Price Competitive Alliance Projects: Identification of Success Factors for Public Clients

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Abstract: The need to identify the critical factors in the successful development and management of the price competitive alliance model has become a priority for public sector clients, as there is an increasing need to obtain better value for money (VfM) for its infrastructure projects. Yet, there has been limited research undertaken about the nature and use of price competitive alliances. This research determines the success factors (SFs) for price competitive alliances during their relationship development phases as this form of alliance contract is being used extensively by public sector clients to procure critical infrastructure projects in Western Australia (WA). A review of the literature of partnering and alliance contracting is used to develop a conceptual model of potential SFs. Interviews with 21 practitioners who participated in alliances on behalf of a WA public sector client were conducted to determine their perceived SF for price competitive alliances throughout the relationship development process. Contrary to the literature, each of the SFs identified was required in each stage of the relationship development process. In particular, the development of a leadership enriched culture (where people view the project as an extension of themselves and feel good about what they personally achieve through cooperation) was deemed necessary for the successful implementation of a price competitive alliance. Moreover it was revealed that the establishment of trust for the client began to arise at the point when a realistic target outturn cost that was able to deliver VfM, as well as an innovative sustainable outcome could be attained. Price competitive alliance models are considered to be an appropriate procurement method, albeit during the current economic climate an alternative to public private partnerships, for delivering large complex infrastructure projects.

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Introduction

> Trína chéile a thógtar na caisleáin—Teamwork and cooperation are required to complete great projects.
>
> (Irish proverb)

It is widely known that teamwork and cooperation are essential to successfully complete construction projects (Black et al. 2000; Cheng and Li 2001; Walker et al. 2002; Lahdenpera 2009). The traditional separation of design, construction, manufacture, and maintenance processes associated with projects can hinder effective teamwork and cooperation (Love et al. 1999; Walker et al. 2002). In overcoming the problems that have been associated with traditional contract delivery strategies, alliances are being used by public sector clients particularly those in Western Australia (WA) so as to obtain value for money (VfM) (Ross 2008; Davis et al. 2009). Alliance contracting is a relationship based contractual arrangement that can be used to ameliorate teamwork and the collaborative and cooperative nature of the project delivery process for infrastructure projects (Kumaraswamy et al. 2005; Sakal 2005; Alderman and Ivory 2007).

Infrastructure projects involve a high degree of integration between design, construction, and operations groups. Based on the fundamental principles of collaboration and cooperation, the alliance relationship contracting strategy has been found to be more successful than the traditional transactional approach in effecting integration between the diverse groups involved in delivering projects. The development of the relationship is critical to alliance performance in terms of meeting project objectives and delivering project outcomes (Monczka et al. 1998). Consequently, the need to identify the success factors (SFs) in the successful development and management of the alliance relationship has become a priority, as this form of collaborative arrangement has become a necessary procurement option for the public sector. Therefore, it is necessary for public sector clients to be able to determine the factors that can influence the successful delivery of their alliance projects so as to obtain ameliorated VfM. Previous research that has examined alliance success has tended to only focus on the "pure alliances" undertaken in the private sector and neglected those different alliance forms being used by the public sector (e.g., Jefferies et al. 2000). With this in mind, this research examines the SFs in alliance relationship development for price competitive alliances and the impact that these factors can have on different phases of the relationship development process.

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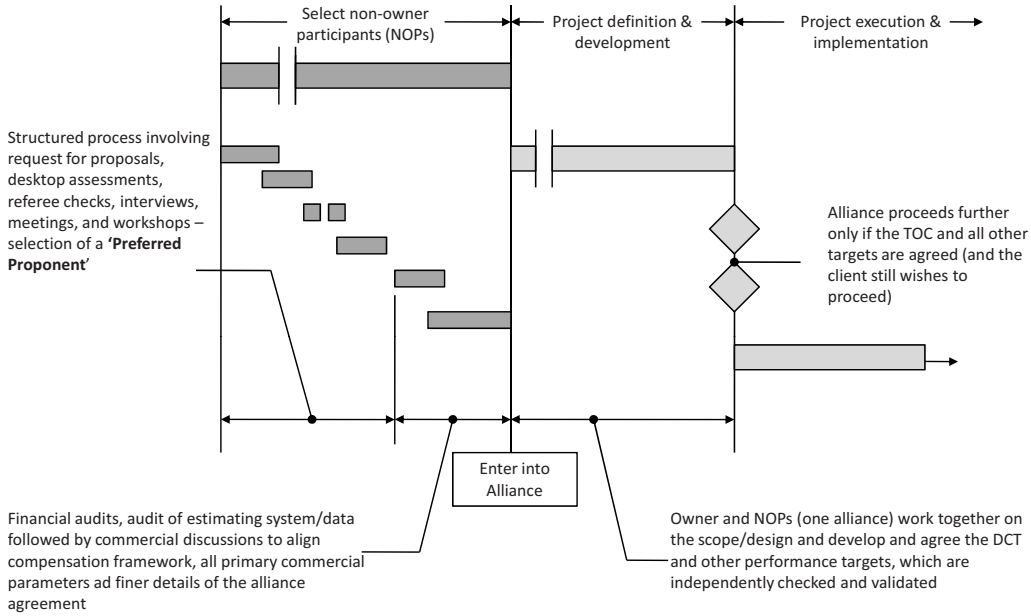

Fig. 1. Pure alliance selection process (Ross 2008, p. 2)

Alliance Types

An alliance is a form of relationship contracting in which the establishment and management of relationships between partners remove barriers maximizing partner contributions and success (Ross 2003). Unlike traditional (transactional) types of procurement where the focus is on maximizing individual outcomes, alliances work on the principles of mutual trust, commitment, and communication (Kumaraswamy et al. 2005; Lee and Cavusgil 2006) to reduce conflict and enhance productivity and overall performance (Lambe et al. 2000; Lee and Cavusgil 2006). Two types of alliances are strategic and project alliances (Li et al. 2000; Love et al. 2002). Strategic alliances are long-term partnerships established between organizations to pursue mutual strategic goals (Holt et al. 2000; Cheng et al. 2004; Judge and Dooley 2006). Project alliances on the other hand are short term and can be described as a project delivery strategy in which a number of participants join together to share risks and outcomes on a project (Li et al. 2000; Rowlinson et al. 2006). They are essentially a procurement model and can take several forms which include pure and price competitive alliances (Ross 2008). A detailed review of the alliance procurement process can be found in Lahdenpera (2009). Most of the earlier use of alliances in Australia particularly WA in the oil and gas sector used a pure alliance (Walker and Hampson 2003) where the nonowner participants (NOPs) were selected on the basis of experience, capability, and attitude but without regard to price (Fig. 1). Two notably successful WA projects that used this form of procurement approach were the East Spar and the Wandoo B developments (Jefferies et al. 2000; Davis and Cowan 2008). While such projects were successful a great deal of skepticism has arisen with the use of pure alliance forms due to the underruns against the target outturn cost (TOC). The TOC is a jointly determined estimate of the total capital expenditure required to deliver the scope of works. A TOC includes the estimated direct cost of each NOP for their respective portions of work within an alliance, as well as the estimated direct costs of the client/owner. It has been suggested that the TOC that is often not genuinely competitive which can result in the alliance being perceived to have performed well (Davis and Cowan 2008).

In addressing this concern, the price competitive alliance illustrated in Fig. 2 was developed so it could be used for public sector projects. Here two independent interim teams are selected in the first instance on the basis of experience, capability, and attitude with limited or no regard to price. Each of these teams with the client's input and support develops its own design, execution strategy, and TOC. The client selects the winning team based upon a comparison of the TOC juxtaposed with nonfinancial criteria.

There has been an ongoing debate about the benefits and disbenefits of price competitive alliances (e.g., Victorian Government 2006; Davis and Cowan 2008; Ross 2008; Lahdenpera 2009). Irrespective of the benefits/dis-benefits, alliances can eliminate the misalignment of commercial interests through a risk/reward model based on an open book accounting approach where risks can be shared equitably (Yeung et al. 2007). Under a risk/reward model, the project cost or the TOC is established only after the partners have been selected through the participation of the designers, constructors, and other service providers. The TOC is developed jointly by the alliance partners with a commercial model designed around incentives in the way of reward for cost savings and penalties for cost overruns (Walker et al. 2002). If the TOC is too high, then the relationship may breakdown and the project may not go ahead. If the TOC is too low then there could be significant pressure to cut corners and compromise quality (Alchimie 2004).

Alliances and Partnering Features

Alliances differ from partnering arrangements. Partnering focuses on improving traditional contractual frameworks such as traditional contracting and design and build (Yeung et al. 2007). Partnering is a collaborative procedure and is not legally binding. Project alliances, however, are legally binding and the monetary rewards for parties depend upon the success of all parties working

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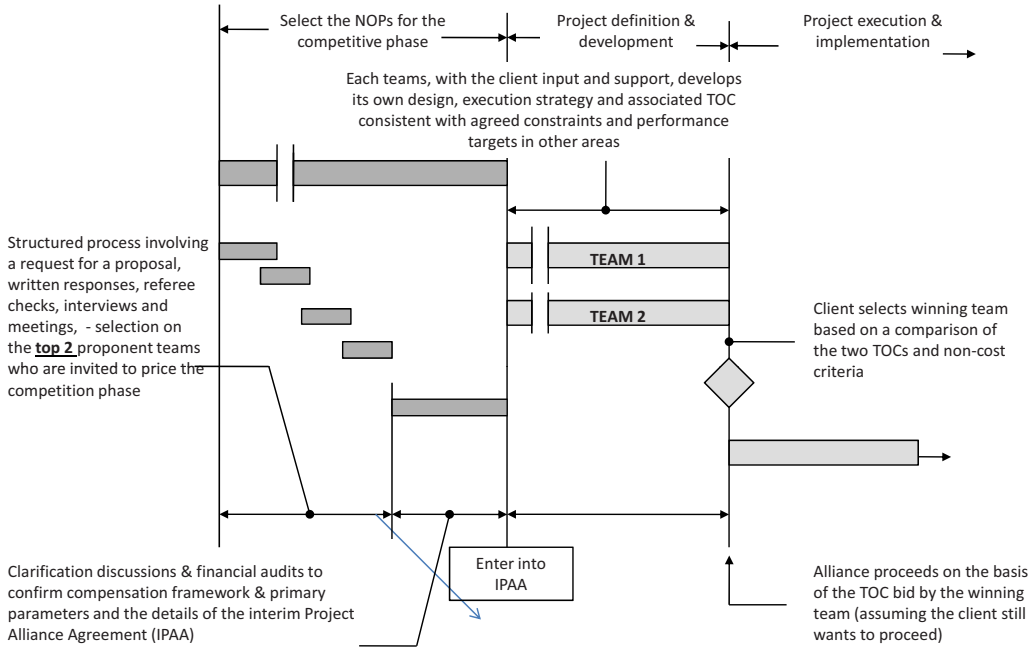

Fig. 2. Price competitive selection process (Ross 2008, p. 2)

in a cooperative manner. There are similarities between alliance and partnering concepts, which include the following (Love et al. 2002; Nyström 2005):

- Establishment of trust between parties;
- Mutual understanding;
- Quality-based selection;
- Regular cooperation and feedback meetings;
- Open information exchange;
- Use of an impartial facilitator;
- Joint problem solving; and
- Economic incentives.

Thompson and Sanders (1998) described the alliance relationship as the unity of purpose between the project team representing coalescence into a "virtual company" on a partnering continuum. In Thompson's model, each of the four stages in the continuum represent a new level of alignment: from competition which is the traditional approach in the absence of partnering; to cooperation where the focus is on reaching an agreement through compromise; then to collaboration which involves achieving process improvement through teamwork; and last, coalescence involving reengineering of processes to fit the application. The coalescence phase represents a cohesive entity that jointly shares the risks and rewards to an agreed formula (Walker et al. 2002). According to Walker et al. (2002) this risk component provides a strong incentive for all parties involved in an alliance to really collaborate to ensure resources and skills are available.

Beach et al. (2005) have suggested that alliances may not be universally accepted in the construction industry as the project environment, characterized by one-off contracts and short-term gain, is incapable of supporting a concept founded on mutual trust and long-term collaboration. While the use of alliances is increasing, caution should be counseled as a significant proportion have been deemed to be failures (Inkpen and Ross 2001; Judge and Ryman 2001; Hughes and Weiss 2007). Rahman (2006) and Alderman and Ivory (2007) suggested that the differing goals and objectives of individuals and organizations can drive opportunistic behaviors and the actions of unscrupulous parties can lead to the disbandment of the alliance relationship. Opportunism, however, can be addressed and relationships maintained if appropriate governance structures are put in place (Lee and Cavusgil 2006).

Alliance Critical SFs

To ensure the probability of project success using an alliance, the following SFs have been identified in the literature. Here the partnering and alliance literature are drawn upon as they are considered to be both forms of relationship contracting:

- *Management and support* factors include top management support (Black et al. 2000), alliance partners' agreement (Love et al. 2002), adequate resources (Boddy et al. 2000), workshops (Ariño et al. 2005), and continuous improvement (Walker et al. 2002);
- *Collaboration and cooperation* support factors include open communications (Black et al., 2000), mutual trust (Hoffmann and Schlosser 2001; Chan et al., 2004), effective coordination (Gulati 1995), creativity (Li et al. 2001), team building (Love and Gunasekaran 1997, 1998; Love et al. 1998), and compatible alignment (Love et al. 1998); and
- *Knowledge and learning* factors include creativity, joint problem solving (Love et al. 2002; Cheng et al. 2004), learning climate (Holt et al. 2000), and commitment (Cheng et al. 2004).

In Fig. 3, a model of alliance SFs is conceptualized and derived from the normative relationship contracting literature. It is suggested that these SFs are needed throughout all stages of an alliance's life cycle though their respective weighting will vary. For example, all the collaboration and cooperation factors will rank highly in all stages, though during the formation stage continuous improvement will be of less importance as key performance indicators (KPIs) and objectives are being identified.

The relationship development process is fundamental to alliance performance and success (Davis and Cowan 2008). Relationship development is an iterative process, evolving progression

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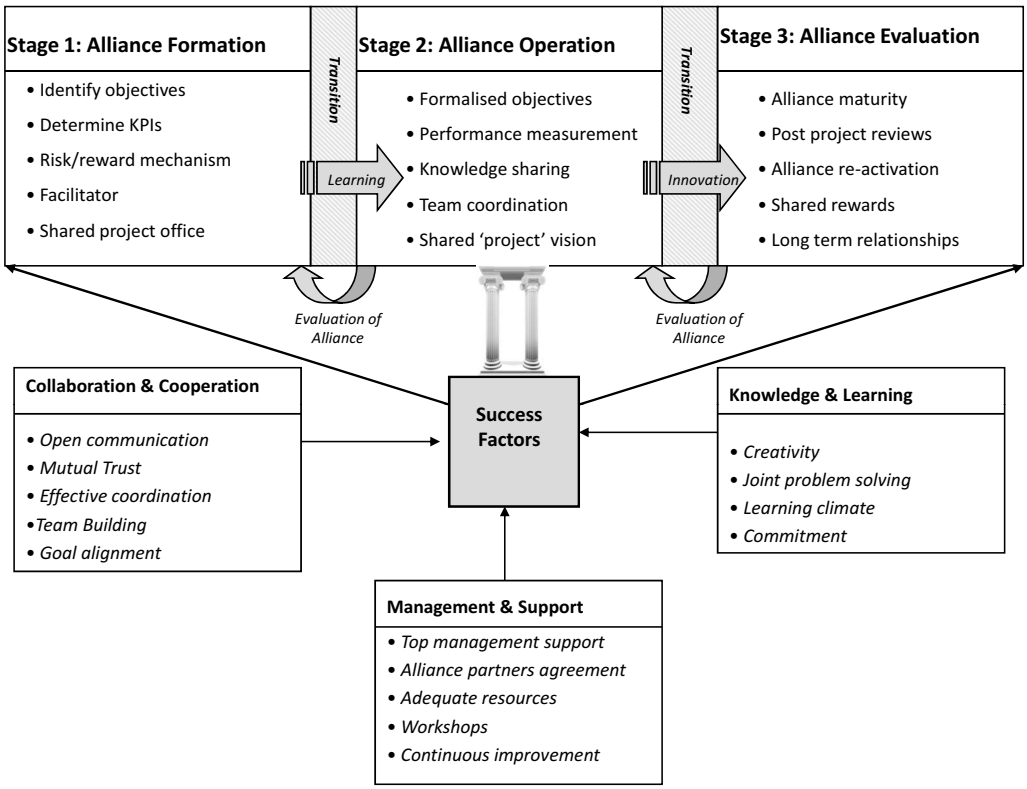

Fig. 3. Conceptual model of alliance SFs

in which the benefits to the partners increase as the relationship develops (Boddy et al. 2000). An alliance typically goes through a number of distinct stages as noted in Fig. 1, though the terminology used to describe each stage tends to differ with various studies that have been undertaken. In Table 1 the primary alliance stages are identified. However, a five stage model has been presented by writers such as Crane et al. (1997) and Hoffmann and Schlosser (2001). These two additional phases presented are not dissimilar to Stage 3 presented in Table 1.

At the end of each stage there is a period of transition where there is a degree of "process" overlap. It is here that the alliance has the opportunity to examine issues that may be of concern and identify strategies to better manage relationships between partners so as to ensure that project deliverables are not being jeopardized. At each stage learning and creativity are necessary to develop process and product innovations. Alliances often fail because individual team members insist on using the replicate practices that have worked on previous alliances even though they may not be appropriate for their current alliance (Hutchinson and Gallagher 2003). The continual encouragement of creative thinking leads people to move outside their comfort zone to foster innovation (Rowlinson et al. 2006). For price competitive alliances the pressures for innovation are high from public sector clients due to the requirement for VfM and sustainable outcomes (Davis et al. 2009).

Alliance Formation

The first stage is a formal process involving negotiation and familiarization of partners (Ring and Van de Ven 1994). Here joint expectations are developed around motivation, potential investments, and perceived uncertainties of the potential joint business deal (Ring and Van de Ven 1994; Doz 1996; Das and Bing-Sheng 2002). As trust has not yet been developed, the relationship is fragile and good management of the partnership is critical (Marshall et al. 2005). To establish trust between partners in the negotiation stage, Hoffmann and Schlosser (2001) suggested encouraging unilateral commitments that underline the importance of the potential partnership. A facilitator can also help to build trust between the partnering team members by promoting open communications.

High information asymmetry between partners is experienced during this formative stage because performance targets and trust are yet to be established (Doz 1996). To encourage greater openness and better communications between parties there should be shared offices (Bresnen and Marshall 2002). McCarter and North-

Table 1. Summary of the Three-Phase Alliance Development Models

Writer	Phase 1	Phase 2	Phase 3
Ring and Van de Ven (1994)	Negotiation	Commitment	Execution
Das and Bing-Sheng (2002)	Formation	Operation	Outcome
Wohlstetter et al. (2005)	Initiation	Operation	Evaluation
Cheng and Li (2001)	Formation	Application	Completion or reactivation

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craft (2007) suggested proximity promotes more frequent interactions and information exchange. Such colocation can also help to increase familiarity and reduce any fear that may potentially exist within the alliance (McCarter and Northcraft 2007). Team building sessions, such as field trips, can help build social bonds between team members. These sessions may also overcome any confusion and communication barriers that exist (Hutt et al. 2000).

Support from the senior management of participating organizations throughout all stages can provide the alliance team with confidence that adequate resources will be readily available (Hoffmann and Schlosser 2001). Bresnen and Marshall (2002) recognized that there is a clear benefit of continuity of personnel within and between projects, but note the difficulty in achieving this in practice owing to the competing requirements of different projects. Although alliances can be informal relationships, written bespoke contracts are usually signed by all the partners (Cheng et al. 2004). This agreement is largely "plain language" and articulates common goals and strategies for all partners. This style of agreement helps to avoid legal setbacks, misinterpretations, and potential influence that may affect the alliance relationship (Ring and Van de Ven 1994).

Alliance Operation

During the second stage of an alliance the partnership evolves and begins to become resilient (Das and Bing-Sheng 2002). In this phase, the mutually agreed goals and objectives that were formed during Stage 1 are formalized. Trust begins to be built (Das and Bing-Sheng 2002); partners learn to collaborate; and cooperation improves between partners (Doz 1996). Several social control processes such as reciprocity and confidence emerge as mechanisms to sustain the alliance during this unstable stage (Marshall et al. 2005). Trust building and safeguarding against opportunism are particular problems encountered in this stage (Todeva and Knoke 2005). A smooth alliance implementation requires all levels of management to work on developing open communications to facilitate the sharing and transfer of information (Wohlstetter et al. 2005). In addition, high levels of coordination are required to encourage behaviors responsive to achieve the desired objectives (Marshall et al. 2005). More frequent interactions between alliance partners help to build a shared vision, which leads to trust and a greater sharing of strategic knowledge (Holt et al. 2000). The continued use of workshops is suggested to promote effective coordination of duties assigned to partner members.

Alliance Evaluation

In this stage, the commitments and agreements are put into action (Ring and Van de Ven 1994) and the relationship between partners is more mature, trust is developed, and the partnership is robust (Marshall et al. 2005). In project alliances, this stage involves the conclusion of the alliance after construction has been completed. The evaluation process provides alliance partners with the opportunity to identify areas for improvement and future direction (Wohlstetter et al. 2005). A common result of the evaluation through the feedback loop is the modification or refinement of the alliance by revisiting the operations phase to improve structures and processes or redefine goals of the alliance (Wohlstetter et al. 2005). Evaluation can either result in the partners deciding to undertake additional projects under the alliance or terminate its existence. Cheng et al. (2004) suggested that reactivation can only be achieved if the critical SFs such as mutual trust, open communications, and effective coordination are present.

Table 2. Distribution of Respondents' Roles in Project Alliances

Role	General description of role	Number
General manager	Client representative	1
Project director	Manage projects	3
Company director	Alliance facilitation	3
Principal project manager	Administration of alliance agreement on behalf of client	2
Principal engineer	Design interface between client and NOPs	2
Relationship/project manager	Interface between client and NOPs	5
Engineering manager	Manager engineering interface	2

Research Approach

To examine the applicability of the conceptual model proposed in Fig. 3 for public sector clients, an exploratory study was undertaken using semistructured interviews that focused on each of the identified alliance phases. Price competitive alliances are examined as these are the form of alliance that the public sector has used in WA. Twenty one interviews were conducted over a 2-month period with a variety of individuals with varying experiences alliances (Table 2).

Interviews were used as the mechanism to examine the themes and constructs identified in Fig. 3. Interviews were chosen as the primary data collection mechanism because they are an effective tool for learning about matters that cannot be observed and for gaining an insight to people's experiences in particular scenarios. According to Taylor and Bogdan (1984) (p. 79), no other method "can provide the detailed understanding that comes from directly observing people and listening to what they have to say at the scene."

The clients who had experience with a price competitive alliance were *purposefully* sampled from within the public agency and invited to participate in the research. Interviews were conducted at the offices of interviewees. Interviews were digitally recorded and transcribed verbatim to allow for the nuances in the interview to be apparent in the text. The interviewees' details were coded to allow for anonymity, although all interviewees were aware that it might be possible to identify them from the content of the text. The format of the interviews was kept as consistent as possible following the themes associated with developed conceptual model. Interviews were kept *open* using phrases such as "tell me about it" or "can you give me an example." The open nature of the questions allowed for avenues of interest to be pursued as they arose without introducing bias in the response. Notes were taken during the interview to support the tapes to maintain validity. Each of the interviews varied in length from 1 to 2 h. Interviews were open to stimulate conversation and break down any barriers that may have existed between the interviewer and interviewee.

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Data Analysis

The text derived from the interviews was analyzed using QSR N6 (which is a version of NUD∗IST and combines the efficient management of non-numerical unstructured data with powerful processes of indexing and theorizing) and enabled the development of themes to be identified. One advantage of such software is that it enables additional data sources and journal notes to be incorporated into the analysis. The development and reassessment of themes as the analysis progresses accords with the calls for avoiding confining data to predetermined sets of categories (Silverman 2001). Kvale (1996) suggested that ad hoc methods for generating meaning enable the researcher access to "a variety of commonsense approaches to interview text using an interplay of techniques such as noting patterns, seeing plausibility, making comparisons, etc." (p. 204).

Using NUD∗IST enabled the researchers to develop an *organic* approach to coding as it enabled triggers or categories of interest in the text to be coded and used to keep track of any emerging and developing ideas over and above those identified in the conceptual model (Kvale 1996). These codings can be modified, integrated, or migrated as the analysis progresses and the generation of reports, using Boolean search, facilitates the recognition of conflicts and contradictions.

Findings and Discussion

Twenty one respondents who represented a public sector organization on their alliance projects were interviewed. Each of the respondents indicated that they were currently involved with the procurement of infrastructure projects using a competitive alliance model. The contract value of the projects that participants were involved with ranged from A$50 million to in excess of A$120 million. The number of parties in each alliance that the public sector organization formed a relationship with ranged from two to four. Table 2 identifies each of the identified roles of the respondents within the organization. Respondents were from an array of functional areas within an alliance, which aided the scope for identifying the SFs.

The identification of the appropriate SFs is heavily dependent upon the experience that has been acquired by those participating in the alliance. It was found in this instance that respondents had acquired a wealth of experience with 48% having 1–5 years, 40% 5–10 years, and 13% more than 10 years. In addition, 75% of respondents had accumulated their experience in several projects. The analysis revealed that the choice to use an alliance predominately centered on the allocation and management of risk particularly when the scope was ill-defined. Other factors that were deemed to influence the use of a price competitive alliance were the requirement for technological innovation, resource shortages, and time constraints. The performances of alliances were typically measured in terms of time, cost, quality, operator satisfaction, community, safety, sustainability, stakeholder satisfaction, environment, and asset performance.

Concomitant with the literature review, the analysis revealed that the following themes regularly emerged as SFs in alliances for the public sector organization: *trust, open communications, effective coordination, top management support, adequate resources, creativity*, and *goal alignment*. Additional SFs that were identified were leadership and integration. It is suggested that leadership can be incorporated within the construct of *management and support* and integration with *collaboration and cooperation* (Fig. 1). Serendipitously, however, the analysis revealed that the identified SFs, contrary to the literature, were deemed vital in each of the identified alliance phases, despite the fact that greater emphasis was placed on some more than others. This may suggest that there was a conscious effort by the alliance parties to continually build and maintain the established relationship. Several respondents proffered that experience in building and maintaining relationships was a determinant of a successful alliance, especially when problematic issues arose. It is the "nature" of the relationship that respondents considered to differentiate an alliance from any other forms of client-contractor transactions. Relationship maintenance was based on the established trust between parties throughout all phases. In fact, after a project is completed the public sector organization attempts to maintain relationships with parties particularly through the use of communities of practice. This enables shared knowledge and information about project processes, products, and technology so that better project outcomes can be attained in the future and innovations identified.

The establishment of personal relationships between team members was identified as being important in encouraging frank discussions without the fear of any lingering grudges. Good relationships were believed to enable decisions to be made readily with regard to issues that arose during the project's life cycle. The culture of the partnering organizations influenced the behavior of individuals and how they reacted to specific issues that arose. A *leadership enriched culture* (i.e., where people view the project as an extension of themselves and feel good about what they personally achieve through cooperation) was identified as being an appropriate culture for alliance partners to have. Such a culture was deemed to be adept to participative decision-making, which is needed to resolves issues and identify managerial and technological innovations. Supporting the need for comparative culture between alliance partners an engineer stated:

> You want a person coming into the alliance who has got that culture but you want to know that they are supported by their organization. If they are an isolate, there is the danger that when something gets referred back to the Alliance Lead Team, you might get some different decisions made if the culture is different. So we see that the organization and the people have got consistent alliancing culture.

Collaboration and Cooperation

Trust

The analysis revealed that a price competitive alliance facilitated stronger relationships as it enabled parties to work closer together and understand each organization's cultural background, so that the trust building process could be facilitated more effectively. A general manager stated:

> My view is that in cost (price) competitive alliances, you have greater trust in the early phase because you have not had any hard times yet as they bid the price in. So on day one you already have a price and there is no reason not to believe that everything is fabulous and you start off on a high.

Surprisingly, the determination of the TOC was found to be a factor that influenced the establishment of trust between the client and their partners during the competitive bidding process. If the

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client thought that the TOC signified VfM, then there was a greater propensity that confidence would be established with the alliance partner's ability. For the client confidence in the TOC enabled the foundations for trust to commence. For example, a project manager stated:

> Developing the TOC is the most stressful time because you are trying to agree a value for money price and our experience has shown us that to date, sometimes companies see this as an opportunity to "milk the cow."

When trust is absent, confidence in decision-making may be jeopardized and opportunities for innovation can be missed. For example, an alliance manager stated:

> When an idea is put forward and you do not trust it, you lose opportunities. It needs to be established as soon as possible through proactive management.

During the operation phase, cost was identified as a major factor that contributed to the breaking down of trust between parties. For example, a relationship manager stated:

> The nonowner participants are more willing to deliver if the project cost is within the target outturn cost or lower. If the alliance is forecasting a loss, different behaviors start to emerge and trust is lost.

Cost overruns are a characteristic of cost competitive alliances, as risks are typically underestimated because the bidders try and keep the estimates down to improve their chances of winning the project (Ross 2003). Conversely, delivering under the TOC may suggest that the partners have overcharged. This can potentially destroy the trust that has been established as the client can lose confidence that the TOC represented VfM. Issues relating to poor time performance were another issue that was deemed to influence trust. In one example, a project example stated that there had been friction due to documentation discrepancies between constructors and engineers, which contributed to silos and mistrust between teams being created. The project director stated:

> Trust was an issue. It is the usual story where the contractor thinks that the engineer is totally incompetent and cannot document and design anything that can be built and the designer feels that the contractor is totally incompetent and does not know how to build. What happens then is you get these pockets of people from the different partner organizations.

Once alliance members had been able to work through their issues during the operations phase, the trust that had been established between parties emerged to be stronger in the evaluation phase. This allowed information and knowledge to be transferred more effectively so that project deliverables could be met. According to a project manager:

> When you build trust, you build understanding and what is absolutely critical is the knowledge embedded in the people so you have no learning curve the next time.

Open Communications

Facilitation, workshops, and conflict resolution/problem solving were identified as mechanisms to encourage open communications between alliance parties. The stimulation of open communication assisted with avoiding misunderstandings, rework, delays, and industrial action. Workshops were used frequently during the formation stage to tease out technical issues and build relationships between parties. A project director stated:

> Facilitation tends to happen earlier on and then tends to drop off towards the end . . . (and) partnering workshops were also used, more in the earlier stages in the alliance.

The project director further described the development of a successful tool that had been used during facilitation, which was referred to as an *expectation matrix*. The process involved project team members making commitments to each other. Each person's expectations were recorded against the identified commitments so that they could align with one another. This proved particularly useful when relationships were strained during the operation phase. It was used to remind parties about their commitment to one another and the goals of the project. Regular meetings and bimonthly newsletters about issues on-site or emerging innovations were used to keep people involved with the project. A project director stated:

> What we did is we wanted to get the whole workforce involved, to feel a part of the project. Communications is very important and this really did contribute to having a trouble free project. We had very little industrial action and I firmly believe that everybody was proud of what they did. We instilled that into the workforce.

Postproject reviews were a requirement for the public sector client during the evaluation phase. This enabled effective learning to take place, which was necessary to identify process improvement activities for future projects.

Integration

The integration of people, systems, and processes was identified as a SF. The identification of efficient and effective systems such as cost control, safety, and quality is important during the formative phase to ensure the alliance operated in a proficient manner. The bringing together of people, systems, and processes from other organizations enabled an understanding of each other's culture and procedures which provided the building blocks for organizational alignment. One project manager stated that if such alignment did not occur then projects would invariably fail:

> Sometimes some of the systems and procedures are fatally misaligned and you do not realize that until it is too late. You have four companies that have different financial procedures and processes and you have to make sure you have to get alignment of those systems and processes; different close-off dates; different approval levels you have got to understand, otherwise your project is doomed.

It does not have to be one organization that provides all the systems. Those systems that are used, however, should be tried, tested, and maintained throughout a project's life. For example, a project manager stated:

> Do not always assume that one organization brings a system to the table which is better for the alliance. You have to take the time to see, and ask do these all deliver the best for the alliance or not. You have to see what the best system is and make sure it works for the project's duration.

Effective integration was identified as a mechanism for "binding the team" and helped to eschew enclaves that often develop when several organizations are working together.

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Effective Coordination

Alliance teams were often deemed to work in isolation from stakeholders and as result these often lead to the emergence of tension and conflict. As a consequence of this experience, the client introduced "relationship managers" into their alliance contracts to develop and maintain relationships and to ensure the expectations of all parties were being met. Relationship managers also provided emotional support to parties, as there is often an unrealistic expectation that people, once placed in an alliance, will automatically cooperate. During the formation phase, effective coordination was seen to be important for the flow of information between the internal and external stakeholders as one principal engineer stated:

> There are all sorts of integrated roles; for example, we have electrical experts sitting outside, and corrosion people, mechanical engineers, operations and such, and we have to somehow get that into the alliance.

Project team coordination was identified as being highly effective when it was colocated. Joint problem solving, decision-making, and learning were greatly improved, which enabled a greater proclivity for innovation. A principal engineer made the following comment:

> A factor that impeded the (previous) alliance was that the nonowner participants split up the design and construction team too early when they closed down the design office on-site. This meant that all the questions had to go back and forward and could not be dealt with on a day to day basis. There was a lot of time lost. This time we are going to keep everyone together; we will be working from one office. We can learn together to try and deliver an innovative outcome.

Coordination of the alliance team was not considered during the evaluation but was necessary to acquire knowledge from project reviews.

Goal Alignment

The establishment of objectives that all parties could clearly understand and adhere to was identified as a SF. The communication of objectives and expectations during the initially during the formative phase enabled organizational and project goal alignment. For example, one general manager made reference to design standards required by stating:

> From our side, we need to be very clear on engineering design standards and the difference between a standard and a preference. Sometimes, someone's preference is costing us a lot of money.

Making sure that all parties adhere to the project's objectives is a continual process and requires vigilance by senior management within the alliance. For instance, one project director stated:

> As to being clear, people always have ideas of doing something different, experimenting, and coming up with innovation. All these things, if you do not know what your boundaries are, you could be going off in all sorts of directions. So that you can easily discount distractions, you need to be clear about what you want.

Management and Support

Leadership at the alliance management level was deemed a SF throughout a project's life cycle, as it is required to ensure that all individuals, the project team, and stakeholders' needs are met. Having the *appropriate* resources was also identified as being critical to successful project delivery. This was especially evident throughout the boom that had been experienced over the last 5 years within WA, which was driven by a demand for commodities such as bauxite, iron ore, and nickel from India and China. Having an array of social and technical skills as well as experience was deemed essential for developing and maintaining relationships. One team leader stated that this applied to all alliance forms irrespective of the model adopted and stated:

> Inability to get the right resources slowed down the process and probably bred mistrust a bit because some of the work was not as good as it could have been . . . (and) some people from the client organization thought that they (the nonowner participants) had incompetent people working on the project.

One relationship manager made a subtle distinction between having the *appropriate* and *right* resources, and used the analogy of *efficient* and *effective* to distinguish between the terms. For example, several relationship managers stated that having the *right* (effective) resources were more important than having simply adequate resources:

- Alliances come at a premium and the cost of having all those overheads and the amount of resources they consume I think there is an opinion that the nonowner participants were somewhat "milking the cow" and even to the point that if they had spare people that they would put them in the alliance to get something for them.
- Having the right people from each party in the alliance was crucial which is where we fell down as X did not have sufficient people to put into the alliance.
- Another thing that impedes alliances is the lack of the right resources. Alliances once they get going have to keep moving. They are spending machines. But if you do not have the right resources, any delays can cost you big money.

The provision of resources to satisfactorily meet required project demands was seen to be a measure of commitment particularly during the formative phase. The supply of resources during the operation phase, however, was more critical than that of formation as it encompassed both the design and physical construction of the infrastructure that was required. In an example provided by an engineering manager it was revealed that the alliance manager and other personnel were frequently changed, which subsequently influenced the project team's capacity to build and sustain trust among each other. The engineering manager stated:

> They (nonowner participants) changed some of the key people at inappropriate times. They changed the alliance manager from bid to implementation so he did not know the transition of the design and had not been in all the workshops for developing behaviors. They brought in someone that did not actually know about alliances. He was under stress to deliver and develop the relationship at the same time; this made it difficult.

Having appropriate resources during the evaluation phase of the alliance was identified as being a SF, but not as important as other variables such as management support and trust. In this

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phase, the project team members are invariably winding down operations and there would be an expectation that individuals would move on to other projects.

Knowledge and Learning

Innovations were deemed to be most effective when they were identified during the formation and operation phases of an alliance. Such innovations, however, are typically identified from experiences and lessons learnt from project reviews undertaken in previous projects. Yet, technical innovations tended not to be identified until the implementation phase. This is because parties often are reluctant to identify design innovations until they had been awarded the contract. For example, a project manager stated:

> They do not deliver innovation until they get the work and then they deliver innovations to get the savings out of the target outturn cost.

In this instance, it is suggested that public sectors may perceive innovation as more critical to nonowners as it is used as a mechanism to obtain cost savings. The detrimental aspect of price competitive alliances on innovation for the public sector client was noted by one principal engineer who stated:

> Two organizations are bidding against each other to drive the price down. You then take that price and nail it to the wall and then you say we now have an alliance. It is a bad start to setting up the relationship.

The interviewees wanted parties to identify innovations in conjunction with the TOC. Ultimately, the public sector client aimed to achieve VfM and it was perceived that this was obtained through technological innovations that contributed to sustainable outcomes.

Conclusions

There has been limited published research that has examined the issues associated with price competitive alliances even though they have become a popular method of procurement for the public sector. Such alliances can provide VfM and enable project risks to be shared between NOPs. The use of incentive payments through risk/reward models provides the impetus for improved project performance. The tying of rewards brings NOPs together to work in a cooperative and integrated manner. The integration of different types of know-how for the promotion of common goals during the formative stages of a project creates the cogency that enables an alliance to create the added value that is required. Such added value is invariably missing when other forms of procurement methods are used to procure public sector projects. Successful cooperation, however, requires mutual trust, commitment, and the active exchange of information.

The research has identified the SF that a public sector client's representatives who have extensive experience with price competitive alliances considered to identify pertinent SFs. The SFs identified were trust, adequate resources, open communication, coordination, integration top management support, creativity, and goal alignment, which were all important in the formation, operation, and evaluation phases of a relationship. Contrary to the literature, however, each of the SFs identified was required in each stage of the relationship development process. In particular, the development of a leadership enriched culture (where people view the project as an extension of themselves and feel good about what they personally achieve through cooperation) was deemed necessary for the successful implementation of a price competitive alliance. Moreover it was revealed that the establishment of trust for the client began to arise at the point when a realistic TOC that was able to deliver VfM, as well as an innovative sustainable outcome could be attained. While the client has worked hard to build and maintain relationships, the nature of the price competitive model may lead to suboptimal solutions, if the TOC is used as a mechanism to simply win a contract. In addressing this issue a relationship manager can assist with the development of trust so that a realistic TOC can be provided and rewards are ensured for savings that arise as the project develops through to its completion.

Price competitive alliance models are considered to be an appropriate procurement method, albeit during the current economic climate an alternative to public private partnerships, for delivering large complex infrastructure projects. The public sector client will continue to learn from its experiences with using a price competitive model to deliver its large complex infrastructure projects in WA. Price competitive alliances can facilitate the development of stronger relationships, as parties work closely to develop the TOC from the outset. Initially working together to establish a TOC enables parties to assess their capabilities and culture as well as compatibility to form an alliance.

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