrast to traditional models that tend to transfer risk down to contractors and subcontractors. These models incentivise all parties to proactively and collectively manage risks and improve productivity.
- Heightened health and safety awareness and culture - a good health and safety record is often a strong indicator of the quality of work a company and individual produces. A heightened health and safety culture takes time to develop and goes beyond just following processes to be an ethos underpinning everything an organisation does.

- Sound risk monitoring, reporting and documentation - having a dedicated risk management team is essential for managing project risks. Many project risks lie in the cracks between different construction activities such as between trades or between construction and design teams. This means that having dedicated and experienced people to monitor, report and respond to risk is a significant contributor to successful risk management practice.

For managing risks at the sector level, initiatives such as the Construction Sector Accord are beginning to address issues such as improving the visibility of the construction sector pipeline and enhancing procurement and risk management processes within the sector.

Next steps to better understand risk

Which risks have the most significant impact on productivity? Which risk mitigation measures are most effective? The next step in this project is to build a system dynamics model that will help stakeholders to explore and understand risk flow and resulting productivity impacts in the construction sector to inform industry transformation (see Figure 1).

Our aim is to identify key points and mechanisms in the system where risks can be most effectively mitigated. By promoting enhanced risk management strategies and resilience practices, we anticipate a more productive, higher quality and more stable vertical construction industry contributing to improved socio-economic wellbeing in New Zealand. ◀

For more ▶ If you wish to contribute to this study or have any questions, contact charlotte.brown@resorgs.org.nz