CONSTRUCTION CONSORTIA: DO THEY SERVE ANY REAL PURPOSE?

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Construction of large and complex projects is invariably carried out by firms working with others in joint ventures, special purpose vehicles or consortia. Several reasons have been given for the creation of consortia in construction. They enable firms to undertake larger projects than they would be able to consider on their own. They allow firms to take advantage of the expertise of a wider range of specialisms. They spread the risk of large projects over a number of firms. Although consortia provide a useful solution to a number of obstacles facing firms in the development and building processes, are these benefits won at a price? Working as a consortium presents particular difficulties owing to the early and close working relationships often formed between firms at pre-tender stages. The benefits of consortia (i.e. balancing risks, conflicts, gains and losses) are tested against the assertion that only when property and construction firms are vertically integrated in consortia are conflicts reduced. Several interviews with participants in the building production process provide evidence that construction consortia *per se* are found not to increase or reduce perceived risk to firms or to increase or reduce perceived conflict between them. The real transformation process is the same regardless of the arrangements between the parties.

Keywords: construction consortia, joint ventures, conflict, risk.

INTRODUCTION

In recent years, especially since the introduction of the Private Finance Initiative (PFI) in the UK in 1992, consortia of firms have been used to procure many large and complex public sector projects. Once a public sector client has decided a major project is needed, the simplest method of procuring it seems to be to engage a consortium with sufficient financial backing and technical expertise to carry out the work. Construction consortia are often used where several firms combine to provide a building or structure as a complete contract or as part of a contract to provide services to government acting as client on behalf of the public. This would include those projects involving construction either funded through traditional public sector funding means or through PFI.

It might be thought that by using a consortium a team could be employed which would work together to solve problems, reduce costs and lower risks. At the same time, quality issues could be addressed and all this could be achieved more quickly than if carried out using traditional procurement methods. Moreover, not only could the consortium carry out the building work, the same arrangement could be used to deliver services including facilities management after the construction phase. This view seems to be based on a misconception of how consortia operate in theory and in practice. In practice consortia are financial and marketing devices quite separate from the delivery of the physical assets and the service provision.

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Government has encouraged construction firms to work in teams and has involved private sector finance in the funding process through its PFI. In response to this approach, Special Purpose Vehicles (SPVs) are set up to structure the delivery once a contract has been agreed. Until the creation of an SPV, informal combinations of firms may set up construction consortia combining banking, property and construction companies. A number of methods of public procurement have been adopted under the umbrella of PFI, including Prime Contracting (MOD), Procure 21 for health service projects (NHS) and Framework Agreements for schools and other types of building. In Prime Contracting there are clusters of firms supplying the cluster group leader or Prime Contractor. Each of the clusters has clusters of other firms supplying the specialist firm. Under Procure 21, Primary Supply Chain Partnerships (PSCPs) have been set up. These PSCPs are construction consortia, which have prequalified for NHS projects. There are only 12 PSCPs in England. Framework Agreements are deemed to be contracts in order to comply with EU directives. The framework sets up arrangements for suppliers to work together over a period or over a number of building projects. These agreements enable firms to undertake a series of smaller projects, such as school building, on behalf of the same client body or local authority. The use of consortia in construction does not necessarily mean that construction firms could not work together outside consortia. In construction there has always been co-operation and a problem-solving ethos; otherwise buildings could not have been built. Nevertheless, in construction projects it is always possible to find someone else to blame. It might therefore be argued that one of the main reasons for the formation of a consortium is because it is not possible to parcel up risks. The members of a consortium are forced into the position of trusting others to make commercial decisions on their behalf, which they are going to be held to, because in principle, though not necessarily, they are all jointly and severally liable. In practice, ultimately the client or individual parties carry the risks at present. For this reason consultancy firms and others carry professional indemnity insurance.

The questions raised in this discussion concern the formation, composition and operation of consortia in construction. Are these consortia to be viewed as effective and efficient or as purely marketing devices adding little value to the process? Several public sector projects, such as Portcullis House and the British Library in London and the Scottish Parliament building in Holyrood, Edinburgh, have encountered management and funding difficulties. These characteristics are often the main reason for cost over-runs and building delays especially in the public sector. There is no reason why they cannot be managed, but as yet they have often appeared to involve intractable difficulties.

One feature of the building production process is that it is usually carried out by a number of construction firms, often as many as 30-40 specialists, sometimes more than 70. Moreover, the size of projects often requires a number of firms to contribute risk capital and arrange debt financing. It is these equity-contributing firms that are seen as the building consortium, but construction contractors often remain outside, being members of the consortium in name only, for marketing purposes.

Other members of the consortium may be participating banks and property developers insofar as they provide equity capital. This is quite separate from any debt finance provided. But they are only part of the management and production of projects. They form a buffer between the public sector clients and the technology and resources used in the process. We consider the formation, nature and behaviour of collaboration and the risks associated with joint ventures in construction.

METHOD

This review is based on a study of the literature, reinforced with interviews with a number of leading practitioners. The particular focus of this study concerned consortia working on public sector projects. Interviews with selected practitioners from the demand side and the supply side of consortia have enabled us to develop clear explanations and answers to the research questions. The interviewees represent a public sector client, a developer, a bank, a financial consultancy, an independent project manager, a construction industry consultant, two main contractors, a specialist subcontractor and a legal advisor. The size of firms approached ranged from small consultancies to relatively large firms.

It is important to state that the interviewees were not randomly selected and are not necessarily representative of the industry as a whole or even their particular specialisms. However their views on consortia in construction were not known before the interviews took place. The interviews should be seen as indicative of some opinions held in the industry concerning consortia. Far more interviews would of course be needed to find statistically significant results.

The interviews consisted of directed or structured discussion of construction consortia designed to highlight particular issues. The areas discussed concerned the setting up and operation of consortia, the management of risk and decision making.

CONSTRUCTION CONSORTIA IN GENERAL

Consortia in construction

Several longer term or strategic relationships within the construction industry have emerged in the last few years, including consortia, joint ventures, partnering, special purpose vehicles, strategic alliances and supply chain management. They are all examples of construction and property syndicates. Unfortunately the terms are often used loosely or interchangeably by practitioners and this leads to confusion over the definition of the terms in practice. Fortunately the business context invariably makes the meaning clear. Nevertheless, it may be useful to propose some operational definitions for these terms.

We define a ***consortium*** as an arrangement between a number of firms in which each firm contributes an equity stake in the form of risk capital or payment in kind in order to qualify as a member. Remuneration of consortium members may be calculated as a percentage share of the net profits of the consortium.

A ***joint venture*** is characterised by a number of firms collaborating on a project or a number of distinct projects with a view to sharing the profits net of interest, each firm being paid on the basis of its agreed contribution in kind or in financial terms.

A ***partnering agreement*** involves a number of firms, usually including the client, working co-operatively to achieve a given output over one or a number of projects.

A ***special purpose vehicle*** (SPV) is a formal accounting and contractual arrangement set up by one or more firms to undertake a project or a series of projects separate from the accounts of the firms comprising the SPV. Thus not all SPVs are consortia. However, consortia invariably set up SPVs after being selected to carry out specific work and the members of the consortium become the shareholders of the SPV.

Figure 1: Developer-led consortium

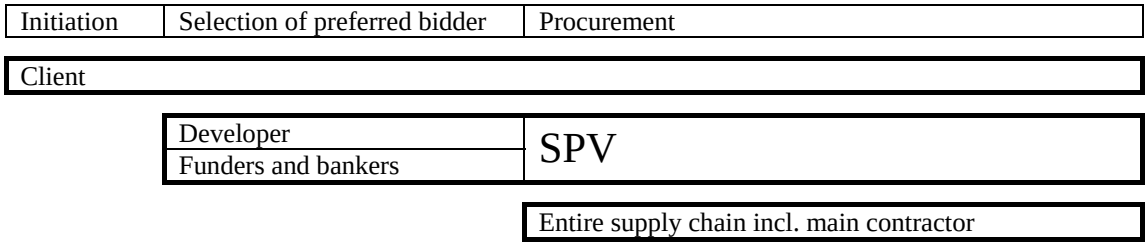


Figure 2: Developer-led consortia selling or transferring the completed facility to an operator

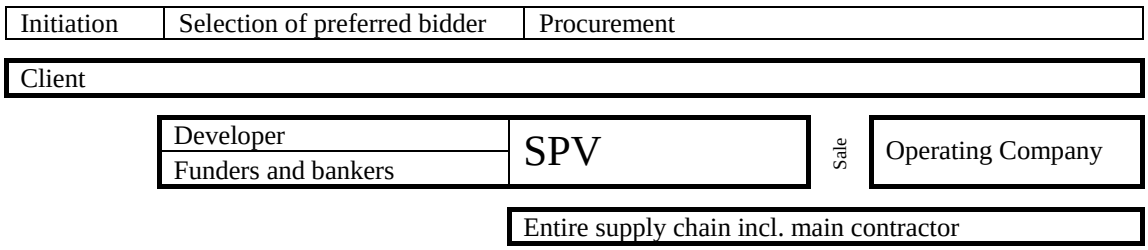
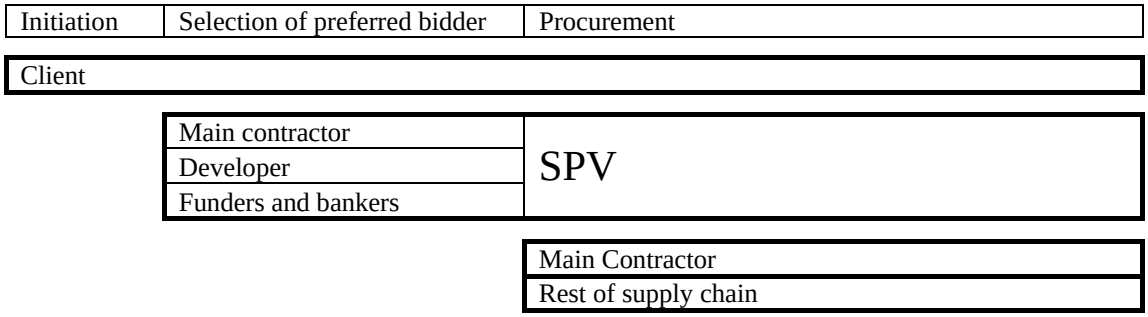


Figure 3: Joint ventures with main contractor partner



Figures 1 to 3 show the relationships of different parties during three distinct phases beginning with the initiation of the project, the selection process and ending with the procurement of the building and services. Figure 1 shows a developer-led consortium comprising a developer and a funder. The client is involved throughout the process but remains separate from the consortium, which in turn is separate from the supply chain. Developers and funders generally take responsibility for marketing, financial control and the commercial risk of undertaking the project. Contractors and facilities managers and other suppliers, such as component manufacturers, undertake the delivery of the project or services according to their contractual obligations. Their risk is related to production risk. Following initiation of the project by the client, a number of consortia may compete. The point at which a preferred bidder is selected is known as the financial close. On reaching the financial close the consortium moves from an informal arrangement to forming an SPV. In Figure 1 the project is only concerned with the procurement of a building or structure.

In Figure 2 the consortium is engaged to provide on-going services through an operating company. This takes the form of a project management company to which the operating contract is transferred.

Figure 3 shows an example of a contractor-led consortium. However, it is usually a financial division of the construction firm which is engaged in discussions with the other members of the consortium. Consequently, the bid vehicle comprises the

contractor's financial division, funders and the main contractor. After financial close the SPV is formed and the main contractor becomes both a member of the SPV and a separate member of the supply chain. As the main contractor is part of the joint venture, part of the supply chain is included in the SPV, but not all. The contractor may be a shareholder of the SPV but is also one of its suppliers.

Figures 1 to 3 illustrate the barrier formed by construction consortia, because the entire supply chain is separated from the client making it difficult for contractors and clients to communicate. This is dealt with in greater detail below.

Each project tends to vary depending on the relative size, skills and financial inputs of the various parties needed to meet the specific demands of each building or service requirement. The *ad hoc* arrangements adopted necessarily blur and confuse the boundaries of the terms and models described above. Moreover, different interviewees interpreted the terms differently, often depending on their role in the property and development process.

Although some construction consortia appear to include contractors, many PFI bids are assembled by developers and financiers using a contractor only to present a technical input to the client. In practice the construction contractors are kept at arm's length and are not full participating members of the consortium. There is no one form that defines construction consortia. On the contrary there are several types of consortia: developer/financial consortia, developer/financial/contractor consortia, client/developer consortia and single-type-organisation consortia. Some are involved in the essential commercial-risk taking of projects while others are involved in the building production process and some combine commercial risk, construction and service provision.

It is not always possible to distinguish *ex ante* the type of consortium, especially where contractors are involved at an early stage. Contractors are often used at an early stage to demonstrate the existence of a team, but at this stage the contractor may have made very little commitment to the consortium. According to one contractor interviewed for this study, the membership of consortia can change between the initial presentation and the actual work on site. Much depends on the working relationships between the actual people forming the consortium.

Moreover, not all construction firms working closely together are necessarily working together using any of the above arrangements. ***Strategic alliances*** are formed by firms who seek to work together on an on-going basis as and when the members of the alliance win work for different clients, provided the specialist skills are required.

Another example of closer working relationships between firms in the construction industry appeared in a SEC Group briefing paper to their members (May 2003). According to the briefing paper, Egan (1998) suggested that the Defence Estates, NHS Estates, the Highways Agency and other public sector building procurers should encourage the industry to form ***integrated project teams*** (IPT), which are not consortia. IPTs should consist of all those involved with the design, manufacture, assembly, installation, operation and maintenance of the building. These IPTs are thus intended to work closely with the client over the whole process with a view to achieving the customer's business objectives.

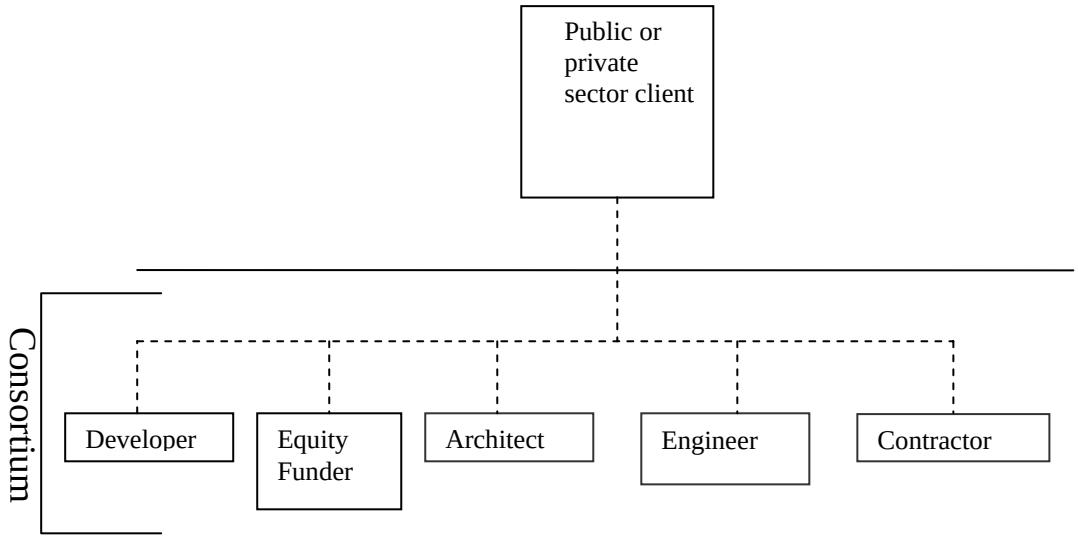


Figure 4: Consortium showing external client and lines of communication between individual members of a consortium and the client with little or no communication between members of the supply chain

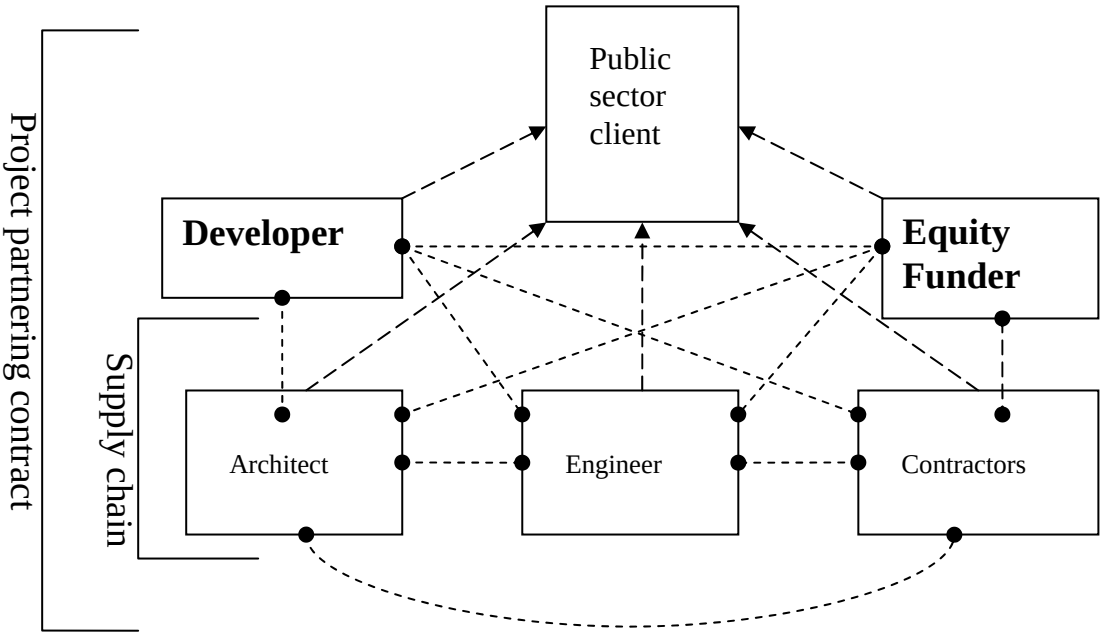


Figure 5: Project Partnering Contract showing the client within the contract arrangements and lines of communication between individual members of a consortium and the client and between members of the supply chain

The Egan Report does not mention IPTs as such but does discuss integrating the construction process and the team around the product, (Egan, 1998: 16). This integration does not necessarily imply the formation of new entities such as consortia, to undertake the work but does imply the need for greater co-operation and understanding. ***Supply chain management*** also seeks to reinforce the continuum of relationships formed by working on a project through greater communication and understanding between all the parties involved, extending upstream to include building component suppliers where necessary.

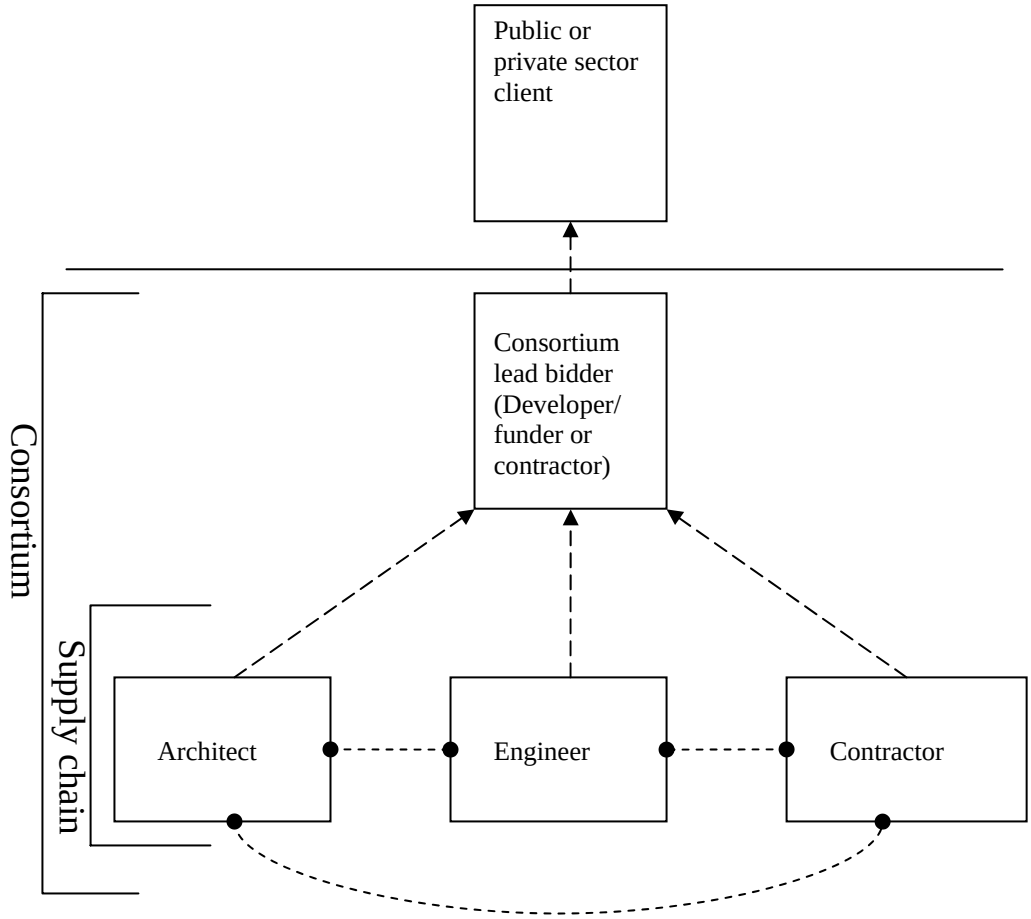


Figure 6: Consortium arrangement showing lines of communication between individual members of a consortium including the supply chain but excluding the client

If consortia do not lead to vertically integrated processes in construction, in an effort to improve collaborative working, they simply add another layer of contractual arrangements to the construction process as seen in Figures 1 to 3. As an alternative to consortia-type arrangements, a greater degree of co-operation between main and specialist contractors would, according to Egan, also reduce the adversarial nature of the process. However, in practice the underlying relationships have remained essentially unchanged.

Nevertheless, it might be argued that integrated teams might reduce duplication of effort through improvements in communication between the various parties, but at a cost and this cost may be high. It is the consortium nature of construction, according to Pearce (2003: 23), which creates major difficulties between the various participants in the building process and adds to the transaction costs of delivering "consistent work patterns and effective communication". Figures 4 to 6 show different kinds of relationship between clients and members of consortia and between the members of consortia. Figure 4 shows the client outside a consortium faced by a number of firms which combine to negotiate with the client but do not necessarily have close working relations with the other members of the consortium. Nevertheless the consortium presents a unified approach to the client in order to win the tender process.

In Figure 5 the client participates in the relationship. This specific arrangement appears to model the social housing sector where Housing Associations work with private sector developers and contractors to build social housing and houses for sale. This also appears to be the model assumed in the Project Partnering Contract 2000 (PPC 2000). The PPC 2000 requires the active involvement of the client with full and open communication between all parties. As shown in Figure 5, lines of communication are seen to exist between all members of the partnering agreement and especially between the members of the supply chain and the client. (We are grateful to David Mosey for suggesting this model.) However, this mode of working is not common in projects for public sector clients. More generally, in recent consortia which have been established to serve public sector clients, the client is not contractually part of the consortium.

In Figure 6 the consortium lead bidder directs the supply chain and negotiates with the client. The lead bidder is usually the partner contributing the greatest share of the bid costs, a role usually taken by the developer, contractor or facilities manager. The client thus remains outside the consortium, which can form a barrier between the client and the supply chain.

This pattern of consortium arrangement appears to predominate. In effect the core of the consortium is comprised of the lead bidders, who are usually the developers with their financial backers. They take the initiative with the client and act as a catalyst for the supply chain, which they control. The supply chain is seen as separate from the core of the consortium. In this model the presentation of the consortium to the client may include the contractors but in reality the supply chain is at best an integrated set of some of the suppliers (as illustrated in Figure 6) working for the consortium lead bidder.

In the final analysis, construction consortia are an attempt by property and construction firms to integrate vertically, while remaining separate entities. This contradiction in terms leads to many misunderstandings and difficulties. Nevertheless it is an attempt to respond to market pressures caused by the size and complexity of projects put to the industry that require more than a specified building on completion. The continuity of responsibility beyond the construction phase to the building-in-use has led to a need or desire to integrate the firms engaged in the provision of the built environment.

In view of the existence of consortia in construction we discuss the reasons that firms have chosen to work in consortia rather than as fully vertically integrated firms providing a full construction and facilities management service in-house.

REASONS FOR CONSORTIA IN CONSTRUCTION

Many consortia are formed in anticipation of client requirements or in response to pre-contract qualification criteria set by the client. There may be several reasons for the belief in the efficacy of consortia both from the clients' point of view and from the point of view of the members of the consortia.

One reason for the existence of consortia in construction is given in Pearce (2003). Section 3.8 of his report entitled "Implications of small unit size" shows that one of the consequences of the predominantly small size of specialist firm in construction is that they must co-operate with other small firms in order to undertake relatively large building projects.

A second reason consortia are to be found in construction is implied by Hayes *et al.* (1987), who discuss risk management from the contractors' point of view. Although Hayes *et al.* are not concerned with the issue of consortia they discuss the issue of risk

management, arguing that an appropriate contract strategy involves consideration of the organisational structure needed to control both design and construction and the relationship between them. The allocation of risk between the various parties may not be best served by traditional contracting arrangements in undertaking high risk complex projects. When difficulties arise on site or when there are major cost overruns it may be too late to avoid the costs of delay, arbitration or litigation. They advocate "active management of a risk by all parties." (Hayes *et al*.: 24)

We argue that the idea of active risk management should be taken further in proposing that a construction project should begin with an analysis of the main objectives and risks in a project, followed by the identification of roles and responsibilities, and only then the identification of contractual terms which bind the parties in legal relationships. This is the opposite of the more usual practice of starting with a standard-form contract and adapting it to suit particular circumstances. A consortium may be viewed as an organisational structure which takes risk into account at the earliest stages in a project rather than waiting for problems to arise at a later stage. The emerging use of construction consortia thus signals a clear move away from traditional approaches to the procurement of construction work.

A third reason for consortia in construction concerns the existence of transaction costs. A consortium is a rational response to the economic and commercial environment in which firms operate. In construction the production process is highly fragmented and specialised. Many separate firms must come together in order to construct and operate buildings. These complex relationships are determined by the markets for the various services and components needed: design, management, piling, steel erecting, cladding, facilities management and many other specialisms. Before a contract can be signed the product or service must be defined and understood by both parties and both sides to the deal must have confidence that the order will be carried out and duly paid for. A consortium is often seen as one solution for discussing and overcoming the uncertainties which may arise and facilitating negotiations with the client. However, in reality the process remains fragmented within consortia and up the supply chain. Indeed, the discussions between the consortium members and the public sector client rarely if ever include members of the supply chain.

The exclusion of members of the supply chain is not necessarily a negative criticism of the lead bidders in a consortium as several strategic issues need to be negotiated by the main parties involved before detailed aspects can be discussed. For example, von Branconi and Loch (2004) provide a strategic checklist-framework for dealing with transaction cost aspects which may arise in project contracts before more detailed considerations are discussed. This checklist consists of eight key areas, namely:

- Technical specifications, including use, operation and maintenance
- Price, consistent with the technical specifications allowing for contingencies and profit margins
- Payment terms which recognise the cash flow issues facing contractors
- Schedule with key milestones clearly defined and understood
- Performance guarantees including those to be undertaken by the client
- The period of warranties specifying the re-performance of services and or the replacement or repair of building defects
- Limitation of liability to protect contractor by providing a maximum exposure

- Securities, such as bank guarantees, may be used to offer a limited degree of assurance to both or either party.

Von Branconi and Loch (2004) argue that these key areas are all sources of transaction costs with associated areas of uncertainty as described by Williamson (1992), Jarillo (1988) and Stinchcombe and Heimer (1985). The first four key areas specify the project while the second four give assurances to both sides
Jarillo (1988) discusses strategic networks of partners which require partners to agree their goals through continuous collaboration and interdependency. As construction involves discrete projects, with future collaboration uncertain if not unlikely, firms may be tempted to take advantage of short term opportunities. Stinchcombe and Heimer (1985) discuss a possible solution to transaction costs caused by clients' changing requirements during a project's construction. They suggest a type of hierarchy be introduced as if the separate firms were internally co-ordinated within one organisation. Construction consortia provide command structures, authority systems, dispute resolution procedures, standard operation systems and incentive schemes.
A fourth reason for the formation of consortia in construction may be viewed as an industry response to demand put to it by the public sector and very large private sector clients. Demand is put to the industry in the form of project proposals. These projects tend to be very large and complex. At any one time construction firms hold a portfolio of discrete projects on which they are working. Only firms of a certain capacity can undertake work over a certain size or complexity. When the workload exceeds that size firms have no option but to seek partners. Otherwise the exposure to risk represented by one project contradicts the need to balance risk in the firm's portfolio of projects. In this way the relative commitment of any one firm to any particular project is limited. Few firms would devote all of their resources to one project. Nevertheless, each project still constitutes both a source of revenue for the firm and a threat to its profitability and even its continued survival.
Project size and complexity influence the way firms collaborate. This response is an application of game theory. According to Hargreaves Heap and Varoufakis (1995) the situation facing firms in the construction and property sectors appears to comply with the conditions of game theory. These conditions are that there should only be a limited number of players, that the players expect the behaviour of the other players to be based on a similar rationality to their own and that the actions of one player impact on the other players.
Three types of game may be identified: the hawk-dove, the co-ordination and the prisoners' dilemma. In the hawk-dove game the share of profits is unequal but all lose if the players fight. In the game of co-ordination, if firms co-operate they win but if they fight they all lose. In the prisoners' dilemma individual firms act in their own interest but are worse off as a result.
In brief, in construction consortia different games are played out and the different scenarios of winners and losers depend on the terms and conditions affecting the project each consortium undertakes. The advantages of co-operation may be the initial driver towards setting up consortia. It may be assumed by firms and organisations that the members of a consortium combine to their mutual advantage in a form of co-ordination game. However, unexpected events may adversely affect all the parties and can create conflicts, which lead firms into confrontation to their mutual detriment. An alternative game is presented by the prisoners' dilemma in which the members of the consortium each act in their own interests with the result that the gains from the consortium are lower than they would have been had the firms been able to co-

operate. In the hawk-dove scenario firms combine to form consortia but some members are far more powerful than others and are in a position to take advantage of their position. The result is that all firms are worse off than they would have been, had some members not taken advantage of their relative strength. From this brief summary of applied game theory it is clear that conflict is inherent even within consortia, even where co-ordination games are being played, due to the impossibility of predicting all eventualities, which may arise.

CONFLICT AND DISSENT IN THE PRODUCTION PROCESS

Consortia are formed by a number of diverse organisations in order to undertake projects. These projects are therefore shared amongst the members of the consortium. However, Ive and Gruneberg (2000) argue that members of joint ventures do not share the same goals. In construction projects it is typical for each member of the team to have distinct goals often in conflict with the other members, (Murdoch and Hughes, 2000). Moreover, not all members of the team are of equal importance or have equal power (Greenwood, 2002).

Nevertheless, a consortium (as distinct from the project itself) may be deemed successful if participation in the joint venture is sufficiently profitable for each member and each member perceives his or her reward to be commensurate with his or her contribution. But where firms collaborate, these conditions are almost impossible to find. In the course of any project disagreements between the parties invariably emerge as disputes arise over payments for unplanned, unexpected or unavoidable additional work. Of necessity these disputes must arise as each organisation seeks to promote its own interests within the context of a zero sum game, in which one party can benefit only at the expense of another.

This is not to say that conflict is necessarily destructive. Indeed conflict may be expected and even welcomed as part of a creative process or as a result of care, passion and involvement by people representing different firms. For example, it is quite possible that a quantity surveyor (QS) may be concerned with controlling costs while the contractors are concerned with delivering a building according to specifications. If costs are escalating to the point where cost overruns become inevitable the conflict between the QS and the contractor may then be used to find a compromise solution.

CONCLUDING REMARKS

Firms form consortia in order to win contracts. Consortia are therefore marketing devices, which present the impression of team working, but in reality the production process can be just as fragmented as it is under conventional procurement methods. The consortium therefore forms a barrier to an understanding by the client of the actual construction production process.

The level of supply chain visibility to the client and the industry is reduced by the existence of a consortium because the consortium forms an additional obstacle between the public sector client and the firms undertaking the actual construction work. Supply chain visibility matters to the client who otherwise loses control over the process of construction or service provision, while remaining accountable for cost overruns. However, where the client is involved in partnering arrangements some of these barriers might be overcome.

Although firms do form consortia, it is not the way that firms would prefer to operate. They do so because projects are too large or too complex for them to undertake alone

or because the projects require on-going services which cannot be provided by the individual firms in-house. Consortia are formed because most firms involved in construction projects such as developers are small or medium sized enterprises with management skills at a premium. Even where firms are large senior management capable of organising major projects is often in short supply. Working in consortia enables members to take advantage of management resources of fellow members. The engagement of specialists and consultants also allows firms to be flexible. The organisation and behaviour of members of consortia is determined by their relative power based in their equity share in the group.

There is a wide variation in the manner consortia are formed determined by the individual circumstances of each project, its requirements, size and complexity and the attitude of individual project leaders. Nevertheless, this paper has argued that although construction consortia exist, there is a strong case for doubting that they *per se* add value to the construction process.

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