PROJECT ALLIANCES: CROSSING COMPANY BOUNDARIES IN THE BUILDING INDUSTRY

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ABSTRACT

Following the dissatisfaction with the traditional, fragmented organisation of the building process, the concept of the project alliance has been introduced in the building industry. The project alliance is a short-term relationship between parties where they agree on shared goals and form an integrated team to achieve results for a specific project. Attention is devoted first to preconditions and pitfalls for implementing project alliances in the building industry. Secondly, two building projects where project alliances have been used were analysed.

INTRODUCTION

Several models of long-term buyer-supplier relations have been developed for manufacturing industries. A limitation of these models is that they are only used in controlled production environments where the supply of goods is a repeating process. These models have often a limited application to an industry such as construction, where repetition is rare and works are procured typically on a one-off project-by-project basis. In the construction industry, designing, constructing, and supplying parties work together in constantly changing coalitions at different building projects (O'Brien et al., 1995). These temporary coalitions disappear upon the completion of projects.

The purpose of this paper is to elaborate on preconditions and advantages of a new non-traditional organisation form in the building industry: the project alliance. Within this new setting, all parties are committed to closely working together for the duration of the project. As such, the project alliance replaces the fragmented organisation of the building process with a more effective integration of resources and redefines the traditional boundaries between firms involved (Halman and Braks, 1999).

Empirical research was conducted in the Dutch building industry. Documentary information about experiences with project alliances in the Dutch building industry was the first source of data. This experience was a major input for brainstorm sessions and interviews with project managers actively involved in residential and non-residential construction, the second source of data. These brainstorm sessions focused first on preconditions for and (dis-) advantages of project alliances in the Dutch building industry. Secondly, the planning of building projects where project alliances had been used was discussed with the same group of managers. The major reason for doing these case studies of building projects was the importance of studying preconditions and implications of the concept of the project alliance in its real-life context (Yin, 1994).

The outline of this paper is as follows. In part one, the traditional organisation of the building process is analysed. In part two, attention is devoted to different aspects of the non-traditional concept of project alliances. Preconditions for and (dis-)advantages of project alliances are discussed in part three. Results of the case studies of building projects are summarised in part four. The conclusions are presented in part four.

THE FRAGMENTED ORGANISATION OF THE BUILDING PROCESS

In the traditional organisation of the building process the contractor wins a building project by tendering. The client often chooses the contractor who offers the lowest price. Because of this cost-driven nature of the industry, the contractor who wins the project in turn tries to get the lowest price from suppliers and subcontractors. Several bilateral contracts are negotiated between the contractor or architect and one of the suppliers. The architect produces a design for a client. Then, the contractor executes the design, assisted by suppliers and subcontractors. This temporary coalition consisting of several bilateral contracts disperses upon the completion of the project.

Each firm involved allocates resources according to his contract (Winch, 1989). Each party is only responsible for his specific input and has its own domain of expertise. These professional and organisational boundaries are rarely crossed. Therefore, many problems occur because designing, constructing, and supplying firms differ from each other in volume, market environment and culture. Each of these firms speaks its own language and has its own approach. This gives rise to many conflicts between parties during the building process due to lack of detail in the project description and the interpretation of what is included in the project (Pries and Janszen, 1995).

The traditional organisation of building processes can be characterised in terms of frequency, uncertainty and asset specificity. In transaction cost economics (TCE), these factors are the major dimensions used (Williamson, 1991).

First, in the traditional building process the frequency of transactions between parties involved is low, because of the use of market based bidding procedures during the selection. A few clients of construction are able to offer repeat orders for work over a long time horizon This temporary character of relations stimulates opportunistic behaviour because a party tries to get as much as possible out his contract.

Second, several types of uncertainties occur during the building process (Winch, 1989). Task uncertainties are caused by the fact that each project requires new design and production solutions. Organisational uncertainties are tensions in the temporary project coalitions. Task and organisational uncertainties combined with time pressure and project complexity often result in an insufficient information supply. Poor planning and many conflicts between the parties result.

Third, in construction projects asset specificity is low during the pre-contract phase, but high during the post-contract negotiations over variations and claims. Possibilities for opportunistic behaviour like small number situations or asset specificity are limited before the contract is signed. Afterwards the situation is reversed. Change of project specifications can lead to opportunistic behaviour of the designer, contractor or supplier.

THE PROJECT ALLIANCE

Using a TCE view, the characteristics of frequency, uncertainty and asset specificity mentioned above demand for an integrated approach. For that reason, partnering has become a contemporary theme in the construction industry. Bennett and Hayes (1995) suggest partnering can be carried out either on serial basis (strategic partnering) or a one-off commodity basis (project partnering). An example of project partnering is the concept of the project alliance. This concept originates from the offshore industry. For oil and gas companies in this industry, the need to reduce costs has been the main drive to search for more efficient and effective ways to work (Halman and Braks, 1999). Various positive experiences with project alliances in this industry have been reported so far (Offshore Engineer, 1999). The project alliance is a short-term relationship between parties where they agree on shared goals and form an integrated team to achieve results for a specific target project. The main principles of a project alliance are (Halman and Braks, 1999):

- an intensive preparation phase in order to secure the required conditions for openness, trust, and co-operation between the participants of the alliance;
- an agreement between the participants on a system to share project risks and rewards: the benefits achieved by the project alliance are shared equally between parties;
- disclosure of cost information between participants insofar relevant to achieving the project objectives.

Each individual is responsible for communication of information that could have impact on others. In case a firm is not performing correctly, this will influence the whole project. Without intervention, the other parties will notice a decrease in profit. A typical structure of a Project Alliance consists of an Alliance Board, a Project Management Team and subcontractors (Halman and Braks, 1999):

- The fundamental role of the Alliance Board is to ensure the performance of the project by guiding and supporting the Project Management Team, ensuring commitment of the parties to the project and to each other. The Alliance Board consists of one representative appointed by each of the relevant parties. The chairman of the Alliance Board is also the interface between the Alliance Board and the Project Management team
- The Project Management team is made up of appropriate functional specialists from the various parties. The role of the Project Management team is the management of the different stages of the building process.
- Sub-contractors are working for individual members of the Project Management team.

The Alliance Agreement is drawn up as an overarching agreement that binds the different firms. It is this agreement which defines the targets, risk and reward mechanisms and the interrelationships of the different contractors. Besides the Alliance Agreement the client still has individual Works Contracts with each firm. In these Works Contracts various matters are addressed. They provide rules in the event that there is a failure to reach an agreement on an Alliance or that through unforeseen circumstances the Alliance Agreement fails.

The purpose of the alliance is to reduce costs and optimise return for the client and reduce costs in order to enhance profit for the contractor. The relationship is characterised in that parties accept to work to Target costs. Targets are introduced to reach this win/win situation. Performance which produces 'Final Cost' lower than 'Target Cost' will produce a

saving to be shared between participants on an agreed basis. A performance which produces a 'Final Cost' higher than the 'Target Cost' will produce an over-run to be shared between the participants on an agreed basis. A risk/reward formula linked to the project give incentives to the firms involved to get their targets.

PRECONDITIONS AND (DIS-) ADVANTAGES OF PROJECT ALLIANCES

The experience with project alliances in the petro-chemical industry was a major input for several brainstorm sessions and interviews with project managers actively involved in residential and non-residential construction. These brainstorm sessions focused on preconditions and pitfalls for implementing project alliances in the Dutch building industry. In the interviews the results of the brainstorm sessions were verified and discussed. According to the project managers, the following conditions are of a major importance for the success of a project alliance:

- *Openness*: the traditional way of working needs to be replaced by a culture of openness, based on trust between the Alliance parties. This is one of the main differences with traditional contracts. Anyone may contact anyone else in order to progress an issue. Information will not be withheld, nor will it be distorted.
- *Commitment* to the project alliance of the top management of each firm involved is necessary to make the alliance a success. Commitment demands for openness among all parties on objectives, understanding each other business drivers, and alignment of individual interests.
- *Influence*: the alliance consists of key contractors that are really able to influence the total costs and the progress of the project. The project has to be in the initiative stage in order to give parties really the possibility to influence the building process.
- *Skills*: the parties and employees involved need to have thorough process knowledge and experience. Complementary skills are needed and partners that don't posses thorough process knowledge and experience have to be avoided.
- *Characteristics of the customer*: the client has to be prepared to accept project alliances. This is often the case when the customer appreciates innovative input of the firms involved, when there is a time constraint (it is in the interest of the customer to shorten the building time) and the project has a certain level of complexity.
- *Project organisation*: structured systems for planning, cost control, financial arrangements, organisational structures and preparation on implementation are essential (good fences make good neighbours).

In Table 1 major advantages and disadvantages of project alliances are presented. According to the project managers, several advantages are at the same time disadvantages. Discussing the major conditions gives direction to what the project managers see as the major pitfalls:

- lack of commitment of the parties involved;
- over reliance/complacency: relying too heavily on the fact that alliancing will automatically solve all problems;
- panic: nervous reactions when things appear to go wrong;
- perceived conflict: partners may be seen to be closely tied to each other, so exclusion from the tender lists will be the consequence;
- cost of involvement: investment of management and staff time;

- mistiming: alliancing is introduced too late in the process;
- the legal interface: alliance concepts are difficult to bring under a classic contract.

Advantages	Disadvantages
Optimising price/quality relation, fit-for-purpose specification.	
No claims because price of contractors is on 'cost + fair fee' basis with chance on potential higher fee.	Profit or loss prognosis can only be determined late in the process. Financial security is therefore only late available in the process.
Risks are spread over the alliance partners by a collective risk and reward scheme: alliance agreements with gainshare arrangement.	Dependence on other parties, they determine profit or loss too.
Shortening building time by faster approval procedures and optimised document flow by improved communication between parties.	Intensive co-operation in the initiative stage costs time.
Getting inside information of other firms.	Other firms get inside information of your firm.
A successful alliance stimulates the choice of the same partners in the next project (never change a winning team).	When the alliance is a success, the client will increase its demands.

TABLE 1 Major advantages and disadvantages of project alliances

CASE STUDIES OF BUILDING PROJECTS

In the brainstorm sessions, attention was devoted to potential reductions in construction time during the different stages of the building process. The planning of two building projects where project alliances were used were analysed.

DSM project

This project was an extension of two chemical plants of DSM, the largest Dutch manufacturer of chemicals. After studies in 1994 and 1995 the building process started in 1996. DSM initiated a project alliance consisting of the customer (DSM), the Engineering Contractor (Fluor Daniel) and the Constructing Contractor (GTI). Fluor Daniel was selected because of its experience with alliance-concepts and the existing relationships. GTI was the in-house contractor of DSM and familiar with the plants for construction and maintenance. GTI could also give local and multi-disciplinary support.

In this project alliance the profit for all parties was determined by the difference between actual costs and the Target Budget based on the project costs in a traditional context. After a few weeks of discussion, the parties agreed on the Target Budget. The Project Management consisted of representatives of the three major parties involved: the project manager from DSM, the engineering manager from Fluor Daniel and the construction manager form GTI. Decisions were taken in consensus. The project manager reported monthly to the Steering Committee consisting of the plant manager of DSM (also chairman), a representative of Fluor Daniel and of GTI.

Critical success factors	Measurement	Realisation
Safety	Number of casualties	0
Costs	Budgets used	Underrun of 15%
Process time	Number of days	Decrease of 20%

TABLE 2 Critical success factors of the DSM project

The critical success factors were defined as in Table 2. The quality of the engineering activities was above average. Fewer working days were lost because of delays. In order to get insight in the possibilities to shorten construction time by the project alliance, this organisation form was compared with the traditional organisation and design and construct (in that case the contractor produces the whole building product) (see Table 3).

	Traditional	D&C	Alliance	Difference D&C- All.	Difference Trad.-All.
Total number of months	27	20	16	4	11
Total construction time in relation to traditional building [in %]	100	74	59	15	41
Total construction time in relation to D&C [in %]		100	80	20	

TABLE 3 The planning of the chemical plant

Nerefco Hydrofiner project

Nerefco is the acronym of Netherlands Refining Company and is a joint venture between BP (69%) and Texaco (31%). Nerefco has two production locations in the Rotterdam area refining crude oil. The CDU4 plant of Nerefco stopped production in 1989. A restart of this plant was seen as a risky project. Parties selected for the alliance were Raytheon Engineers and Constructors, Fabricom Mechanical, Fabricom E&I, and NBM Amstelland. The Alliance Project Organisation consisted of the Project Alliance Board (directors of the alliance partners) for policy and control and the Project Management Team (the project managers of alliance partners) for the day-to-day management.

In 1996, a small team of in-house contractors started to explore the old plant. Based on this exploration, activities to be done and related costs were estimated. Based on this information the alliance partners were selected. In order to estimate definitive costs these partners executed a detailed inspection. A project budget of fl. 300 mln. came out. Within 20 months, four new installations had to be established and existing systems to be adapted. All partners were collectively responsible for the whole budget. For the division of profit or loss beforehand percentages were agreed. The total loss was limited to 6% of the project budget. For more losses, Nerefco itself was responsible (see Figure).

At the end of the project, there was a positive financial result of fl. 25 mln. The plant was delivered one month earlier than the very strict planning of 20 months (it was calculated that the 20 months planning had a probability to succeed of only 10%). Keys to this success were the commitment on all levels, also on the management level, and the motivation to decrease costs. By developing common objectives/goals, parties reacted quickly when problems occurred (a "one team" approach). The integrated alliance planning functioned well and encouraged the flexibility and creativity of the employees.

CONCLUSION

Following the dissatisfaction with the traditional, fragmented organisation of the building process, the search for more collaborative relations has become a contemporary theme in the building industry. The project alliance is one of the non-traditional organisation forms recently introduced in this industry. In terms of transaction cost economics, project alliancing can be described as a hybrid mode of co-ordinating the building process. On one

hand, autonomous parties are involved in the project alliance, an element of market governance. On the other hand, the project alliance subject building processes to continuous monitoring, an element of hierarchical governance. Project alliances are particularly suitable when there is a need for efficient, reliable information. These alliances also increase speed. Feedback between parties when technical problems are encountered reduces response times.

The analysis of building projects showed that the project alliance results in a substantial decrease of costs and construction time. When the project alliance is compared with the traditional approach construction time is shortened by more than 25%. Particular the design and tendering stages are shortened. Comparing the project alliance with design and construct construction time is shortened by 10 to 20%, particular in the design stage. Keys to this success are commitment of all parties on all levels and an open information exchange. Major roadblocks to realise project alliances are the traditional management techniques and the related prevailing technical mind-set. Information and know-how have to be transferred between supplying, constructing and designing parties. Opportunistic behaviour has to replaced by mutual trust.

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