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Partnering: what is it, when should it be used, and how should it be implemented?

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The interest in construction partnering has increased during the last decade. Much research has, however, found that cooperation and its benefits are not easily obtained, partly due to a lack of understanding of the partnering concept and when and how to implement it. The aim is therefore to increase this understanding by investigating three research questions: (1) What is partnering? (2) When should partnering be used and to what extent? (3) How should partnering be implemented? A thorough literature review and four case studies are utilized to develop a definition of partnering and discuss when and how partnering should be implemented through cooperative procurement procedures. Partnering is defined as a cooperative governance form that is based on core and optional cooperative procurement procedures to such an extent that cooperation-based coopetition is facilitated. Mandatory core procedures are: soft parameters in bid evaluation, compensation form based on open books, and usage of the core collaborative tools start-up workshop, joint objectives, follow-up workshops, teambuilding, and conflict resolution techniques. Complementary optional procedures are: early involvement of contractors in concurrent engineering, limited bid invitation, joint selection and involvement of subcontractors in broad partnering teams, collaborative contractual clauses, incentives based on group performance, usage of complementary collaborative tools (e.g. partnering questionnaire, facilitator, joint risk management, joint project office, and joint IT tools), and increased focus on contractors' self-control.

Keywords: Partnering, procurement, cooperation, governance, case study.

Introduction

The interest in and promotion of cooperative relationships has increased during the last decade in many countries. Cooperative relationships can be discussed in terms of alliances, relational contracting and partnerships, but in the construction industry partnering is the most frequently discussed institutional form of cooperative relationship (Wood *et al.*, 2002). Partnering is often argued to bring about advantages in the areas of quality, sustainability, safety performance, dispute resolution, human resource management, innovation, as well as time and cost reductions (Egan, 1998; Chan *et al.*, 2003a).

Some research efforts are of a more critical nature since they have found that cooperation and its benefits are not easily obtained due to various barriers to change, arising when trying to implement partnering in different countries: for example Hong Kong (Chan *et al.*, 2003b), the UK (Akintoye *et al.*, 2000; Saad *et al.*, 2002; Bresnen, 2007), the US (Glagola and Sheedy, 2002), Australia (Ng *et al.*, 2002) and Sweden (Eriksson *et al.*, 2008). One part of the problem is that there is no universal definition of the partnering concept, causing confusion and ambiguity about what partnering really is. Saad *et al.* (2002) suggest that partnering is largely misunderstood and not a unified concept as other forms of procurement, which causes major problems for partnering implementation (Glagola and Sheedy, 2002; Chan *et al.*, 2003b). Hence, it is pertinent to increase the understanding about what partnering is.

Another problem is that partnering should be implemented in the right situation for the right reasons (Ng *et al.*, 2002). Since partnering implementation requires investments in time and resources, a suitable level of cooperation must be attained so that potential benefits exceed the costs. If partnering is implemented in the

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right way but in the wrong situation, the potential benefits will not be obtained and the effort will be judged as a failure. It is therefore relevant to increase the understanding about when partnering should be used and to what extent.

The third main problem concerns the fact that partnering is not easily implemented, even if people know what it is and when to use it. The transformation from adversarial to cooperative relationships requires a holistic and systemic change in structures, processes and attitudes (Eriksson and Pesämaa, 2007). In their empirical studies regarding the implementation of partnering in the supply chain Akintoye *et al.* (2000) and Saad *et al.* (2002) found that the actors perceived it important and beneficial, but they lacked an understanding of the concept and the prerequisites associated with its successful implementation. Eriksson *et al.* (2008) also argue that clients seem unaware of how to overcome the barriers to partnering. Hence, it is important to increase the understanding of how partnering can be implemented.

Since numerous researchers are overly positive about the use of partnering at the same time as many others identify partnering failures and implementation problems, it seems pertinent to increase the understanding of the partnering concept and its implementation. The following three interconnected research questions will therefore be investigated: (1) What is partnering? (2) When should partnering be used and to what extent? and (3) How should partnering be implemented? The research approach is based on a thorough literature review and four case studies.

What is partnering?

The literature review presented here has identified many different definitions of partnering, which can be categorized into four different types. First: some definitions are quite generic and simple. Chan *et al.* (2003b) state that partnering is the simple process of establishing good working relations between project parties. Another definition asserts that partnering is a management approach used by two or more organizations to achieve specific business objectives by maximizing the effectiveness of each participant's resources (Bennett and Jayes, 1995). The problem with such definitions is that they are too broad and non-specific, not giving the reader any deeper insight into the core of the concept.

A second type of definition includes the most important means to achieve partnering, thereby giving a richer picture of what the concept really is about. Partnering can then be described as an attempt to establish non-adversarial working relationships among project participants through mutual commitment and open communication (Cheung *et al.*, 2003a), or partnering is a project management approach to enhance project performance through a transformation of the traditionally confrontational construction culture to one that is based on trust and openness (Cheung *et al.*, 2003b). The most common components in such definitions are: joint objectives, trust, commitment, conflict resolution techniques, openness and continuous improvements (Naoum, 2003; Cheng and Li, 2004; Chen and Chen, 2007). The benefit of these definitions is that they give some advice and understanding about how to achieve partnering. The drawback is that they mix apples and pears by including not only procedures and tools (e.g. joint objectives and conflict resolution techniques) but also their outcomes (trust, commitment, openness, etc).

A third group of definitions has been developed quite recently in rather sophisticated ways, based on Wittgenstein's family-resemblance concept. These efforts aim to develop a universal definition taking into account the content of many definitions. In order to capture the core of the partnering concept, they focus on the components, that is, what partnering consists of. Through literature reviews Nyström (2005) found that trust and mutual understanding are the two most important components of partnering and that incentives, teambuilding activities, partner selection, openness, facilitator, conflict resolution techniques, and structured meetings are other important components that have to be present to some extent. In a similar way Yeung *et al.* (2007) found that the soft components trust, commitment, cooperation and communication along with the hard components formal contract and gain-share/pain-share are the key components of construction alliancing, which is a similar type of cooperative relationship. Other components that have to be present to some extent are early selection of contractors, workshops, joint objectives, continuous improvements, win-win philosophy and conflict resolution techniques (Yeung *et al.*, 2007). These definitions have much in common with the second group although they are more comprehensive and theoretically grounded. However, they share the same negative aspect since they too mix apples (procedures) and pears (outcomes).

A fourth type of definition, based on the theoretical thinking of the third type but not including outcomes of partnering, would be useful to develop. It is important to recognize that partnering *per se* does not automatically lead to effective outcomes, or even collaboration (Bresnen and Marshall, 2000a). The inclusion of positive outcomes in a definition makes partnering failures impossible. According to such definitions, projects that do not obtain trust, commitment, openness,

cooperation and mutual understanding are not partnering projects. This is obviously not helpful since we must be able to investigate potential factors causing failures in order to avoid them. Lu and Yan (2007) make a useful contribution in this matter by focusing on a partnering approach (based on procedures) rather than a partnering philosophy (involving commitment, trust, good faith, etc.). They define partnering as a structured sequence of processes initiated at the outset of a project that is based on mutual objectives and utilizes specific tools and techniques such as facilitated workshops, a charter, conflict resolution techniques and continuous improvements techniques (Lu and Yan, 2007). This is the most useful definition so far, but the list of components included is not very comprehensive. Hence, a synthesis of Nyström's and Lu and Yan's definitions would be appropriate. Eriksson (2008b) investigated how different procurement procedures (from the specification stage to performance evaluation) affect the governance form, which in turn affects the levels of cooperation and competition in the relationship. Clients can facilitate cooperation by using cooperative procurement procedures, while the use of traditional competitive procedures facilitates competition and arm's-length relationships (Eriksson, 2008a). Partnering can then be defined as a cooperative governance form facilitated through various cooperative procurement procedures, of which all are not required for a partnering label. However, in line with Nyström's argument it is still necessary to distinguish among core and optional components.

When should partnering be used and to what extent?

Partnering is not suitable for all kinds of project (Thompson and Sanders, 1998; Ng *et al.*, 2002). In small, one-off, less complex projects which are of low strategic importance, the set-up costs simply do not justify an extensive collaborative approach (Bresnen and Marshall, 2000b). According to transaction cost economics (TCE) and related literature on contract law, pure market relationships, facilitating competition, are most suitable for occasional, standardized and simple transactions, whereas relational contracting, based on cooperation, is better for recurrent, complex and customized transactions (Macneil, 1978; Williamson, 1985). Based on TCE logic, various researchers therefore seem to agree on when increased cooperation is called for, that is, in construction projects characterized by complexity, customization, uncertainty and long duration (large size) coupled with time pressure (Palaneeswaran *et al.*, 2003; Lu and Yan, 2007; Eriksson and Nilsson, 2008).

The problem rather involves selecting a suitable extent of cooperation, since an exaggerated focus on partnering processes may even become harmful (Bresnen, 2007). According to Thompson and Sanders (1998), the extent to which parties collaborate in cooperative relationships can be described in a continuum. A low level of cooperation primarily includes joint objectives and a charter, while in other aspects it is based on the same procurement and contractual arrangements as traditional arm's-length relationships. In intermediate levels the focus changes from short-term to long-term, which heavily affects trust, openness, risk sharing and continuous improvements. In high levels of cooperation the team members identify themselves with the project team rather than with their employing organizations. This is facilitated by a common performance measurement system and a joint project office (Thompson and Sanders, 1998).

Based on TCE logic, Eriksson (2008a, 2008b) developed a coopetition continuum, prescribing a suitable balance between cooperation and competition in different types of projects. Coopetition can be defined as the balance between cooperation and competition in a buyer–supplier relationship, derived from the actors' simultaneous cooperative and competitive behaviours (Eriksson, 2008b). By choosing suitable procurement procedures, tailored to the project characteristics, the client can establish a governance form that facilitates a suitable level of coopetition. As complexity, customization, uncertainty, duration (project size) and time pressure increase from low to high levels, the governance form should focus more on cooperation and less on competition (Eriksson, 2008a); see Figure 1.

The client needs to conduct an analytic estimation of the project characteristics in order to decide which coopetition level is suitable. Indirectly this decision also involves when to use partnering and to what extent. Coopetition levels with more cooperation than competition (cooperation-based coopetition) should be based on cooperative governance forms, such as partnering (Eriksson, 2008a).

How should partnering be implemented?

By increasing the understanding of what partnering is, when to use it and to what extent, we have actually come a long way to increased understanding of how to implement partnering. It remains to describe which specific cooperative procurement procedures clients can choose from and how to implement them. Eriksson (2008a, 2008b) developed a process model (see Table 1) of how to facilitate a suitable level of coopetition through appropriate procurement procedures.

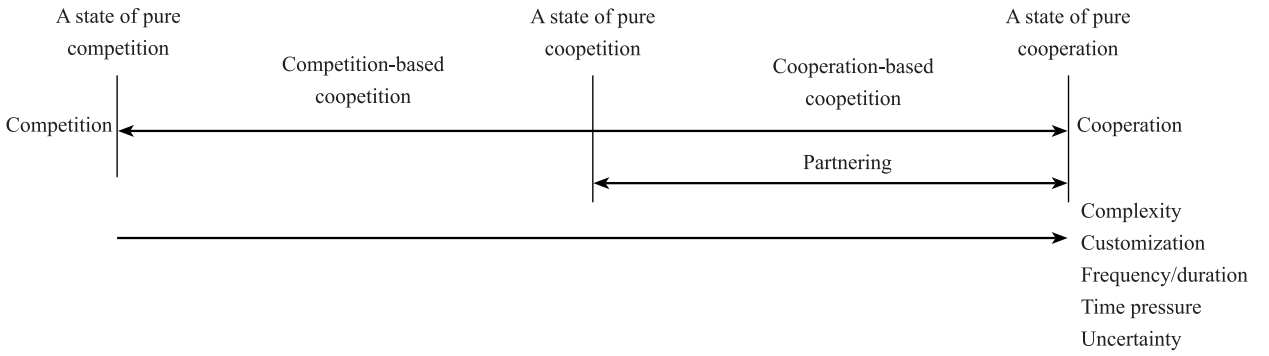

Figure 1 Coopetition continuum (developed from Eriksson, 2008b)

Table 1 Competitive, coopetitive, and cooperative procurement procedures (Eriksson 2008a, 2008b)

Buying stage	Procedures related to competition	Procedures related to coopetition	Procedures related to cooperation
Specification	By the supplier (or by the client)	Joint specification with one party responsible	Joint specification with shared responsibilities
Bid invitation	Open bid procedure (multiple bids)	Limited bid invitation (a few bids)	Direct negotiation with one bidder
Bid evaluation	High weight on price	Equal weight on price and soft parameters	High weight on soft parameters
Subcontractor selection	By the contractor (or by the client)	Joint selection with one party responsible	Joint selection with shared responsibilities
Contract formalization	Formal, comprehensive	Formal, comprehensive contracts + relational norms	Informal, incomplete contracts + relational norms
Compensation	Output based (fixed price)	Fixed price and shared profits	Including incentives (shared profits)
Collaborative tools	Low extent	Medium extent (including cooperative benchmarking, aggressive joint objectives)	High extent
Performance evaluation	By the client	Both by client and by supplier	By the supplier

Partnering with a high level of cooperation can be facilitated through the alternatives in the cooperation column: early involvement of contractors in joint specification, direct negotiation with only one bidder, bid evaluation based on soft parameters (e.g. technical and managerial competence, collaborative ability, earlier experience of the supplier and shared values) instead of lowest tendering price, joint subcontractor selection, incentive-based compensation, collaborative tools and joint activities (e.g. joint objectives, teambuilding events, facilitator, partnering questionnaire, joint IT tools, joint project office, joint risk management, and conflict resolution techniques) that facilitate socialization among partners, and supplier self-control. However, it is important to point out that some coopetitive or even competitive alternatives can be chosen in partnering arrangements as long as the balance remains more focused on cooperation than on competition.

In order to reap the benefits of both cooperation and competition, the different procurement alternatives must be suitably combined, since they are interconnected and all possible combinations are not appropriate (Eriksson, 2008b). Thus, it remains to increase the understanding of how different procedures can be appropriately combined and implemented. Detailed case studies, giving illuminating examples of how to implement specific procedures, are therefore useful. Examples of such efforts are: early contractor involvement in joint specification (Brown *et al.*, 2001), bid evaluation based on soft parameters (Topcu, 2004; Kumaraswamy and Anvuur, 2008), subcontractor involvement (Briscoe *et al.*, 2004), joint objectives (Swan and Khalfan, 2007), partnering questionnaire (Cheung *et al.*, 2003b), and joint IT tools (Cheng *et al.*, 2001). Research efforts involving the implementation of a whole range of procedures (Bresnen and Marshall, 2002;

Cheung *et al.*, 2003a; Olsen *et al.*, 2005; Eriksson and Nilsson, 2008) are also useful in order to investigate the interconnections between different procedures. This paper adds to this knowledge by presenting empirical results from four case studies in Sweden.

Method

The empirical part of the research involved four case studies of partnering projects procured by a Swedish mining company. In order to enhance comparisons between the empirical data and the conceptual arguments it is important to select critical cases (Yin, 2003) that are governed through explicit partnering approaches. Critical cases should be selected by theoretical sampling (Eisenhardt, 1989) in order to provide opportunities for comparisons of main aspects related to the three research questions. The four chosen cases provide identifiable similarities and differences in terms of: (1) project participants' understanding and experience of partnering; (2) project characteristics (e.g. size, duration, complexity and uncertainty); and (3) the way partnering was implemented. Although the projects were executed in the chronological order A-B-C-D they overlapped significantly, which put high pressure on the client's human resources. Since each project is affected by the social context from both earlier and parallel projects, all cases are of an embedded nature (Yin, 2003). Selecting four projects within the same organization obviously results in diminished possibilities for generalizations. Case study research should however aim for analytical rather than statistical generalizations (Yin, 2003) and an advantage of the chosen approach is that any observed differences in partnering outcomes can then be more easily associated with differences in how it was implemented rather than with cultural differences on organizational and national levels.

The data collection was performed through 50 interviews (a total of 66 hours) with respondents mainly representing the client's project organizations (35 interviews), but also from the partner organizations (15 interviews). The client respondents included the director of the construction project department, first-level project managers of the four projects, second-level project managers in Projects A and B that were divided into smaller parts due to their large size, procurement managers, quality managers, design managers, and various specialists involved in time scheduling and quality control. The partner respondents included site managers, contract manager, design consultants and engineers. The interviews were semi-structured and developed from the process-based frame of reference presented in Table 1. Additionally, approximately 20 hours of document studies were performed, focusing on partnering charters, incentive arrangements, and tendering and contractual documents. To increase reliability (transparency and future replication), case study protocols were constructed together with case study databases, containing case study notes, documents, and the narratives collected during the study, all with the aim of facilitating retrieval for future studies (Yin, 2003).

There are three main uses for case study research: motivation, inspiration and illustration (Siggelkow, 2007). These case studies have been used not only for illustration but also for motivation reasons, giving empirical support for the conceptual prescriptions. The qualitative process data formed an empirical data pattern, which described why and how the procurement procedures were performed in the case study projects. These patterns were compared among cases, that is, cross-case pattern analysis (Eisenhardt, 1989). The empirical patterns were also compared to the theoretical predictions in order to investigate differences and similarities between the process data and theory, i.e. a pattern-matching analysis (Yin, 2003). In order to enhance sense making and theorizing from the process data a visual mapping strategy was adopted (Langley, 1999) since the use of tables and matrices allows the simultaneous representation of a large number of dimensions, facilitating cross-pattern analysis (Eisenhardt, 1989; Langley, 1999). In order to improve predictive power the visual mapping strategy can be complemented with a synthetic strategy, which transforms process data to variance theory, predicting variances in the dependent variable through variances in the independent variables (Langley, 1999). Accordingly, a synthetic strategy involved a holistic perspective on the sequence and variance in the process data (i.e. procurement procedures) in order to predict variance in the outcome of partnering (i.e. cooperation).

Empirical findings

Description of case study projects

The four case study projects concerned two large pelletizing plants (Project A and B), a new main mine level (Project C), and flotation facilities (Project D), see Table 2.

What is partnering?

In Projects A and C the client teams did not have any earlier experience of partnering. They engaged a construction contractor that had a great deal of experience and knowledge from previous partnering projects and this facilitated the development of partnering knowledge in both the client team and other partners.

Table 2 Project characteristics

Project characteristics	Project A Pelletizing plant	Project B Pelletizing plant	Project C New mine level	Project D Flotation plant
Size	€300 M	€600 M	€20 M/year	€40 M
Main parts	Construction (C) Electrical engineering (E) Mechanical engineer (M)	Construction (C) Electrical engineering (E) Mechanical engineer (M)	Construction (C)	Construction (C) Electrical engineering (E) Mechanical engineer (M)
Duration	2 years	2.5 years	Contract for 1 year at a time	1.5 years
Time pressure	An initially high time pressure was increased further due to extended scope.	Extremely high time pressure.	Very high time pressure due to high requirements on the production speed: 15 300 m/year.	High time pressure.
Complexity	Very high complexity. Complex coordination between C, E, and M. Totally 150 different firms were involved. 700 people were involved at most on site.	Extremely high complexity. Complex coordination between C, E, and M. 1400 people were involved at most on site.	Moderate complexity. Smaller amount of trades and disciplines in underground work. Due to limited space too many people can not work simultaneously. At most 150 people were involved	Not as complex as Projects A and B but a normal industrial project with high complexity. Complex coordination between C, E, and M.
Customization	Rather high, since the technology (straight grate sintering machine) was not really new but customized at site.	Very high. No existing product available and process development was required. The world largest Grate Kiln-Cooler was built on site. It is the world's only pelletizing plant equipped for NOx reduction.	Very high. Obviously almost all work is taken place at the site. Work has to be planned carefully ahead to fit the client requirements, the time schedule and the geological conditions.	Rather high, but fairly normal for an industrial construction project.
Uncertainty	High. Client demands changed considerably during construction, resulting in many COs. The plant process capacity was increased by 80% in two steps.	High. Parallel design and construction increase the uncertainty.	High. Geological conditions and quality of the ore body are very hard to estimate before hand.	Moderate. Conceptual design stage was not very time pressured which resulted in less uncertainties regarding scope, technical solutions and costs.

In Project B neither the client team nor most of the suppliers were accustomed to partnering. The main contractor, however, had partnering experiences and the client team had very high expectations of the partners, especially the experienced main contractor. The project manager stated that 'in partnering I should be able to send the contractor in my place and he will act according to my best interest'. It is very difficult to fulfil such high expectations of cooperation in a single project, and when the contractors failed to do so, the project manager was somewhat disappointed and not quite satisfied with the cooperative efforts made by the partners. In Project D, the partnering team from Project A was pretty much intact. Hence, most actors were very familiar with the partnering concept and could implement lessons learned from earlier experiences in Project A. This resulted in a valuable mutual view of what partnering is already from the outset of the project.

The case studies show that a mutual understanding of the partnering concept and what can be expected from it is critical. Such mutual understanding sets the basis for equality, mutual respect, and a joint striving for the project objectives. Thus, the recognized importance of

increasing the knowledge of what partnering is, in order to enhance its implementation (Chan *et al.*, 2003b), is supported by the case results.

When should partnering be used and to what extent?

In 2004 the client's procurement department adopted a partnering strategy concerning all large and complex investment projects. Thus, it was not really up to the project managers to decide freely which governance form to use. One project manager stated that 'if I want to use another type of governance form than partnering I have to motivate it carefully'. However, the project managers of the four projects perceived 'fully fledged' partnering to be suitable due to the challenging project characteristics (see Table 2) and the lack of human resources in the client organization. From a TCE perspective the partnering strategies seem suitable since all four projects were characterized by high complexity, uncertainty and time pressure (Eriksson, 2008b).

How should partnering be implemented?

In spite of similar aspirations in the projects, different levels of cooperation were achieved. The highest level of cooperation was achieved in Project D, facilitating very good project performance. In Project B, which had the most difficult project characteristics, the level of cooperation did not reach satisfactory levels. These differences in outcomes can to some extent be explained by some variations in the choices of procurement procedures and project characteristics, but more importantly by how the procedures were implemented. A second-level project manager in Project B stated 'it is nothing wrong with partnering as such, but how it is implemented'. The empirical results are presented in Table 3.

Integration of design and construction (concurrent engineering) is mostly suitable in construction projects characterized by high complexity, customization, uncertainty and time pressure (Brown *et al.*, 2001; Andi and Minato, 2003). The argument that early involvement of contractors is important in partnering (Palaneeswaran *et al.*, 2003) is supported by the case study findings. Close collaboration in early design stages developed and grew to close collaboration throughout the project life cycle. It should be pointed out that the timing of the involvement is not all that matters; the way in which contractors are involved and interact is also vital. Experiences from Project B show that early procurement of contractors has little effect on collaboration if the client does not have the time and resources to interact with the contractor. Project C was the only project in which design was performed solely by the client side, which is normal in underground (mining) work. In the other three case projects concurrent engineering was performed in order to save time and utilize contractors' competence. The parallel design and construction was vital due to the high time pressure and the integration also served as a key factor enhancing cooperation. Hence, early involvement of contractors in concurrent engineering is often very important for cooperation to emerge, but since it is not always suitable it should be judged as a vital optional component of partnering rather than a core component.

Limited bid invitation and careful partner selection facilitate the development of cooperative relationships (Love *et al.*, 1998; Kadefors *et al.*, 2007). By limiting the amount of bidders, high performing contractors increase their chances of a continuous workload, which serves as a major motivator for them to cooperate with clients (Bresnen and Marshall, 2000c; Eriksson, 2007). Strategic partnering involves a special case of limited bid invitation since the competitive tendering situation is abandoned in subsequent projects. The selected contractor can therefore count on a continued relationship if performance meets the requirements. Since the acceptance of the lowest bid is a frequent reason for poor performance, bid evaluations should focus on soft parameters such as competence, earlier experience and ability to collaborate (Topcu, 2004; Kumaraswamy and Anvuur, 2008). In all four case projects bid invitations were limited or direct negotiations and selection procedures were based on soft parameters and earlier experiences of the partners. The explicitly low focus on lowest price resulted in harmonious relationships in which all actors were allowed to make money. In Project B, however, the focus on price was implicitly high, manifested by rough price negotiations when deciding the target price. The construction contractor's contract manager stated that 'it was tough to be so suspiciously questioned already at the outset of the project'. This approach is similar to the low bid mentality in traditional competitive tendering, which is a major barrier to partnering (Glagola and Sheedy, 2002). Additionally, the personal chemistry between the project leader and site manager was not very good in Project B. This highlights the importance of appraising key individuals during bid evaluations. Interviews with contract manager, site manager and design manager are important in order to find out the client's chances of collaborating well with these people. Limited bid invitation is often functional but not always possible, due to public procurement acts, for which reason it is an important optional component of partnering. Bid evaluation based on soft parameters rather than lowest price is, however, a core component.

Contractor–subcontractor relationships based on domestic contracts are often strained and adversarial

Table 3 Cooperative procurement procedures implemented in case study projects

	Project A	Project B	Project C	Project D
Feasibility and design	The feasibility stage was only 6 months. Only MS was involved as a consultant. CC was procured and involved soon after the investment decision, but only 1.5 months of the design stage elapsed before construction start. ES was procured shortly after construction start. Partners collaborated well in concurrent engineering.	CC and MS were procured early in the feasibility stage which lasted 1 year. Collaboration was close with MS but strained with CC due to tough price negotiations and lack of human resources dedicated to this relation. Start workshop was held too late (after construction start), Relationships got off on the wrong foot, which was difficult to correct during the remainder of the project. EC was procured after construction start.	The client performed most of the design work, especially regarding the placement of tunnels. Consultants are involved to some degree in the design of underground facilities. Since the involvement of contractors were not needed in the design work they were procured after most of the design work was finished. CC and three SCs were procured fairly simultaneously to plan construction work jointly.	CC, MS and ES were procured as consultants early in the feasibility stage which lasted 9 months. Collaboration was close among all partners although they were a bit unfamiliar with contributing to design work. Due to the early involvement of partners on a consultant basis 2/3 of the design work was finished before target prices and contracts for the construction stage were agreed. The partners collaborated well in concurrent engineering.
Bid invitation	Negotiated contracts with MS and ES. 3 CCs were invited to tender.	Negotiated contracts with MS. 3 CCs and 3ECs were invited to tender.	9 CCs were invited to bid but only 4 submitted tenders.	Negotiated contracts with CC, MS and ES.
Bid evaluation	CC-evaluation: Price 22%, Soft parameters 78%.	Similar to Project A for CC but the focus on price was higher for EC.	CC-evaluation: Price 33%, Soft parameters 67%.	Favourable risk analyses and earlier positive experiences made the client choose these three suppliers.
SC-selection	The client and CC collaborated in the selection of SCs.	The client collaborated with MS and CC in the selection of SCs.	The client and CC collaborated in the selection of SCs.	The client collaborated with CC, MS and ES in the selection of SCs, but it was mostly up to the partners to choose SCs.
Contract formalization	3 DB contracts with CC, MS and ES. Partnering team also included 3 consultants and an ESC. Jointly established collaborative contractual clauses were appended to the standard contracts.	3 DB contracts with CC, MS and ES. Partnering team included CC, MS and construction consultant.	DBB contract with CC. Partnering team included CC and 3 SCs.	3 DB contracts with CC, MS and ES. Partnering team also included two consultants and a SC.

Table 3 (*Continued*)

	Project A	Project B	Project C	Project D
Compensation	CC, MS and ES had similar compensation schemes: fixed price for indirect costs and open book reimbursement for direct costs including 50/50 gain-share/ pain-share in each contract. Opportunities for bonuses (€1.5 M ~ 0.5% of total value) connected to work environment, time and collaboration.	Compensation was similar to Project A for CC and MS. Fixed price for EC. Bonus opportunities (~ 1% of total value) were similar to Project A.	CC and one SC had similar compensation schemes: fixed price for indirect costs and open book reimbursement for direct costs including 45/45/10 gain-share/ pain-share on the total cost performance. Bonus opportunities (€0.4M ~ 2% of total value) connected to work environment & time.	Similar compensation schemes as Project A. Bonus opportunities (€2M ~ 5% of total value) connected to work environment and time.
Collaborative tools	Start workshop, joint IT-tools, joint objectives, partnering questionnaire, follow-up workshops, teambuilding, facilitator, conflict resolution.	Collaborative tools were similar to Project A, but also included a joint project office. Joint IT-tools were not used to the same high extent as in Project A.	Similar to Project B.	Similar to Project B.
Performance evaluation	Traditional control by contractors and client. The partners' self-control did not work very well. Joint follow up workshop after project was finished.	Similar to Project A. The partners' self-control did not work satisfactorily.	Similar to Project A. The partners' self-control did not work very well.	Somewhat increased focus on partners' self-control compared to Projects ABC. This aspect is enhanced by partnering but can be improved further.
Project results	Results regarding costs, time and quality were satisfactory. Cooperation was very good within contract relationships but slightly less good between contracts.	Slight cost and time overruns due to increased scope and change orders. Quality was satisfactory. Cooperation among partners was not satisfactory considering the partnering arrangement.	Results regarding costs, time and quality were satisfactory. Costs were reduced with 10% compared to preceding year when partnering was not used. Cooperation was very good both within and between contracts.	Results regarding costs, time and quality were very good. Cooperation was very good both within and between contracts.

Notes: Abbreviations: CC = construction contractor; EC = electrical contractor; ES = electrical supplier; ESC = electrical subcontractor; MS = mechanical supplier; SC = subcontractor; DB = design-build; DBB = design-bid-build.

even when client–contractor relationships are collaborative (Dainty *et al.*, 2001; Packham *et al.*, 2003). It is therefore important that the client gets involved in joint selection of subcontractors (Palaneeswaran *et al.*, 2003) and integrates them in the partnering team (Packham *et al.*, 2003; Eriksson and Nilsson, 2008). Owing to lack of resources, the client only collaborated with some of the partners in the selection of subcontractors in the case projects. Although the actors considered this collaboration beneficial, it requires time and resources and does not eliminate the risk of selecting unsuitable subcontractors. A few poorly performing subcontractors were actually jointly selected. A positive effect of joint selection is however that the actors share the risks and cannot blame each other for poor selections; they have to take joint action to decrease the negative effects of unsuitable choices. It is more important, however, to involve key subcontractors in the partnering team. This was done to some extent in the case projects but the respondents agreed that it should have been done to a

larger extent. Even if joint selection and involvement of subcontractors in a broad partnering team is often desirable, the cases show that partnering can be executed well without it. Hence, this is an optional component of partnering.

Traditionally, construction transactions rely heavily on formal standard contracts, seeking strict liability and attaching blame to occurring events (Cox and Thompson, 1997). The focus is contractual rather than relational, which hampers flexibility and encourages non-collaborative behaviour (Thompson *et al.*, 1998). Other authors have found, however, that standard contracts are not very influential when coupled with relational norms in partnering projects (Eriksson and Nilsson, 2008). In the case projects the form of contract does not seem to have mattered much; it is more an issue of timing. As long as the actors are procured as early as possible it does not matter much if they are contracted on a design-build or design-bid-build basis. Although design-build contracts were utilized, the client was heavily involved in leading the design work. In Project A, collaborative contractual clauses, describing the objectives and expectations of the partnering relationships, were appended to the standard contract. These collaborative clauses were not, however, considered very important for the collaborative climate. Although the abandonment of standardized contracts and establishment of collaborative contractual clauses are positive things, they are not a prerequisite for partnering, but rather an optional component.

Research efforts regarding the importance of incentive-based compensation have arrived at contradictory results. Some authors argue that incentive-based compensation is an important factor of partnering arrangements (Bayliss *et al.*, 2004), while others think that intrinsic benefits are more important (Kadefors, 2004; Eriksson and Nilsson, 2008). According to Bresnen and Marshall (2000b) and Palaneeswaran *et al.* (2003), contractors consider continuous business relationships to be a more important motivation factor for increased cooperation. This supports the importance of limited bid invitations and strategic partnering for cooperation to emerge. In the four case projects the gain-share/pain-share arrangements coupled with bonus opportunities were considered to be beneficial but not crucial. Another issue is the size of the bonus opportunities. If bonuses are to affect attitudes and behaviour, many respondents argued that they have to be relatively large. In Project D the bonus opportunities were therefore amplified to approximately 5% of the project value, which was considered more influential than in the previous projects. The third and perhaps the most important point to make regarding compensation forms is that gain-share/pain-share arrangements and bonus opportunities should be tied to group performance rather than the performance within individual contracts. In Projects A, B and D the compensation was connected to the companies' individual performances, which hampered collaboration between contracts. In Project C the gain-share/pain-share arrangements and bonus opportunities were tied to the group performance, for which reason the individual partners did not have any incentive to sub-optimize their own performance. This was perceived to be very beneficial. Although financial incentives are not the only important driver for collaboration, it is hard to see how traditional fixed price compensation can work in a partnering setting, since it endorses a win-lose rather than a win-win situation. Simple reimbursement based on open books can work, but then the client misses the opportunity to include an efficiency-enhancing driver. Hence, open books should be viewed as a core component while incentives and bonus arrangements based on group performance are an optional component of partnering.

Collaborative tools and joint activities are normally not utilized in traditionally procured projects (Eriksson, 2008a). In partnering projects, however, collaborative tools are very important ingredients, facilitating socialization and cooperation (Cheung *et al.*, 2003a; Bayliss *et al.*, 2004; Olsen *et al.*, 2005; Eriksson and Nilsson, 2008). The case projects utilized a broad range of collaborative tools: start workshop, joint IT tools, joint objectives, partnering questionnaire, follow-up workshops, teambuilding, facilitator and conflict resolution. All respondents were positive to these activities and found them effective for improving relationships and collaboration among all actors. Since all projects were large in monetary terms, the costs of performing these activities were not considered unreasonably high. In the partnering literature the collaborative tools start-up workshop, joint objectives, follow-up workshops, teambuilding and conflict resolution techniques are always discussed as core components (Cheung *et al.*, 2003a; Naoum, 2003; Bayliss *et al.*, 2004), whereas tools such as partnering questionnaire (Cheung *et al.*, 2003b), facilitator (Glagola and Sheedy, 2002), joint risk management (Palaneeswaran *et al.*, 2003), joint project office (Olsen *et al.*, 2005), and joint IT tools (Cheng *et al.*, 2001) are more optional.

Although construction work is hidden and very difficult to inspect (Kadefors, 2004), most clients rely heavily on extensive end inspections of the finished work (Eriksson, 2008a). In partnering projects it is better to rely more on the contractors' self-control and only execute limited random end inspections (Eriksson and Nilsson, 2008). In all four case projects, performance evaluation was conducted in traditional ways. The

partners' self-control was not perceived to work very well, which motivated the client to focus more on this issue in Project D. Partnering was considered to form a suitable base for improved self-control but a great deal of development is still required to reach satisfactory results in this matter. Since performance evaluation is mostly executed in traditional ways also in partnering projects, improved self-control activities coupled with limited end inspections should be viewed as an optional rather than a core component of partnering.

Summary

Knowledge and experiences from earlier research and the four case studies show that the different buying process stages have varying importance for cooperation. Hence, some cooperative procurement procedures are crucial for partnering while others are more optional. Accordingly, in Table 4 the various cooperative procurement procedures that have been identified in this study are divided into core and optional components of partnering.

Conclusions

The main theoretical contribution is a developed definition of what partnering is: partnering is a cooperative governance form that is based on core and optional cooperative procurement procedures to such an extent that cooperation-based coopetition is facilitated. The mandatory core procedures are: bid evaluation based on soft parameters (e.g. technical and managerial competence, collaborative ability, earlier experience of the supplier and shared values), compensation form based on open books, and usage of the core collaborative tools start-up workshop, joint objectives, follow-up workshops, teambuilding and conflict resolution techniques. Optional procedures that can be implemented to a varying extent are: early involvement of contractors in concurrent engineering, limited bid invitation, joint selection and involvement of subcontractors in broad partnering teams, collaborative contractual clauses manifesting relational norms, incentives and bonus opportunities based on group performance, usage of complementary collaborative tools (e.g. partnering questionnaire, facilitator, joint risk management, joint project office, and joint IT tools), and increased focus on contractors' self-control. The four presented case projects were full-fledged partnering attempts, utilizing all but one (i.e. increased focus on contractors' self-control) of these cooperative procurement procedures.

Partnering should be used in complex and customized projects with high uncertainty and long duration coupled with severe time pressure. The higher the levels of these project characteristics, the more cooperation and less competition is required. The more cooperation is demanded, the more should also the optional cooperative procurement procedures be utilized in partnering arrangements. The coopetition perspective adopted in this paper advocates suitable levels of cooperation rather than as much cooperation as possible. Some extent of competition is mostly appropriate also in partnering projects in order to enhance efficiency and development. It is thus important to implement the cooperative procurement procedures to such an extent that a suitable level of cooperation-based coopetition is facilitated in the partnering project. Because of the challenging characteristics of the four case projects, the client's decision to implement full-fledged partnering through all core components and a very high extent of the optional cooperative procurement procedures seems appropriate.

The case projects also offer some detailed practical advice of how to implement the broad range of

Table 4 Core and optional components of partnering

Core components of partnering	Optional components of partnering
Bid evaluation based on soft parameters	Early involvement of contractors in concurrent engineering
Compensation form based on open books	Limited bid invitation
Usage of core collaborative tools:	Joint selection and involvement of subcontractors in broad partnering team
Start-up workshop, joint objectives, follow-up workshops, teambuilding, conflict resolution techniques	
	Collaborative contractual clauses
	Compensation form including incentives based on group performance
	Usage of optional collaborative tools: partnering questionnaire, facilitator, joint risk management, joint project office, joint IT-tools
	Increased focus on contractors' self control coupled with limited end inspections

cooperative procurement procedures. The differences in outcomes, in terms of the levels of cooperation achieved in the case projects, can be explained by different ways of implementing the procedures. From a practical perspective it is noteworthy to highlight the importance of a thorough partner selection of key staff on the individual level, designating resources and personnel to joint-problem solving in the early stage of concurrent engineering, and avoiding tough price negotiations with partners involved at an early stage.

In order to further increase the understanding of how to implement partnering, more research regarding group-based incentives and contractors' self-control should be encouraged. Future research should also investigate whether there are more core and optional procurement procedures than the ones identified here. Although the empirical part of the research is limited to four projects procured by one Swedish client, the main findings addressing the three research questions are probably valid for other settings as well, whereas generalizations of a more detailed and specific nature of how to implement partnering in other cultural contexts should be made cautiously.

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