IT Uptake and Integration Across a Temporary Project Organisation in the Construction Industry

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EXECUTIVE SUMMARY

The case study, funded by the Co-operative Research Centre for Construction Innovation (CRC-CI) in Australia, examines the adoption and integration of IT to facilitate supply-chain activities by a temporary project organisation that was assembled to complete a portion of a major construction project in New Zealand. It consisted of a number of consultants, suppliers, and contractors from three different countries operating in a fourth country, which delivered the major architectural feature for an award-winning building. The case study explores both the interplay between IT and its various users, and its impact on business relationships in an industry traditionally characterised by its litigious, short-term, project focus.

Keywords: supply chain; temporary project organisation

ORGANISATIONAL BACKGROUND

This case study describes that part of the project supply chain formed around the focal company during the construction of a landmark construction project in a major city in New Zealand. This supply chain is unusual for a number of reasons:

- It is centred on the activities associated with an atypically successful company.
- It involves a highly geographically dispersed supply chain.
- It would not have been feasible without the use of IT.

The focal company has existed for about 30 years. It operates in both the property development and engineering sectors. This case concentrates on the section of the company that acts as a specialist subcontractor for the design and management of the erection of engineered facades on major buildings. Their projects are located worldwide, but are all coordinated from Australia.
They have 25 staff members who manage a set of business relationships with trading partners from around the world. They have won awards for export and design excellence, and would describe their product as intellectual property. The management structure is very flat, and a key component of their management strategy is the involvement of all staff in weekly meetings at which both operational and strategic matters are discussed. The gross receipts of the company are around $20 million per year and their margins, though undisclosed, are reported as “considerably higher than the industry norms,” which are traditionally very low (typically less than 5%). They have recently completed a technically demanding project, to clad a landmark building in New Zealand, that used architects and contractors from that country, but incorporated components built to their specification in Australia and China. Additionally, another firm of engineers from the UK collaborated with them on certain aspects of the project. It is therefore this temporary project organisation that provides the context for this case study.

The focal company uses fairly conventional IT infrastructure and applications, utilising MS Office, AutoCAD for design, intranet and extranet for domestic file exchange, and e-mail for data distribution to supply chain partners. On a number of previous projects, the company has been required to use proprietary, Web-based project collaboration Web sites for data exchange and communications functions. Major aspects of this case arise because of a number of issues: the focal company’s position within construction projects, sometimes as an IT follower rather than as a leader, other times dictating its use to its suppliers; the alignment of often conflicting quality assurance requirements; and the geographical dispersion of projects and supply chain partners.

The focal company’s involvement in this project came about subsequent to a design competition where the winning architect prepared sketch plans. These were approved by the client (city council), and were then used to prepare the documentation and cost plans. The key feature of the project was the front facade, known as the “sculpture wall,” which consisted of an extensive glass curtain wall, curved in three planes. Subsequent to an audit of domestic facade engineering expertise and in accordance with the client’s wish to minimise contractual risk (i.e., pass on risks/costs associated with design and construction flaws and delays), an overseas facade engineer was appointed as consultant to the client, who then recommended the focal company as a suitable specialist subcontractor.

The design package was put out to tender ahead of the main contract for the building. Although slightly dearer than the lowest bid, the focal company’s bid was accepted. There followed a round-table meeting to resolve any remaining difficulties, at which the focal company pointed out that the steel content of the design was 50% higher than they would have expected. They subsequently tabled an alternative design that used cast-aluminium elements, and over the next 7 months, this was collaboratively refined to produce significant improvements at lower cost, with most components being sourced in Asia.

Not the perfect project, but a fantastic outcome for all stakeholders, including the city... (Client)

SETTING THE STAGE

The benefits of collaborative work in a project environment are obvious and well reported, as are the benefits of using various IT tools to facilitate collaboration. While it might be assumed by many of those working in the IT application development sector that the construction industry is simply a subset of the manufacturing sector, this is emphatically not the case. When it comes to working collaboratively as part of a temporary project team, the overwhelming majority of construction-related firms are simply not good at doing it, which is all the more surprising.
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