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Using a case study approach to identify critical success factors for alliance contracting

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Abstract

Purpose – There has been a significant increase in the use of relationship contracting in the global construction industry, with strategies such as Partnering, Alliancing and Public-Private Partnerships all used. These approaches were introduced to the Australian construction industry in the 1990s in an attempt to overcome the adversarial nature of traditional contracting methods. The purpose of this paper is to investigate factors that influence the successful implementation of Project Alliancing by means of a case study approach focusing on the procurement of a large water treatment plant. The research findings identify critical success factors (CSFs) both from literature and the case study project.

Design/methodology/approach – The research traces the origins of Alliancing and identifies CSFs by reviewing literature and analysing a current case study project. The paper first identifies CSFs on a global scale by establishing a theoretical framework of CSFs and then compares this to the case study project. A case study of an Australian Alliance project is investigated whereby a semi-structured interview process, involving senior managers from the six partners from the Alliance, was used in conjunction with a review of project documentation. The findings of the case study project are compared to the literature and any new CSFs are identified.

Findings – Alliancing helps to establish and manage the relationships between all parties, remove barriers and encourage maximum contribution to achieve success. Alliancing provides a project delivery method that promotes open communication, equality and a systematic problem resolution process. Team culture focusing on an "open book/no blame" approach is vital to the success of an Alliance. Five CSFs were identified as specifically influencing the success of the case study project: the use of an integrated Alliance office; the staging of project and stretch targets; establishing project specific key performance indicators; facilitating on-going workshops; and the integration of a web-based management programme.

Originality/value – The research findings assist both public and private sectors by identifying factors that are critical for success in Alliancing. Five additional factors were identified as specifically influencing the success of the case study project. Since this research was conducted, Australia has seen a further increase in relationship contracting where the likes of Alliancing is often used as the default approach for certain Public Sector projects. Ongoing research into Alliancing is vital to ensure the development of sustainable procurement models, successful operational viability, fair risk distribution and value for money.

Keywords Case study, Critical success factors, Infrastructure, Construction industry, Alliance contracting, Water treatment works

Paper type Case study

Introduction

Construction projects are dynamic, ever changing and most crucially inherent with risks. For instance, Noble (2007) states that these levels of risk and the growing size and complexity of projects has attributed to the adversarial and fragmented nature of the construction industry. Traditional forms of contract, such as Construct Only or Design and Construct, consist of project risks being allocated to the party believed best

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placed to manage the risk. Subsequently, the terms and conditions of traditional contracts aim at predicting all possible outcomes and assigning liability, so when changes or alterations occur, the result often ends in dispute. By comparison, relationship-based contracts, such as Alliancing, are built on a partnering ethos in order to embrace collaboration, change and innovation in project delivery (Sakal, 2005).

Alliancing has been used on a small number of Australian public sector infrastructure projects, however, some state governments have developed Alliance guidelines outlining a framework for delivering major works. The aim of this paper is to investigate factors that influence the successful implementation of Project Alliancing and therefore establish a framework of critical success factors (CSFs). This research presents a single case study approach that reviews project contract and communication documentation and also uses a semi-structured interview process with carefully selected senior project participants on an Australian Alliance contract. The selected methodology has been deemed as most appropriate due to the somewhat limited implementation of Alliancing within the Australian construction industry and the small sample of organisations involved in such projects. Project contract and communication documentation was analysed along with transcripts from an interview process in order to produce the framework of CSFs specific to the case study project. Through and analysis of literature (summarised in Table I), there is a clear gap in Project Alliancing, particularly with regards to identifying factors for it successful implementation in the Australian construction industry.

Relationship-based procurement

There has been a significant global increase in the use of relationship-based contracting approaches in construction projects with strategies such as Partnering and Alliancing commonly used (Harmon, 2003; Walker and Hampson, 2008). These approaches were introduced into the Australian construction industry in the 1990s (Cheung *et al.*, 2005). Walker and Rowlinson (2008) provide a definition of relationship contracting:

> Relationship contracting embraces and underpins various approaches, such as partnering, alliancing, joint ventures and other collaborative working arrangements and better risk sharing mechanisms. Relationship-based contracts are usually long-term, develop and change over time and involve substantial relations between the parties.

Partnering is implemented by putting a partnering agreement on top of a traditional contract and encouraging the contractor, consultant and client to proactively address project risks, identifying them before they affect the project, take action and jointly agree to manage the risk. This approach is problematic in that superintendents have continued to see their roles as "gatekeepers", rather than team members, and contractors have kept one eye on the contract conditions and claims, whilst going through the partnering process (Walker and Rowlinson, 2008). There is a wide range of academic literature available on Partnering and for further information readers should see Matthews *et al.* (1996), Green and Lenard (1999), Bresnen and Marshall (2002), Bayliss *et al.* (2004), and Eriksson (2010).

In comparison, Walker *et al.* (2002) identify Alliancing as being different from Partnering in that it is more "all embracing" in its means of achieving unity of purpose between project teams. Alliances are an agreement between two or more entities who undertake to work cooperatively, on a shared risk and reward basis, for the purpose of achieving agreed outcomes based on principals of good faith and trust and an open-book approach (Kwok and Hampson, 1996; Abrahams and Cullen, 1998; Walker and

Table I.
Project alliance critical success factors

Critical success factors	Cited by authors					
Strong commitment by client and senior management	Abrahams and Cullen (1998)	Green and Lenard (1999)	Jefferies *et al.* (2001)	Haque *et al.* (2004)	Walker and Hampson (2008)	Jefferies *et al.* (2012)
Trust between parties				Haque *et al.* (2004)	Walker and Hampson (2008)	
Sound relationship	Abrahams and Cullen (1998)					
Equity		Green and Lenard (1999)		Haque *et al.* (2004)		Jefferies *et al.* (2012)
Mutual goals and objectives		Green and Lenard (1999)	Jefferies *et al.* (2001)	Haque *et al.* (2004)	Walker and Hampson (2008)	Jefferies *et al.* (2012)
Joint process evaluation	Abrahams and Cullen (1998)	Green and Lenard (1999)				Jefferies *et al.* (2012)
Dispute resolution process		Green and Lenard (1999)				
Cooperative spirit	Abrahams and Cullen (1998)			Haque *et al.* (2004)	Walker and Hampson (2008)	Jefferies *et al.* (2012)
Flexibility and adaptability			Jefferies *et al.* (2001)			Jefferies *et al.* (2012)
Tight alliance outline	Abrahams and Cullen (1998)					
Alliance structure	Abrahams and Cullen (1998)			Haque *et al.* (2004)		Jefferies *et al.* (2012)
Best people for project	Abrahams and Cullen (1998)			Haque *et al.* (2004)	Walker and Hampson (2008)	
Facilitation	Abrahams and Cullen (1998)		Jefferies *et al.* (2001)	Haque *et al.* (2004)		Jefferies *et al.* (2012)
Commercial incentives	Abrahams and Cullen (1998)		Jefferies *et al.* (2001)	Haque *et al.* (2004)		
Open communication				Haque *et al.* (2004)	Walker and Hampson (2008)	
Shared knowledge	Abrahams and Cullen (1998)			Haque *et al.* (2004)	Walker and Hampson (2008)	
Stretch targets		Green and Lenard (1999)	Jefferies *et al.* (2001)	Haque *et al.* (2004)		

Rowlinson, 2008). The process of Alliancing involves the careful selection of best practice partners to form the Alliance team. The partners develop an Alliance charter describing programme and cost targets, performance requirements and risk and reward arrangements (Walker *et al.*, 2002). The Alliance group then works as a unified team to meet the Alliance charter based around a win-win attitude, trust, commitment and innovation for the delivery of the project (Green and Lenard, 1999).

According to Walker and Hampson (2008) it is the procurement approach that provides a framework for all the aspects of construction to be holistically brought together and produce a successful product. Development of procurement strategies can effectively govern the success, efficiency and sustainability of a construction project. Recent research into relationship-based procurement methods discuss the success of Partnering, Public-Private Partnerships and Joint Ventures (Black *et al.*, 2000; Jefferies *et al.*, 2002; Jefferies, 2004, 2006; Wong and Cheung, 2004; Li *et al.*, 2005; Jefferies and McGeorge, 2009), but little to date on Alliancing, particularly factors for its successful implementation in the construction industry.

Alliancing

Project-based Alliances were first developed through the Portland Division of the US Army Corps of Engineers by Colonel Charles Cowan. Since then Alliancing has gained acceptance by many industries world wide, including the construction industry (Green and Lenard, 1999; Jefferies *et al.*, 2006b, 2012) and in countries such as the UK it has become part of building guidelines and legislation (British Standards Institution, 2010). Alliancing utilises the principles of risk sharing to better develop relationships and integrate the team to maximise project performance. It also aims to reduce the likelihood of litigation and limit cost overruns and delays through enhanced control. Lines of open communication help to resolve problems and facilitate any project changes while removing administrative and legal costs and the probability of financial success is enhanced as an outcome of the non-adversarial and win-win culture of the procurement process (Kwok and Hampson, 1996; Walker *et al.*, 2002; Cheung *et al.*, 2005; Jefferies *et al.*, 2006a, 2012; Walker and Hampson, 2008).

Several authors have defined Alliancing over the last decade, each varying slightly but most incorporating the elements of cooperation, goals and objectives. Kwok and Hampson (1996) describe Alliancing as a cooperative arrangement between two or more organisations that forms part of their overall strategy and contributes to achieving their major goals and objectives for a particular project. According to Ross (2003), Project Alliancing is defined as an Alliance between a team of companies, that has no fixed or maximum price, but a target cost which also includes a protocol on profit margins. A pain/gain arrangement is often involved to ensure all participants have an equitable share with the owner, whether the actual performance is better or worse than the pre-agreed targets (Ross, 2003). According to Jefferies *et al.* (2006a), an Alliance is where an owner and a combination of providers (such as architect, builder, sub-contractor, supplier) work as an integrated team to deliver a specific project under a contractual framework where their commercial interests are aligned with actual project outcomes.

Alliancing demonstrates characteristics of a partnership in that there is a collective sharing of almost all project risks and benefits, a "no blame/no disputes" agreement and an integrated project team who are personally selected. Each Alliance entity provides their services on a net cost basis and upon completion of the project the parties share in the profits and/or losses, respectively (Jefferies *et al.*, 2012). While a

complete "no-claim" culture is difficult to achieve and demands the complete "buy in" of all members of the project team to drive a relational vision (Cheung *et al.*, 2006), Alliancing in construction has been identified as a management strategy that can be used to reduce risks and promote movement away from current adversarial approaches to a more collaborative culture (Jefferies *et al.*, 2001, 2012; Walker and Rowlinson, 2008).

Alliancing in Australia

The Australian construction industry has gradually embraced the use of relationship-based procurement strategies (Jefferies *et al.*, 2000, 2001, 2012; Walker and Hampson, 2008). According to the Victorian Government's Department of Treasury and Finance, in their "Project Alliancing Practitioners Guide", an Alliance is defined as "a commercial/legal framework between a department, agency or government-business enterprise as 'owner-participant' and one or more private sector parties as 'service provider(s)' or 'non-owner participant(s)' for delivering one or more capital works projects" (Victorian Government, 2006).

The first Alliance within Australia was the construction of the Wandoo B Development Offshore Oil Platform in Western Australia. The Wandoo B Development project was a A$480 million dollar contract, which began in 1994 and was successfully completed in 1997 (Jefferies *et al.*, 2000, 2001). A number of other oil, gas and mining projects were successfully delivered in the mid 1990s through Project Alliancing including the East Spar Gas Field Alliance contract for Western Mining Corporation (A$250 million), Port Headland Iron Ore Alliance contract for BHP (A$700 million) and the Roxby Downs Metal Ore Alliance contract for Western Mining Corp (A$400 million) (Abrahams and Cullen, 1998).

The Australian National Museum was successfully completed and opened in March 2001 and is said to be the first building, as opposed to infrastructure, project to be procured through an Alliance. Alliancing was chosen for this project because it offered a fast delivery for a complex project with high expectations due to its cultural significance, high construction quality requirements, unique and innovative design and a need of value for money (Walker and Hampson, 2003). Zuo and Zillante (2006), in their case study research on an Alliance Contract used to deliver the Adelaide Convention Centre in South Australia, stated that the project involved significant risks, in terms of a very strict completion date and budget, with the added the complexity of it being built over an operating railway station. The project was constructed on time, with all stakeholders stating that the collaborative project approach produced a building of high quality and outstanding management and the risks associated with this project, such as industrial action, environment and safety, were managed to very low levels.

More recent Australian examples of Alliancing are provided by the Victorian Government's (2009) Department of Treasury and Finance and include the Brisbane wastewater treatment plant upgrade (A$187 million); the Coopernook to Herons Creek upgrade of the Pacific Highway in New South Wales (A$500 million); South East Queensland Desalination plant (A$953 million); and the Monash Citylink freeway in Melbourne (A$1.39 billion).

CSFs

Rockart and the Sloan School of Management developed a concept for identifying CSFs which they defined as "those few key areas of activity in which favourable results are absolutely necessary for a particular manager to reach his or her own goals […]

those limited number of areas where things must go right" (Rockart, 1982). Morledge and Owen (1999) further developed the concept of CSFs by identifying certain weaknesses associated with the practical application of Rockart's method. They identified and attempted to address the perceived areas of weakness such as: subjectivity; bias; human inability to process complex information; time dependency; generalisation; and qualitative performance measures.

Rowlinson (1999) states that CSFs are those fundamental issues inherent in a project that must be maintained in order for team-working to take place in an efficient and effective manner. They require day-to-day attention and operate throughout the life of the project. Recent research tends to take a relationship-based approach to the issue of CSF (Rowlinson and Cheung, 2002; Jefferies, 2004, 2006; Li *et al.*, 2005; Walker and Hampson, 2008).

Various authors have complied success factor lists within the context of Alliance Projects. The following table (Table I) summarises CSFs from literature in order to develop a framework for successful Project Alliancing. The papers in Table I were selected as they each provide a level of the historical development of Alliances and also identify CSFs from multiple international case study projects from 1998 to 2012.

Research method

The choice of a single case was considered methodologically appropriate as both a "critical" case (Flyvbjerg, 2006) where the choice of an exemplar case study project could reveal matters pertinent to general issues of CSFs in Alliancing, and a "paradigmatic" case (Flyvbjerg, 2006) which highlights more general characteristics of Australian Alliancing projects.

A comprehensive review of related literature was used to generate a list of CSFs for Alliance projects (Table I). The authored articles outlined in Table I were selected as they each provide a detailed description of the historical development of Alliancing and also identify CSFs from multiple international Alliance case study projects from the period of 1998-2012. The search tool used was the University Library's online journal database which included the publications by Emerald (published by Blackwell Science) and Informa World (published by Taylor and Francis). Only journals that were ranked "A" or "A*" under the Government's Excellence in Research for Australia (ERA) framework were considered. A current case study Alliance project was selected in order to test the validity of the CSFs identified from the literature and to extend the body of knowledge. Yin (2009) noted that the single case study method is an appropriate application where the case in question represents an extreme or unique case or that the situation has not previously been the subject of detailed scientific investigation. A single case study has been selected as the most appropriate means for the research reported in this paper given the limited number of Australian construction projects that use Alliancing, particularly in the State of New South Wales, where the researchers are located.

Prior to conducting the interview process, a pilot study was performed with a representative from each of the Alliance partners. The wording of the interview questions was assessed in order not to bias the outcome of the interviews. The wording was subject to minor editing so as to make the questions clear and concise and subsequently avoid confused interviewee responses and irritation. Data collection for the case study was performed by reviewing contract and communication documentation and a semi-structured interview process with senior management from the main Alliance partners. The project contract documentation took the form of contract summary documentation (such as the Alliance agreement) and the

communication documentation took the form of access to the web(internet)-based programme that contained everything from working drawings to specifications and site diaries to minutes of meetings. The interview participants were all seniors managers involved in the Alliance project and represented each of the six Alliance partners. Each partner nominated two experts from its respective ranks of senior management to participate in the interview process. In total, 12 interviews, each lasting for approximately one hour, were conducted over two stages. The first stage of interview questioning focused on developing a rapport between the researcher and the interviewee, collecting general project background information and corroborating CSFs identified from the analysis of literature. The second stage of the interview process focused on identifying the CSFs for the project. A semi-structured interview process focused on key themes, and CSFs, from Alliance projects that were identified during the review of the literature and project specific CSFs were subsequently identified and discussed. Qualitative interview data were analysed using a content analysis approach to group and compare the findings from both the review of the literature and the case study project. The research identified CSFs from the literature and the findings of the case study project compared these CSFs in a real world context. The case study also attempted to extend the body of knowledge by identifying additional, or new, CSFs. An illustration of the research method is presented in Figure 1.

The case study project

The project client

The project client is a statutory corporation that is a large water services supplier that providing drinking water, wastewater and some storm-water services. The client services over four million customers, generates A$1.5 billion in revenue, manages A$14 billion in assets, employs 3,600 people and services 1.5 million properties. The authority governing environmental protection issued the client with 27 Sewage Treatment Systems Environmental Protection Licenses. The Licenses cover the operation and maintenance of the sewage system networks, and in addition, set out Pollution Reduction Programs specifying timeframes for detailed improvements to environmental performance. As part of a multi-million dollar upgrade, 272 sewer stations were specified as well as improvements to the operation of its catchments.

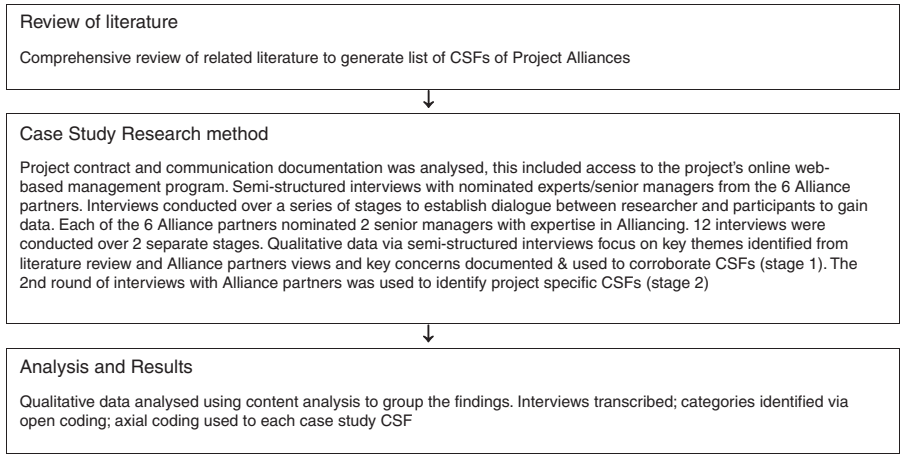

Figure 1.
Research method

Selection of a project alliance contract and the alliance partners

The client released a long-term strategic plan for sustainable water, wastewater and storm-water management up to the year 2021. Two years into the upgrade project the use of traditional, lump-sum procurement methods for the works was averaging an upgrade of 16 stations per year. The required programme of 250 station upgrades by the specified date was clearly not going to be achieved. The following client requirements were established:

- new performance standards for upgraded stations requiring component interchangeability;
- careful consideration of heritage requirements, works within National Park and within close proximity to waterways;
- the works are to cause minimal impact to local and state government authorities and all sectors of the community;
- synchronisation with current and future projects; and
- existing stations would need to remain operational during construction with no dry weather overflows.

After reviewing various procurement alternatives the client decided that an Alliance approach would best achieve the targets as well as satisfy the cost, scheduling, safety, quality, environmental and community challenges to successfully deliver the project. An Alliance team with a single high performance culture based around a focused, single set of project objectives was then targeted. The client sent out "requests for proposals" and followed this with an intense Alliance evaluation process involving foundation workshops and a rigorous Target Cost Estimate process. This led to the selection of an Alliance team comprising six organisations awarded a contract to complete the project to upgrade 230 sewage infrastructure stations. Besides the client, the Alliance partners are:

- Alliance Partner 1 is a contractor that has procured over 6,000 projects, exceeding A$40 billion in value and has a long history and a strong reputation in collaborative project delivery, working with both private and public clients.
- Alliance Partner 2 is a consulting firm of engineers, planners and construction managers that has completed more than 2,000 water and wastewater projects.
- Alliance Partner 3 is a large and successful defence and technology contractor that provides outsourced maintenance and construction services.
- Alliance Partner 4 is a professional services consulting group that is closely involved in the development of water and wastewater services for the client.
- Alliance Partner 5 is a specialist consultant in issue management, community consultation, stakeholder management, individual and group facilitation, public and media relations and Quality Assurance assessments.

Alliance agreement/project charter

The client developed the following six objectives for the project's Alliance Agreement:

(1) Schedule: meet relevant License specifications in terms of sites, timeframes and performance; optimise the programme roll-out rate.

(2) Cost: minimise lifecycle costs; better the target programme cost by 20 per cent without adversely affecting quality and operational standards.

(3) Works: minimal environmental impact during delivery of the works and operational phases; no overflows as a result of construction.

(4) People: provide a safe place of work evidenced by zero incidents and injuries; have minimal impact on client customers; all programme personnel proud to be involved.

(5) Systems: satisfy the client's legislative and regulatory requirements; implement management systems to meet quality processes and outcomes.

(6) Legacy: improve the client's capability for delivery of capital programmes; implement operational improvements; enhance client's reputation with industry.

These objectives played an important part in creating a high level of commitment and understanding between the project stakeholders prior to the formation of the Alliance team.

Key performance indicators (KPIs)

At the project's inception the Alliance established a commercial framework of risk and rewards, or commercial incentives, based around the following set of broad KPIs:

- community;
- environment;
- occupational health and safety; and
- quality.

Performance was assessed in each of these areas with possible results ranging from 1 to 5. (1) Being Failure, (2) Poor Performance, (3) Business As Usual, (4) Best Practice and (5) Outstanding Performance. A "Failure" or "Poor Performance" resulted in a form of pain share where the Alliance paid money back to the client; "Business As Usual" meant a neutral outcome; and "Best Practice" or "Outstanding Performance" resulted in a financial gain for the Alliance which was distributed between the various individual organisations according to the commercial framework.

CSFs of the alliance project

Upon reflection of the KPIs at the end of the project, it was revealed that over 90 per cent of the assessment areas within the KPIs achieved "outstanding" results, indicating that the project was an overall success for the Alliance team and the client. While there was some commonality between the list of CSF from the literature (presented in Table I) and those identified via the case study project (see Table II), the following table also identifies five new CSFs (highlighted in italics) that can be used when developing Alliance contracts. Table II presents the project specific framework of CSFs for the case study Alliance project.

The five new CSFs to Alliance contracting in Australia were identified during the interview process in the case study project. These are success factors that were not previously identified when reviewing literature. They are highlighted in Table II and discussed further below.

Critical success factors	Description
Attitude	Alliance team members need to apply an attitude of "Best for Project" to all aspects of the project
Formation of a single entity	Remove all attachments to the individual organisations, e.g. company logos, titles and adopt a single Alliance name and uniform
Pre-project and planning workshops	Early workshops between the Alliance partners before the client-focused workshops to build good working relationships
Continuous facilitation	Facilitator involvement early in the project to establish a strong Alliance team and involvement at various times throughout the project to motivate the team
Careful team selection and project-specific team alignment	Alliance partners chosen carefully so to maximise the skills and performance required for achieving high standards in key performance areas
Right project personnel	Personnel need to be team players, open minded and creative thinkers
Integrated Alliance office	Central Alliance office combining all Alliance partners
Staging of project and stretch targets	Breaking the project into stages allowed reflection upon results to date and re-establishment of future stretch targets
Project-specific KPIs	Ensuring the KPIs drive the Alliance in the right direction motivating success in areas critical to the project requirements
Dedicated client and commitment by all stakeholders	Client and stakeholders to show commitment to the project through participation at a senior level
Benchmarking and continuous performance monitoring	Implementation of benchmarking and performance monitoring to gauge success and areas for improvement
Early commercial development	Develop commercial framework at an early project stage so that the team can be formed with skills necessary to achieve high performance in the KPI areas
On-going workshops including site personnel	Workshops to be conducted throughout the life of the project introducing site personnel to the project Alliance concept and identifying the importance of their role
Web-based management program	Single web-based program for management of the project allowing the individual partners to manage resources and share knowledge
Participants with past working relationships	Selection of Alliance partners with proven past working relationships
Awareness of project aim, objectives and charter	Ensure all levels of management are aware of the project aim, objectives and charter
Open book nature	Alliance participant to have an open and trusting relationship between one another

Table II.
Critical success factors of the case study project

Establishing an integrated alliance office

The group of Alliance organisations were all co-located in a single office with up to 150 personnel from the various individual companies. The quote below was extracted from the interview data:

> You need to take people out of their company environment and have an integrated office which the Alliance team calls their own. Personnel must sit in groups and form teams according to their expertise, such as project delivery, design, project management and site supervision. The success is having all the key stakeholders working in the one room at the one time from the start, so the planner, the designer, the geotechnical engineer, the communications expert, the environmental expert, the OHS expert, the operations & maintenance manager and so forth are all there.

The case study also identified that the integrated Alliance office: "[…] breaks down barriers and enhances communication". Enhancing communication capabilities improves the overall likelihood for Alliancing success and allows for fast problem solving. Furthermore, the integrated office improves problem solving capabilities: "It just makes it easier if you can go straight to the designer and talk about an issue and say this is the problem, let's fix it now".

Problem solving can occur in real time which is an element that another interviewee states as being critical to the success of the Alliance: "Having everyone co-located in the one building was critical to the success of the team. All questions and queries can be resolved in real time and by face-to-face contact. This allowed for quicker and more efficient problem resolution". Faster problem solving improves the overall success of any project, but with Alliancing being such a teamwork-related procurement method it is essential that this area is extremely efficient and an integrated office achieves this. Faster problem solving also brings advantages for the client, adding value to their product. This was reinforced during the interview process: "[…] by having an integrated team from inception through to completion, it allows high quality and good problem solving capabilities which adds value to the client".

Establishing an integrated vehicle, such as this, to drive the Alliance project is an element that was seen as essential for project success, specifically in relation to team building, communication and problem solving.

Staging of project and stretch targets

An important element of Alliance contracting is the setting of stretch targets. Stretch targets are used to establish project aims that extend beyond "Business As Usual". The case study interviews found that the project not only implemented stretch targets, but also staged these stretch targets throughout the project. This meant that the project was broken up into stages called "Tranches". At the beginning of each tranche, new stretch targets were established and "Business As Usual" improved as the project stages were completed. While stretch targets themselves have been identified in previous literature as a CSF, the "staging" of these targets has not.

One of the Interviewees outlines the tranche approach to the project and the re-establishment of stretch targets: "[…] outcomes were carried forward into the next tranche […] it gave people focus, we would never aim for business as usual, our aim was always stretch targets. If we met a goal, that became our 'business as usual' and we were always improving. That was half the reason why the project was completed early, it was a continuous improvement process".

The continuous learning process was further highlighted: "It is important to track lessons learnt, and the team took time to review the lessons learnt and integrate them in the future stages. Anything learnt or ways we could do things smarter were quickly integrated to change the way we approached things". "It was important to implement seminars and workshops at the beginning of each tranche to ensure the whole team, from management to site personnel, were aware of the new targets and project aims. This was also a time for the Facilitator to get involved and build-up the team motivation and enthusiasm".

The tranche approach to the project's programme and the re-establishment of stretch targets at the beginning of each tranche was a factor that was continuously highlighted and influenced the overall success of the project: "[…] systems and stretch targets were refined and developed throughout the program tranches […] everything was a dynamic and growing process […] being able to gain that knowledge, harness

it and work beyond that business as usual made the project such as success". The staging of an Alliance and re-establishing stretch targets at each stage to continually improve upon business-as-usual can be simply applied to all Alliance projects and is a factor that the case study has identified as increasing the likelihood of project success. By applying similar staging processes and re-establishing stretch target for future Alliances, teams can build upon success and achieve exceptional project results.

Project-specific KPIs

The success of the case study project was influenced by carefully linking the KPIs to the project requirements. A case study Interviewee describes this:

> "You want to make sure that the KPIs are written in a way that recognizes that the right performance drives the right behaviours within the team and must ensure that the KPIs are proactive and not reactive […]" Furthermore, "Some of KPI areas, such as safety, community and quality, had payments tied into performance within these areas, which is difficult to do with a traditional fixed price contract".

A major KPI area was community and communication. This KPI had financial incentives linked to it for outstanding performance, motivating the Alliance team to achieve outstanding results in this area of community awareness and liaison and was described via the interview process as follows:

> "It was identified that the community and communications was an important element of the project as it was included in the KPIs. But, it was important to not only establish these themes through the group of specialists in the office, but to get the right results it had to be transferred through to the personnel in the field. Having community and communications as a KPI really elevated the status of community relations training and made it part of the culture." This was further reiterated during other interviews: "[…] being a KPI area there were certain performance criterion that we had to meet. We had to respond to any community concern in a certain period of time. There were financial rewards linked into that, so there were incentives there. Community response time and satisfaction of the community to the project team were all part of the project KPI area. This is also a benefit of Alliancing".

The community KPI is an example of how important it is to establish KPIs which motivate the Alliance team to focus on areas of the project which require special attention. Project specific KPIs are a factor that can influence the success of Alliancing projects. Attention must be made when developing the commercial framework to align the KPIs with the projects/clients critical requirements. If this occurs then the Alliance team has a better chance of achieving outstanding project success.

On-going workshops including site personnel

The formation of a strong Alliance team is extremely important to the success of the project and is equally important to create strong working relationships with the sub-contractors. For the project to be successful the Alliance team must ensure that the sub-contractors are committed and dedicated to the project and the Alliance method of procurement, as they are carrying out the actual site work. The Alliance team on the case study project identified the importance of building strong relationships with the sub-contractors and conducted workshops for this reason. An Interviewee describes the workshop approach:

> […] the Alliance set up workshops where the program manager and the delivery manager would talk to the sub-contractors and let them know what the expectations were and the opportunities available. The workshops with the sub-contractors were a critical part of

> building a strong working team. They allowed the organisations that were not a commercial Alliance partner to still feel part of the project team and they identified the importance of the role of the sub-contractor to both the project and the Alliance.

The sub-contractors are an important part of an Alliance project and involving them in ongoing workshops builds trust, strong relationships and commitment which promoted good workmanship and thus influenced the overall success of the Alliancing project.

Web-based management programme

The project implemented a web(internet)-based management system which was the central project management tool used by the Alliance team. A number of the interviewees identified this as being a key factor that led to successful communication between the stakeholders:

> The program was a single web-based project management tool which was a key factor for success as it enabled the dissemination of information between the partners. The system held all the design documentation, correspondence, cash flows and budgets. Being a web-based system the information was available to the team anywhere anytime allowing better management and control over the project, thus assisting in the overall success of the project.

The system integrated some major project KPIs and allowed efficient and effective management of these areas. Management programmes for these individual areas were all on the one single system. This allowed personnel to be versatile in their roles as training in the use of the system covered all areas. This contributed to the success in those areas: "The system set-up included the integration of the community, environment, safety and quality systems. This was very powerful and was successful because there was one system to work to rather than individual systems".

The web-based programme allowed all sections of the Alliance management to easily interact, communicate and solve problems in real time. In order for Alliancing to be successful significant interaction and communication is required between the various organisations that form the Alliance. Open communication, team building, problem solving, teamwork, integration, information sharing and support are important requirements of an Alliance. A programme such as this enhances the likelihood of success in these key areas as it also provides an important link between the individual Alliance organisations.

Conclusion

Since this research was conducted, Australia has seen a further increase in Alliance Contracting, but only in certain States (jurisdictions). This is particularly evident in Queensland where the likes of Alliancing has been used for the procurement of many Public Sector projects. For example, the Queensland State Government, in the form of both their Public Works and Main Roads departments, use Alliance and Partnering arrangements as default contracts on projects with construction periods of over 12 months and/or with a dollar value of A$10 million. Relationship contracting approaches, such as Alliancing, establish and manage the relationships between all parties and remove barriers, encourage maximum contribution and allow all parties to achieve success. The use of Alliancing is due to globalisation factors and the need to successfully manage risk. Alliancing provides a project delivery method that promotes open communication, equality and a systematic problem resolution process that achieves win-win outcomes. Alliancing demonstrates a collective sharing of almost all project risk/reward, provides a "no blame/no disputes" agreement and installs an integrated project team who use a principle-based strategic management process.

In partnership, each Alliance entity provides their services on a net cost basis and upon completion of the project the parties share in the profits and/or losses, respectively. Through both a review of literature and case study analysis of a current Alliance contract, a number of CSFs were identified. With regards to Alliance contracting in Australia, five additional, or new, CSFs were identified as specifically influencing the success of the case study project. These five "project specific" CSFs, which extend the body of knowledge, can subsequently be applied to Alliance projects in general, and are:

- the use of an integrated Alliance office;
- the staging of project and stretch targets;
- establishing project specific KPIs;
- facilitating on-going workshops that include site personnel; and
- the integration of a web-based management programme.

Success factors aside, there is still a propensity for Alliance partners to eschew developing and maintaining collaborative relationships once their Alliance has been established (Davis and Love, 2011). Therefore, ongoing research into Relationship Contracting approaches, such as Alliancing, is vital to ensure the development of sustainable procurements methods, the continued funding of infrastructure, successful relationship management, operational viability, fair risk distribution, financial success and value for money for all project stakeholders.

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