

The Effects of Boom Bust on National Construction Industry Performance

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Abstract

The NZ Construction Industry Key Performance Indicators (operated by the Construction Clients' Group (CCG)) have been used for benchmarking in New Zealand since 2004 and were established by an industry wide Steering Group comprising clients, supply chain and representative industry bodies.

The Key Performance Indicators (KPI) have been adopted by several organisations including clients and suppliers and link directly to KPIs operated by the United Kingdom. This approach has enabled direct benchmarking with United Kingdom project performance including the best practice projects, 'United Kingdom Demonstration Projects'.

The key benefits of measuring project performance via National KPIs for those organisations adopting them as part of a continuous improvement programme, a larger percentage of their projects achieve improved time, cost, quality, health and safety, sustainability, and customer satisfaction results.

Overall industry results over the last two years indicate that performance is improving, especially since 2006 (the last time the industry was measured using the same KPIs). In 2006, the industry was booming, in 2011 and 2012, the industry was in a 'bust'. There are early indications that the industry is going into performance decline again. Could this be linked to Boom Bust? How have some businesses insulated their performance results from the boom bust effect?

Introduction

The New Zealand Construction Sector accounts for four percent of New Zealand's Gross Domestic Product (GDP)¹. With such a contribution, it is imperative that the construction sector is efficient and does not become a drag on the economy by being unproductive. The sector has been defined as one that follows a boom-bust cycle, which is linked to economic growth and recession. Unfortunately, the influences of the boom-bust phenomenon have had an impact on industry wide performance. To demonstrate these influences, this essay draws upon the work of Constructing Excellence NZ and the National Construction Industry Key Performance Indicator (KPI) results², which have been provided by members of the Construction Clients' Group³. In addition to this, after analysing the highest performing projects of the data set it was found that there were some common success factors. These are offered here so that construction organisations can use them to help increase or maintain their productivity and shield themselves from the effects of the boom-bust tyranny.

Project Performance Monitoring

The United Kingdom is often ahead of New Zealand in experiencing the effects of new technology, changes in the ways of working, and trends in the work place. This is possibly due to the differing age, size and scale of the countries. New Zealand's geographic isolation (before the information-age brought us metaphorically closer to the rest of the world) saw innovation borne out of necessity given the limited access to products and services. However, New Zealanders are not ones to unnecessarily recreate something either. Further to the national trait of innovation is the willingness to learn from others and 'stand upon the shoulders of giants'. Jim Fletcher, founder of one of New Zealand's long serving and major construction companies, Fletcher Construction, did this during his holiday trips to other western countries where (much to the chagrin of his wife) he would visit construction firms and fill many a notebook with observations of different construction methods and materials. He would then implement those more efficient ideas within his own firm to out-compete his market rivals. Ideas like securing their supply chain and offsite concrete batching of concrete to name a couple⁴. Today, construction sector project performance monitoring is one of those concepts that New Zealand is adopting from the United Kingdom as part of their review of their construction industry.

The concept of Project Key Performance Indicator (KPI) monitoring, as a programme to drive construction sector performance, was introduced into New Zealand in 2004 in cooperation with an industry wide steering group of clients, supply chain participants and representative industry bodies, which led to the establishment of a national set of KPIs that reviewed the performance of projects delivered in 2006⁵. The United Kingdom created the 'Construction Industry Key Performance Indicators' as a result of a government investigation in 1998 into the lack of productivity from the sector⁶. Since then the United Kingdom has been monitoring and reporting its results. When New Zealand began monitoring its own performance level in the sector with the KPIs, it was found that its results were not dissimilar to that of the United Kingdom when it decided there was a problem that needed fixing. The KPI system works by surveying a number of projects each year and then creates a series of curves that other organisations can use to measure their performance against. Furthermore, results can be plotted on a spider-graph, which can be used to compare a project's result against a group average. See Figure One below.

¹ Ministry of Building, Innovation and Employment (MBIE), Building and Construction Productivity Partnership website, <http://buildingvalue.co.nz/home>.

² Constructing Excellence NZ, *The Productivity Case Study Report*, 2012.

³ The Construction Clients' Group is a membership based organisation of construction sector participants with a mandate to share best practice and encourage it in other organisations.

⁴ Robinson, N, *James Fletcher: Builder*, Hodder & Stoughton, Auckland, 1970, pp. 25-30, and S Parker, *Made in New Zealand— the story of Jim Fletcher*, Hodder & Stoughton, Auckland, 1994, pp 11 & 19.

⁵ *The New Zealand Construction Industry National KPI Indicators*, CAENZ, 2007.

⁶ Never Waste a Good Crisis pg 7.

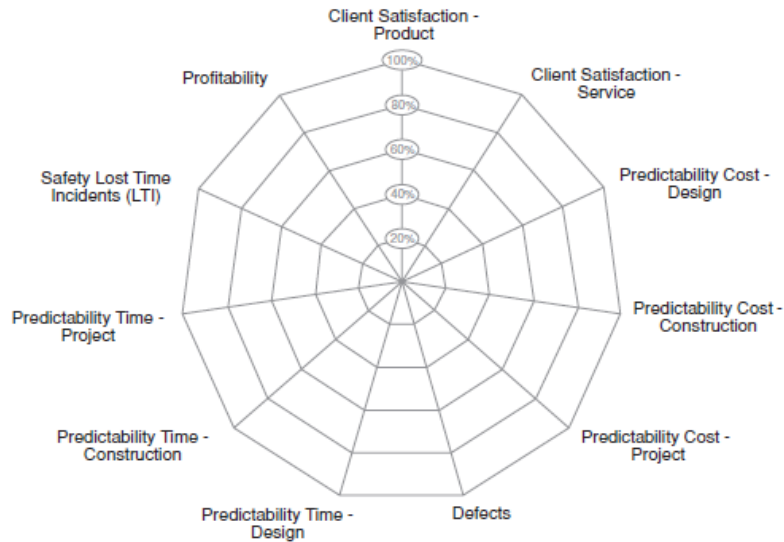


Figure One. Spider-graph representation of the Construction Industry KPIs.

The KPIs are typical aspects derived from project management theory that define the success or failure of a project. That is, predictability and actual outcome against time, cost and quality in the design and delivery stages of the project. The best possible outcome on the spider graph would see every factor scoring 100% and plotted on the appropriate spokes of the graph's framework. Then linking those points together will form a shape that completely fills the spider graph. Any scores less than 100% creates a different shape representative of where a project has room for improvement.

Like the United Kingdom, New Zealand announced its own investigation into its underperforming construction sector in 2009 and found that while the sector is a major contributor to New Zealand's economy (providing more than 4 percent of the Gross Domestic Product, around the same as agriculture) it contributes less to the economy than most countries in the Organisation for Economic Co-operation and Development (OECD). This is mainly because work in New Zealand's sector follows a boom and bust cycle⁷. Furthermore, construction and manufacturing were the main contributors to a 1.2 percent fall in multi-factor productivity from 2006 to 2009⁸. Consequently, the government partnered with industry to tackle the issue and established the Productivity Partnership, charged with the mission of facilitating a construction industry increase in productivity of "20 % by 2020"⁹.

Project Performance Results

The Construction Industry KPIs have helped inform New Zealand's own recent journey of productivity improvement and because of their alignment with the United Kingdom data set, construction projects can not only be benchmarked against a New Zealand average but a United Kingdom one as well. This is powerful information for any organisation serious about improving their project performance and therefore productivity. Figure Two shows how New Zealand's 2012 data compares with the same data set from the United Kingdom.¹⁰

⁷Allen, Yin, Scheepbouwer, *A Study into the Cyclical Performance of the New Zealand Construction Industry*, CAENZ, 2008.

⁸ *Report of the Building and Construction Sector Productivity Taskforce – A Modern Efficient and Productive New Zealand Built Infrastructure Industry*, 2009.

⁹ Ministry for Business, Innovation and Employment (MBIE), Building and Construction Sector Productivity Partnership, <http://buildingvalue.co.nz/home>.

¹⁰ Constructing Excellence NZ, *The Productivity Case Study Report*, 2012.

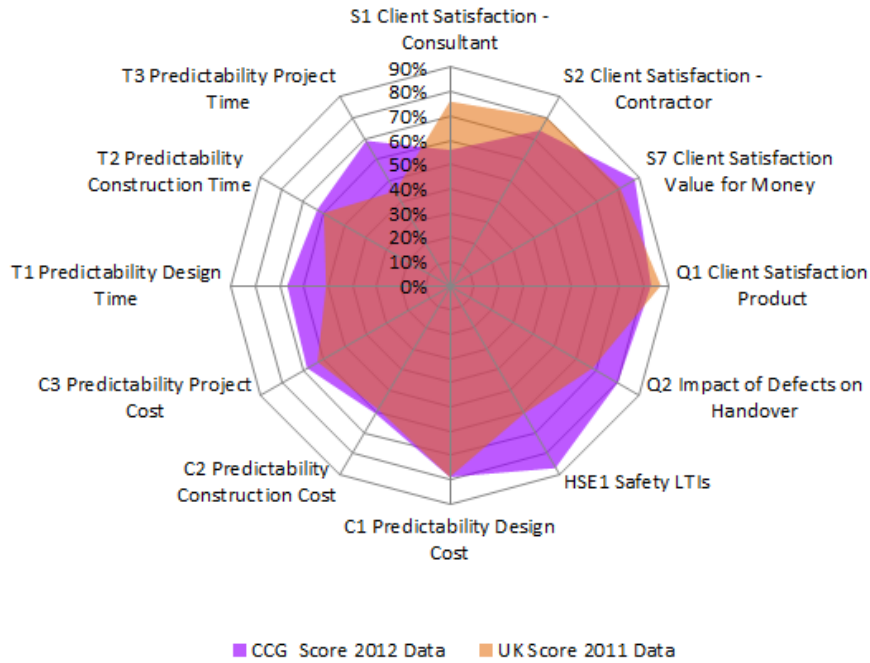


Figure Two. New Zealand Construction Industry KPIs Benchmarked to United Kingdom results.

The spider graph shows that the United Kingdom only outperformed the New Zealand industry in ‘Client Satisfaction’ and that the United Kingdom is worse off with ‘Predictability of Time’ and ‘Health and Safety Lost Time Injuries’. Both countries have room for improvement.

When comparing New Zealand’s 2006 results with its 2012 results it can be concluded that the industry has improved its performance by a fair amount. This could be something to celebrate and be an indicator that any changes that organisations have made are paying dividends on performance. The sector is likely to continue to improve and the Productivity Partnership’s national goal of 20% gain in productivity is on track and achievable by 2020 – or is it? See Figure Three below for a comparison of project performance in New Zealand between 2006 and 2012¹¹.

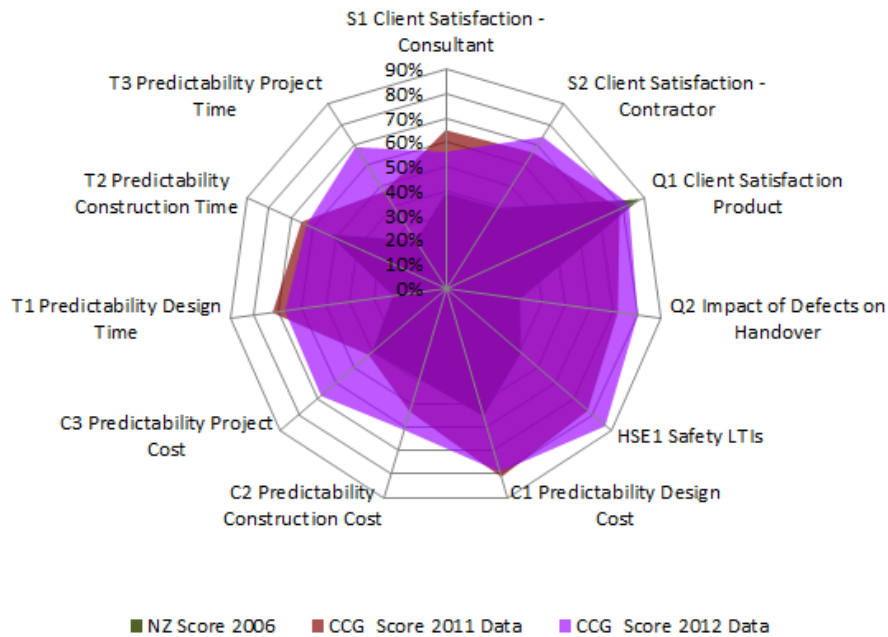


Figure Three. New Zealand Construction Industry Project Performance scores for 2006, 2011 and 2012.¹²

¹¹ ibid

¹² The 2012 data set includes the results 120 projects provided by 30 different CCG members.

The Construction Industry Cycle

As previously mentioned above, the New Zealand construction sector is characterised as being heavily influenced by a ‘boom-bust’ cycle. That is, a ‘boom’ period of a lot of construction activity followed by a ‘bust’ period where activity falls away due mainly to the ebbs and flow of the economy. Figure Four shows that the construction sector enjoyed a period of strong growth from 2001 to 2008 when the Global Financial Crisis hit. Then there was a steep decline and many construction companies that had insufficient resources to weather the downturn were forced out of the market due to the lack of work¹³. For those that have not only stayed in business but also improved their project performance; what are the measures that they have taken to achieve these good results? Some answers can be found by identifying the factors that successful projects have in common.

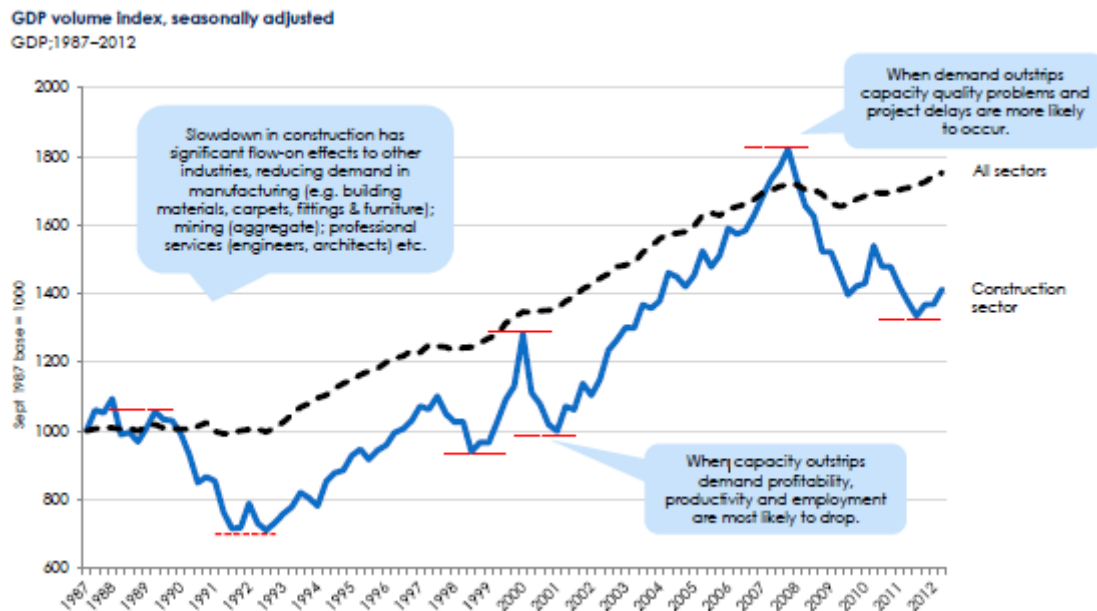


Figure Four. The New Zealand Construction Sector Boom-Bust Business Cycle¹⁴.

Constructing Excellence NZ Ltd and the Ministry for Business, Innovation and Employment’s (MBIE) Building and Construction Sector Productivity Partnership has analysed the Construction Clients Group’s (CCG) ‘Pathfinder’ projects, that is those more successful projects within the membership that exhibited industry best practice. A number of factors have been identified that could be concluded as helping those organisations insulate themselves from the effects of the boom-bust cycle.

Factors that Contribute to Project Performance

The factors outlined in the following section are only a select few for the purposes of the discussion. The Pathfinder case study report itself provides more useful insights into the drivers and inhibitors for project performance and productivity¹⁵.

Client Leadership and Effective Procurement. Client organisations benefit when they have in-house staff that are knowledgeable in effective procurement and how it specifically applies to construction activity. These staff members should also understand project management and have some technical understanding of construction methodology. They should feel comfortable in challenging engineering professionals and holding consultant and contractor alike to account if they see something occurring that is not in accordance with what they said that they would be doing. Clients need to ask for quality control and health and safety plans that force suppliers to think through how they are approaching their work. If these aspects are not asked for then a supplier will not always provide them as they take time and effort to produce. Therefore, clients must take a leadership role in the industry

¹³ Ministry for Business, Innovation and Employment, *Sector Report – Construction*, 2013.

¹⁴ *ibid*

¹⁵ Constructing Excellence NZ, *The Productivity Case Study Report*, 2012.

to propagate best practice. This includes adopting new and more efficient ways of working like integrated design and use of Building Information Modelling (BIM), and not view these as additional or unnecessary cost.

Clients should also be active in learning from other organisations, pass on their own successes, and maintain connectivity with the sector and what is happening elsewhere in the world. This means being professional and an ‘informed client’, not one that can be taken advantage of because of their ignorance.

Clients need to produce clear and detailed specifications that do not leave room for interpretation. Ambiguous and vague documents lead to contractors having to price risk into their tenders. Furthermore, up front discussions on risk management and what to do when it occurs should be adopted instead of resorting to ‘lawyer-led’ contracts that try to pass risk to the supplier. These contracts see additional cost built in by suppliers to compensate for the ‘what if’ risk that could actually have a low probability of occurring.

Suppliers have been calling for long term working relationships with clients as they feel that they can offer better value when they have a closer working relationship that seeks to understand the strategic drivers of the client. Suppliers are spending valuable resources on supplying company details as part of two stage tendering processes time and time again when more expedient approaches could be taken that focuses on the statement of work. Established panels of suppliers can take a fair amount of resource to set up, but have not always delivered on the expected volume of work. The use of workshops with potential suppliers during the design phase, which also involve the end-users, can improve buildability, allow for innovation, enhance functionality, maintainability and overall end-user satisfaction with the product. Keeping the supply-side at arm’s length, and fed on scraps, does not invoke collaborative working arrangements when finally a supplier is selected and expected to understand the client’s needs.

Defining the Project for Success. The information age has seen the fracturing of the engineering profession just like that of any other profession. With so much more information and research being made available, engineering practitioners have become more specialised instead of having to settle at being mediocre at all aspects. Unfortunately, this can mean that not all the disciplines involved in the design of a project are coordinated effectively to ensure that the end result actually performs as the client expects. Approaches addressing this dis-functionality like ‘integrated design’ are being utilised more and more in New Zealand. Also, philosophies like Building Information Modelling are helping to ensure information, relating to the eventual asset, is completely integrated from project start to practical completion and asset handover to the client’s maintainers and operational staff. Outdated mentalities like ‘best for project’ have led the industry to being fixated on only project centric outcomes like time, cost and scope. When budgets come under pressure, this often results in having to ‘value engineer’ out aspects of the design that are seen to be too expensive upfront but actually have through-life benefits for the client by reducing the operational costs. Client satisfaction and project success not only comes from taking over an end product but receiving one that continues to deliver on its design benefits during its operational life. Given the construction industry is creating tomorrow’s buildings and infrastructure should there not be a change in mentality to ‘what’s best for asset’?

The CCG Pathfinder projects showed that whole-of-life considerations were crucial in end-user satisfaction and helped identify what project success looked like. Project KPIs were used that went beyond the traditional milestone and time-cost-scope monitoring. The National Construction Industry KPIs are designed exactly for this and do not have to be an after delivery audit tool. Projects can have targets set based on previous project performance or client expectations and actively reviewed through the project lifecycle. Incentives can be attached to KPI achievement to help motivate staff. Benchmarking and visits to other like projects also helped suppliers visualise the end product and learn lessons to replicate or avoid.

Creating the Culture. The Pathfinder report found that successful projects had their own team culture and a sense of ‘special’. Understanding what motivates people to perform to high levels can be utilised in a project. There is definitely a place for ‘soft’ skills in construction as the ‘old school of hard knocks’ is no longer effective. Workers are more engaged when they have a purpose that they believe in. With some imagination, project leadership, can identify what that higher purpose

is and emphasize it in their communication to the staff, end-users, stakeholders and affected community.

The adoption of collaborative working practices at all levels was another common factor to the Pathfinder projects. ‘Zero sum game’ approaches inevitably leave one party feeling like they have lost something and results in them being less trusting and potentially more adversarial in future situations where problems require resolving or negotiation. Construction leaders should take the time to understand the other party’s business drivers and reasons for the positions that they may take. Through this philosophy, often the creative ‘win-win’ solution can be found and preserve the working relationship for the benefit of the end product instead of the benefit of ego.

Entering the ‘Boom’

With the ‘wall of work looming’ as a result of the Canterbury Rebuild and the pick-up in construction and housing in Auckland (see Figure Five below), what are some of the measures that organisations could be taking to ensure that those gains in project performance that New Zealand has seemed to enjoy continue?

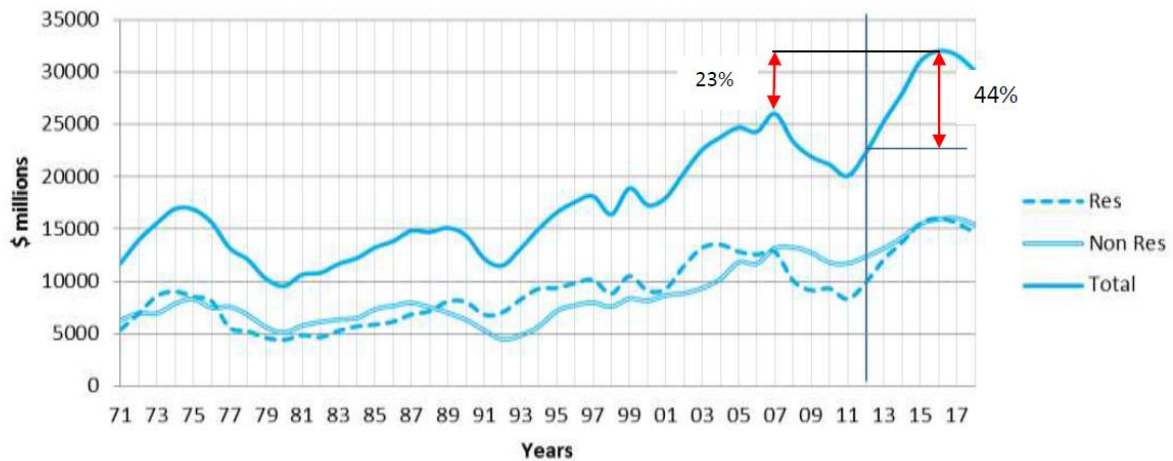


Figure Five. Value of Construction Historic and Forecast¹⁶.

Firstly, those organisations that are monitoring their project performance should clearly continue to do so, as they already have data to compare any future projects against. They can then see if there is a fall-off in performance that needs addressing. Those organisations not already monitoring their projects performance should begin to do so and compare themselves against the national average. If they are below the average then it is an indicator that they could find it difficult to compete for work and clearly should invest in making improvements to their delivery methods.

Supply Side. A ‘boom’ period will see greater amounts of work being brought to the market and the suppliers being able to be selective of what work they wish to take on. That is, demand will outstrip supply. Some suppliers could see the opportunity to take on more work than they are resourced to deliver in the hope that they will be able to find additional resources when the time comes. However, if skilled labour resources are scarce, suppliers could find themselves in an uncomfortable situation of not being able to deliver on contracts to the standards that they would normally be able to achieve. Quality may well be sacrificed as work crews, having fallen behind work schedules, are driven to complete the work. Stress and pressure could end up being carried by a few trusted, competent and long-serving staff. However, with the amount of work being made available it will create opportunities for other suppliers to enter the market place. Disgruntled skilled employees will then have options and could be enticed away from their long term employers.

Supply side would be well placed to continue to focus on delivering a quality product and not be tempted to take on work that they are not resourced to deliver. This way they can maintain

¹⁶ Pacifecon (NZ) Ltd and BRANZ, *New Zealand Building and Construction Productivity Partnership - National Construction Pipeline*, November 2013.

stress levels and motivation of their staff and benefit from a steady labour force. If an employer can offer a fair and reasonable wage where employees feel valued, have responsibility, and the ability to reach mastery in their work, they are more likely to turn down higher paying roles that represent a lot of uncertainty to them.

Clients. Construction clients will need to be cognisant that suppliers have more options in a 'boom' period with who they choose to work for. The supply side will want to tender for work that they have a greater chance of winning and work for clients that are prepared to pay for a quality product. They will not want to waste valuable profits continuously tendering for a one in ten chance of winning work. They will avoid clients that are stuck with 'lowest conforming bid' tender selection processes. Suppliers will also be looking for clients that pay on time, are agile in decision making and have contracts that take into consideration market pressures, for example, fair and reasonable insurance levels. Organisations with slow approval processes and risk transferring contracts will be left wondering why the bigger performing companies are choosing not to tender for their work. Clients need to work at being a 'supplier of choice' during a 'boom' or accept that they will have to pay a premium as they will not be able to benefit from competitive tension.

Clients could set up small panels of suppliers to try and secure constructors and reduce the amount of two stage tendering. Spend the effort up front to select suppliers based on company attributes for quality control, health and safety systems, sustainability, experience and technical competence of staff, customer focus etc. Margins and overheads for work can also be determined. Clients can then focus on the actual construction work and seek quotes from the panel based on the cost and innovative approach. Effort must be put in to manage the panel through good supplier relationship management and key performance indicators so that all parties are achieving their business goals.

Conclusion

The New Zealand Construction industry would do well to continue in the footsteps of Sir Jim Fletcher and his knowledge seeking propensity. His avid reading of technical magazines and awareness of what other methods and trends in construction were occurring abroad, allowed him to out-compete the market and increase the productivity of his company. This essay has shown that there are elements within New Zealand that are adopting productivity increasing methods that have been developed and proven in other nations, like the United Kingdom's Construction Industry KPIs. The use of these KPIs in New Zealand has not only allowed organisations to determine where they need to improve performance, but has also provided invaluable insight into the ebb and flow of the industry as it has been buffeted by the economic tides.

By analysing the KPI results of the more successful construction projects and seeing what they have in common, the New Zealand Construction industry can focus its efforts and look to replicate those success factors in all organisations and in all of its projects for the betterment of the country. Of particular note are aspects like: 'client leadership' in the use of new approaches like BIM, or early contractor involvement; 'effective procurement' that reduces unnecessary tendering; 'defining the project for success' by using meaningful KPIs to drive results; and 'creating the culture' so that each project has a deeper purpose that staff can relate to, as well as ensuring an overarching collaborative approach as opposed to an out-dated destructive adversarial one. Construction industry performance can be directly overlaid on the boom-bust cycle, where during a bust period, performance appears to increase and during a boom period performance decreases. However, this cannot be acceptable as it means New Zealand is held back from economic growth by a major sector with fluctuating levels of productivity. The challenge is to take heed, learn from the lessons of other nations and implement change in our own.

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