Contractual Issues in the Total Use of Building Information Modelling

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Abstract

In the UK, Building Information Modelling (BIM) has been embraced by a number of designers who are aware of its advantages, particularly in enhancing the ability to share design information. A smaller number of leading contractors have also adopted its use; in some cases, insisting that their subcontract designers and other key supply chain members adopt compatible software. It is not clear whether any project has yet reached the stage where all participants share all information through a BIM environment. Nevertheless, this situation is a predictable outcome of its continuing uptake. Whether in Williamson‟s „neo-classical‟ approach to transaction costs to Macneil‟s relational analysis of contractual behaviour, information is a critical issue for contract theory. The paper explores the problems that arise when systems that facilitate (or even demand) the costless sharing of information, exist alongside a contractual context that presupposes its guarded ownership.

Keywords: BIM, contract theory, information, ownership, sharing

1. Introduction

This paper is about the growing use of Building Information Modelling (BIM) and (excluding this Introduction) has five parts. The first considers the impact of BIM on the UK construction industry, both current and prospective. The second reflects on some of the contractual challenges that need to be faced if BIM is to be used to its full potential. The issues raised are not exhaustive: for example, there are technical challenges concerning software interoperability and data integrity; and organisational challenges around the parties‟ receptiveness to innovation and the willingness to adapt their working practices. However the focus of the paper is on the contractual challenges that will present themselves if BIM is to be exploited to its full potential. This is followed by a theoretical reflection on what is at stake in terms of these contractual issues. In the fourth section of the paper we examine what progress, if any, has been made to address these challenges, by the drafters of standard form contracts. To conclude, an agenda is set for further research into some of the preceding issues, and we indulge in some speculation about BIM‟s impact on the future workings of the construction industry and its projects.

2. The use and impact of BIM

Building Information Modelling or BIM is an umbrella term for a series of theoretical and technical developments that have reached a level of maturity where they may now have relevance and impact on the construction sector. For software vendors it has proved useful to market BIM as the brand of the next generation of Computer Aided Architectural Design (CAAD) and to promote the idea that this is a new and a standard way of working for the industry (AutoDesk Ltd, 2010). In reality, at present, there is little coherence to the available BIM solutions and significant commercial drivers to move away from standardisation.

BIM is best defined by its theoretical basis which lies in the software discipline of object-oriented analysis and design (OOAD) (Booch, 1986). This new approach to software development emerged in the 1980‟s and has led to a new generation of software tools which are developed around the “real world” entities and objects they are modelling (doors, windows, floors) rather than the functions the software performs. This approach combined with the ability to handle complex 3-D parameterised representations on relatively low cost computing platforms forms the basis of BIM.

It also leads to one of the key challenges facing the information content of BIM systems, which is “fitness for purpose”. There is an inherent tension between the vision of BIM set out by Lee and Eastman (Lee, 2006) that BIM is the “process of generating and managing building data throughout its life-cycle” and the OOAD principle of *Essential Representation* which states that conceptual models should only be designed with characteristics that are applicable in all possible worlds. The tension then is that at one extreme we have conceptual BIMs that are designed to address the whole building life-cycle and contain only information that is applicable to all stages of that life-cycle, but at any stage in that life-cycle, additional information and alternative representations will be needed.

It is theoretically possible that a single standard conceptual building model will be agreed and adopted by the industry; the most developed and internationally agreed at present are the Industry Foundation Classes (IFC) (buildingSMART, 2010a). Software vendors provide tools that embody BIMs for a specific purpose, e.g. spatial layout, structural design, energy analysis, due to the issue of "fitness for purpose" the information and representation in these BIMs differ. The IFCs are designed to be applicable to the whole building life-cycle and provide a standard mechanism for exchanging information between the proprietary BIM tools. It is at these exchange points where the "fitness for purpose" of the information must be validated and managed.

Currently this exchange of information is being controlled by converting the BIM data into the traditional two dimensional plans, sections, elevations and schedules; these are then visually inspected and approved. Whilst this mechanism supports a heterogeneous mix of traditional and BIM working practices it negates any of the advantages that may be gained through exchange of semantically rich information models. In order to gain these advantages it will be necessary to define and automate the checking of "fitness for purpose" of BIM data during these exchanges, this is addressed by relatively new initiatives such as the Information Delivery Manuals (buildingSMART, 2010b) and Model View Definitions. At present there exists a standard for exchange between the project team for general project coordination and a standard for quantity take-off, structural design facility management handover and others are under development.

These exchange standards could be embodied in the next generation of standard contracts to define the control mechanisms required for information exchange during the procurement process. As BIMs contain information about the actors in the design team, their roles and responsibilities it is likely that in the future exchange standards may be developed not only for contract definition but also administration.

The adoption of BIM varies greatly from country to country. Although the UK played a key role in the research and development of BIM technologies in the 80‟s and 90‟s it has been slow to adopt its use. There are currently two main drivers to BIM uptake; software vendors and governments. In the UK, the BIM software market is dominate by US software companies such as AutoDesk and Bentley; however in Europe these have had a lesser impact and the German and Nordic BIM vendors have an established base. Government agencies have also been slow to respond in the UK,. In the United States, Australasia, Asia and other European countries influential authorities have adopted the use of BIM in their procurement and regulatory processes. Examples include the Texas Facilities Commission (TFC), the US General Services Administration (GSA), Norwegian Directorate of Public Construction and Property (Statsbygg) and the Singapore Building and Construction Authority (Singapore Government).

In the UK BIM uptake appears to be led by industry and the design team, its usage is often justified on the grounds of improved efficiency and quality. Initial results of studies being carried out by the University of Northumbria indicate that designers often perceive BIM as an easy route to delivering 3-D design, while contractors focus on the benefits of reducing construction errors and improving clash detection and engineers value improved models for simulation and analysis. There is no clear

indication that BIM adoption is being led by any specific partner in the procurement chain nor is there clear demand from clients or government.

Although there is clear potential for BIM to be exactly the kind of integrating mechanism that would satisfy calls by Latham (1994) and Egan (Construction Task Force, 1998) for more integrated project delivery, there appears to be little general awareness in the UK industry of problems associated with the kinds of enhanced information exchanges that BIM could precipitate.

3. Contractual challenges

Hughes and Greenwood (1996) describe the main purposes of standard construction contracts as recording a business deal; planning for the effect of contingencies by allocating risks; as a management procedures manual; as an agenda for litigation; and as an „industry reference point". If BIM is to be used to its full potential, then standard forms must change accordingly.

At the root of a contract is Agreement or *consensus ad idem*. Despite this , there is clear evidence that contractual provisions are frequently ignored (Macaulay, 1964; Beale and Dugdale, 1975) or simply misunderstood, with parties relying on third party enforcement (courts, arbitrators, adjudicators) to interpret or even identify the deals they have „signed up to" (Yule, 1995; Greenwood *et al.*, 2005). Some of the more immediate BIM-related issues that surround its use in a project are: the „ownership" of the model or its parts; confidentiality; and the contractual status of the model; i.e. whether the BIM model is considered to be a contract document in the fullest sense, and thus be „relied upon".

A further function of a standard form contract is to „presentiate", that is, to allow for contingencies and allocate the resulting risks (Campbell *et al*., 2003). There are many risks that could be envisaged in terms of the *adequacy* of the design. The situation is not an unfamiliar one, and is regularly dealt with in construction standard forms, with the risk ultimately being transferred through insurance. However, a BIM-based design produces added complications: first, in addition to pure design errors, there is the possibility of software errors. These could range from simple loss or corruption of data to unwanted additional data that have been unintentionally imported in „object properties". For example, the current legal situation with information issues largely centres on *omission* or *inadequate information* and it is the responsibility of all parties to ensure they have adequate information for their purpose. Information rich BIM models have a tendency to reverse this problem and increase the likelihood that unnecessary and incorrect information may be exchanged; existing standard forms of contract may need to consider this problem in the future. The other complication, if BIM is used to its full potential as a „shared entity" (involving contributions from designers, specialist subcontractors and component manufacturers) is the allocation of liability between the contributors. Traditional Professional Indemnity (PI) insurance is based on the individual design practice (as opposed to the project itself) and demarcation between individual responsibility, such that a fully integrated BIM model would cause difficulties for construction insurers. Such matters have begun to be addressed in the United States (see, e.g., AIA Trust, 2009).

According to Hughes and Greenwood (1996) standard contracts can acquire „the status of a management procedures manual incorporating control mechanisms" and „the definitive document for guiding the various contributors through the project". This view of the standard form is very much confirmed by its more recent variants, the New Engineering Contract (NEC) and the Association of Consulting Architects" PPC2000 Contract. If the powerful potential of BIM were to be fully embraced on a project, this would have to be reflected in the form of contract used. Issues to be addressed would include design delegation and leadership and administration and control of the BIM model itself.

Typically, standard form contracts will also contain remedies for situations where parties fail to meet their contractual obligations. In this, they must accord with the legal position on a variety of related matters. These include (as already mentioned) specifics, such as the adequacy of the model itself, technical shortcomings such as software errors and data loss. Additionally, the legal approach to more general considerations such as Reliance, Privity of Contract, and Third Party Rights will be complicated by the multi-faceted and multi-user nature of the full BIM model.

Finally, standard forms „provide a useful point of reference" … „to those at the periphery of the industry"…" (Hughes and Greenwood, 1996). The most obvious example (and this has to some extent been addressed earlier) is the Insurance Industry; but there are others, for example the funders of private projects who „benefit from the continuity provided by standard forms", and this is an important role for one that properly and fully accommodates BIM.

4. A theoretical perspective

The use and availability of information is at the root of BIM: it is also at the root of contract formation. One of the main tenets of neo-classical contractual analysis is that access to information is (normally) imperfect, asymmetrical, and costly (see, for example, MacNeil 1978; Kronman and Posner, 1979; Campbell, 2001). The influence of *transaction cost* or *new institutional* economics is clearly in evidence here (see, for example, Williamson, 1979; 1981) as is the work of principal-agent theorists, for whom bounded rationality and information asymmetry are fundamental contractual problems. Indeed, it would not be an exaggeration to say that in the neo-classical approach to contract formation the prospect of *incomplete and asymmetric information* is possibly *the* most significant element. Casson (1994) has argued that the use of standard forms of contract is based on the fact that they minimise information costs. After the contract has been formed, the absence of information or an imbalance in its possession can have adverse effects on parties" relationships. As Yates and Hardcastle (2002) observe „…contractual incompletedness [*sic*] is the key to opportunism. If there were no gaps in contract documentation and no subsequent changes in client requirements and design, there would be no requirement for ex post "adjustments" and consequently no opportunity for the contractor to behave opportunistically".

Information plays an equally important but quite different role for those theorists, led by Ian Macneil who advocate the so-called *relational* model of contracting. Macneil's perception of contract formation emphasises 'the relations among parties to the process of projecting exchange into the

future' (Macneil, 1980:4). In relational contract analysis, society, not law, is what contracts are about: as Macneil observes „exchange and [contract] planning, the basic areas of expertise of the contracts scholar, have now become just two of the many factors in a complete social organism (Macneil, 1978: 898-99). Uzzi (1997: 42) proposes three components of the „embedded relationships" that are the basis of relational contracts, namely: trust, *fine-grained information transfer*, and joint problem-solving arrangements" [italics not in original]. Similarly, Buckley and Casson (1988) suggest that sharing information leads to the emergence of common values such as *trust, reciprocity* and *solidarity*, and this has been supported by applied work by Greenwood and Yates (2007) on construction partnering arrangements.

5. The response of drafting bodies

At present none of the standard-form drafting bodies in the United Kingdom that we have consulted have sought to incorporate any provisions that address these issues, although there is an awareness of the existence and potential implications of virtual modelling. Standard-form contracts in the United Kingdom commonly adopt the traditional approach of closely guarding copyright in designs created as part of the construction process, allied with the granting of a restricted license to use such designs only in the context of the construction of the asset itself. Such licenses may in some instances not even extend to any extension of the works (see for example JCT 05 DBC clause 2.38.2).

In the United States a number of standardised contractual approaches to BIM have been published. In 2007 a group of industry organisations collectively known as ConsensusDOCS published an Electronic Communications Protocol Addendum which requires the parties to make specific decisions with respect to a variety to protocols governing the creation, transmission and storage of electronic communications generally. More recently, ConsensusDOCS issued a BIM Addendum pursuant to which the parties develop a *BIM Execution Plan* that is intended to address many of the process and contractual issues arising out of BIM technology. This document also contains provisions addressing the allocation of responsibility for liability that may arise from modelling. The risk allocation section (Section 5) requires each party to be responsible for its contribution to the model but allies this with a waiver of consequential damages by all parties in relation to the use of or access to a model.

To the extent that models are contract documents, the parties are entitled to rely upon the accuracy of information in these models provided by others to the extent of the contribution made by each party. The level of this contribution is defined in the Addendum. Each party is required to procure appropriate insurance coverage for its contribution. Each party also retains the copyright to its contribution to the model and agrees to the provision of a licence to the other parties to use its contribution for the purposes of the project only. To this extent, this approach mirrors that adopted in the UK as briefly outlined above but, as the presence of the BIM Execution Plan makes plain, the co-ordination and maintenance of the detailed model requires a far more sophisticated approach than that currently catered for in standardised contracts.

The AIA (American Institute of Architects) has also issued a BIM protocol which focuses more on the extent which parties can rely on information contained within the various contributions which go to make up the model. This protocol details the level at which each party contributes but again in article 4 specifies that whilst each contribution is intended to be shared with the other parties contributing to the overall model that contribution can be relied upon only to the extent of the level of detail specified in the protocol and any reliance beyond that and outside the context of the project itself is at the sole risk of those relying upon it.

In summary, the approach taken in US indicates that whilst the basic right of a party to maintain copyright in its contribution to the design process is likely to be preserved, more flexibility will be required in relation to the manner in which that contribution is used.

6. BIM and collaborative working: a synergistic match

The contractual issues raised by BIM include risk allocation, copyright and insurance in addition to more detailed matters such as: the ownership of a „shared" BIM design; the precise purposes for which the model will be used; the schedules of deliverables; interoperability issues; the management of the modelling process; the reliance to be placed on modelled information; and the use of the model after construction is completed.

BIM provisions have yet to be properly incorporated into UK standard form contracts. There have been attempts to do this in the United States but in the UK, although moves have been made to tackle the issue of electronic data transfer generally, there appears to be nothing that specifically deals with BIM.

The industry faces a choice between continuing to guard the existing restrictive copyright and insurance positions, which will make the management and development of BIM increasingly difficult, or embracing a more collaborative process in which parties are able to agree that each other may, within defined parameters, use and rely upon the information provided by the other parties as contributing to the overall model within the context of the project itself. It would seem clear that this latter approach would result in the most effective use of the BIM process but would require a relaxation of insurance and intellectual property rights that is currently unavailable in the UK. Furthermore, the current economic climate may pose a threat to any serious attempts to move towards a truly integrated project delivery. There is a real possibility that BIM is a potential catalyst for these changes, though there are real obstacles in the way.

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Opinions of Legal Professionals Regarding the Use of ADR in the Construction Industry

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Abstract

Disputes are inevitable in the construction industry, and litigation, the formal way of settling disputes, is time-consuming and expensive besides several other drawbacks. This has led the industry to seek and establish non-judicial dispute settlement methods in quest for more cost-effective and swifter solutions that prevent deterioration of business relations between the parties. Such alternatives to litigation are generically called Alternative Dispute Resolution (ADR) methods. Being a rather new phenomenon, different opinions are present among different parties such as employers, contractors and legal professionals regarding the use of ADR in the Turkish construction industry. Following a survey investigating employers' and contractors' perceptions of ADR, this paper aims to examine the opinions and experience of the legal professionals in the use of ADR in construction disputes through in-depth interviews. The results reveal remarkable findings regarding the experience of legal professionals with ADR, opinions of legal professionals regarding the performance of various ADR methods, the perceptions that legal professionals have about the use of ADR in the Turkish construction industry, the role of legal professionals in ADR, preferred professional background of neutrals working in construction disputes and barriers to the widespread use of ADR in the Turkish construction industry.

Keywords: alternative dispute resolution (ADR), lawyers, legal professionals, Turkey.

1. Introduction

Although all parties have the same objective in a construction project, the motivation for fulfilling this objective is generally concerned with the profit to be earned or the benefit to be obtained. Profit for the contractor, sub-contractor and the promoter of the project is earned in different ways. It is often assumed this means that when the profit position of either party is threatened, conflict will emerge. (Hibberd and Newman 1997). Cheung et al. (2002) also suggest that disputes are frequently the rule rather than exception in the construction industry and they arise during a construction process for a number of reasons. The quality of materials, standard of workmanship, contractor delays, applications for extensions of time not being granted, variations, cost overruns and the meaning of contractual terms can be the subject of expensive claims and turn into disputes that threaten the success of the project (Adriaanse 2005). Given that disputes are a significant phenomenon within the construction industry, the question arises almost automatically as to how they are resolved. Traditionally, the means of resolution have been straightforward: construction disputes were resolved by litigation or arbitration, like other commercial disputes. The former could be regarded as the legal system's provision of a response to the need for dispute resolution, the latter as industry's alternative, an alternative historically so much favoured that major construction and engineering contracts included provision for it. Yet currently neither can be said to generate unqualified enthusiasm within the construction industry. As a result of a general disappointment with the traditional dispute resolution methods, interest in Alternative Dispute Resolution (ADR) began to grow (Brooker and Lavers 1997).

Alternative dispute resolution methods are non-adversarial processes which are aimed at resolving disputes without resorting to the traditional forms of either litigation or arbitration (Ashworth 2005, p.53). The most widely used ADR methods are negotiation, mediation, expert appraisal, executive tribunal, adjudication and dispute review boards/panels. The discussion on arbitration in the literature seems to result in defining arbitration not an ADR method but a quasi-judicial procedure because of its features closer to (or worse than) litigation in terms of duration, cost and the level of bureaucracy (Adriaanse 2005, p.347; Carmichael 2002, p.265). Rubin and Quintas (2003) suggest that the salient characteristics of ADR make it an attractive option for settling the complex and time sensitive disputes that often arise during the course of construction projects. Beside being a faster, less bureaucratic and more cost-effective process that do not require the use of attorneys to present claims, the real-time approach to disputes can prevent deterioration of business relations and the consideration of disputes by knowledgeable industry professionals can provide reaching more equitable results based on the realities of the construction process instead of applying the strict letter-of-the-law removed from its relevant context. The negative perceptions of the use of ADR in the construction industry, on the other hand, have been analysed by Brooker and Lavers (1997) on the basis of an extensive survey in the UK construction industry which identified the following most frequently stated negative attitudes to ADR: (i) proposing ADR to the other side is a sign of weakness; (ii) ADR reveals one's position to the other side; (iii) ADR before discovery of documents could result in a settlement being entered into when one should have gone for something better; (iv) ADR can be used to delay payment; and (v) ADR is non-binding and therefore too weak to be effective (for non-binding methods of ADR). Despite these negative perceptions, Broker and Lavers

(1997) conclude that the widespread dissatisfaction with its long-established `rivals' speaks in favour of ADR; many respondents who had never used ADR expressed an interest in doing so and ADR was perceived as enjoying real advantages over litigation and arbitration, in terms of reduction of damaging confrontation, reduced cost and time, and the expectation of flexibility and a good settlement rate.

According to Cheung (2006), ADR is widely used in developed countries' construction industries and is spreading fast globally. However, the widespread adoption of such new methods is obstructed by ingrained prejudice against new methods of doing business in some countries. Being a rather new phenomenon, different opinions are present among different parties such as employers, contractors and legal professionals regarding the use of ADR in the Turkish construction industry. Following a questionnaire survey investigating perceptions that project managers comprised of twenty-five employers and twenty-five contractors have about ADR (part of the findings of this survey were previously reported in Ilter and Dikbas (2009a) and Ilter and Dikbas (2009b)), this paper aims to examine the opinions and experience of legal professionals in the use of ADR in construction disputes through interviews in the quest for making projections for its further development in the Turkish construction industry.

2. Methodology

The methodology selected for the legal interviews was "in-depth interviewing by expert sampling". This methodology was chosen for a number of reasons. Expert sampling involves the assembling of a sample of persons with known or demonstrable experience and expertise in some area (Trochim, 2010). Expert sampling was used in the exploration of the opinions of legal professionals regarding ADR in the construction industry since the number of legal professionals (lawyers, claim consultants and legal scholars) who have knowledge and experience of the subject is still limited in Turkey. With the aim of reaching these experts, a letter was sent to request an interview to the members of Alternative Dispute Resolution Centre of the Ankara Bar, members of the Arbitration - Mediation and Expert Appraisal Centre of the Istanbul Chamber of Commerce and legal scholars who have publications about ADR. There were 12 interviews in total, which comprised 4 claim consultants (working for prominent contractor firms in Turkey), 5 lawyers and 3 legal scholars.

On the other hand, in depth interviewing methodology enabled detailed discussion of the issues tackled in the research, as well as testing the results revealed in the questionnaire with the contractors and employers that was completed in the earlier stages of the research. Structured interview technique was adopted and the questions formulated to explore the opinions of the legal professionals regarding ADR included the ones to elicit the interviewees' experiences with ADR, perceptions of the performance of various ADR methods in construction disputes, opinions on the current and future use of ADR in the Turkish construction industry, role of lawyers in ADR, preferred professional background of neutrals working in construction disputes and barriers to the widespread use of ADR in the Turkish construction industry.

3. Experience of legal professionals with ADR

The experience of the legal interviewees with dispute resolution methods varied however all had used some form of ADR, which was expected due to the expert sampling methodology adopted in the study. The interviewees confirmed the results that had been revealed in the questionnaire with contractors and employers that little use is made of ADR (except for negotiation) in the Turkish construction industry. Table 1 and Figure 1 show the frequency and percentage of the legal interviewees who had been involved in each of the dispute resolution method while resolving a construction dispute. While nine out of twelve interviewees had been involved in litigation, only five had been involved in arbitration while resolving a construction dispute. More legal professionals were involved in negotiation and executive tribunal (eight in each) than in arbitration. This finding, that arbitration is not as of often used as perceived in the Turkish construction industry, is compatible with the findings that had been revealed in the questionnaire with contractors and employers.

Table 1: Frequency and percentage of the legal interviewees who had been involved in each dispute resolution method while resolving a construction dispute.

		Yes	*No*	*Total*
Litigation	*Frequency*	*9*	*3*	*12*
	Percentage	*75*	*25*	*100*
Arbitration	*Frequency*	*5*	*7*	*12*
	Percentage	*41.7*	*58.3*	*100*
Dispute Review Boards (DRB)	*Frequency*	*3*	*9*	*12*
	Percentage	*25*	*75*	*100*
Adjudication (contractual)	*Frequency*	*4*	*8*	*12*
	Percentage	*33.3*	*66.7*	*100*
Expert Appraisal	*Frequency*	*2*	*10*	*12*
	Percentage	*16.7*	*83.3*	*100*
Executive Tribunal	*Frequency*	*8*	*4*	*12*
	Percentage	*66.7*	*33.3*	*100*
Mediation	*Frequency*	*5*	*7*	*12*
	Percentage	*41.7*	*58.3*	*100*
Negotiation	*Frequency*	*8*	*4*	*12*
	Percentage	*66.7*	*33.3*	*100*

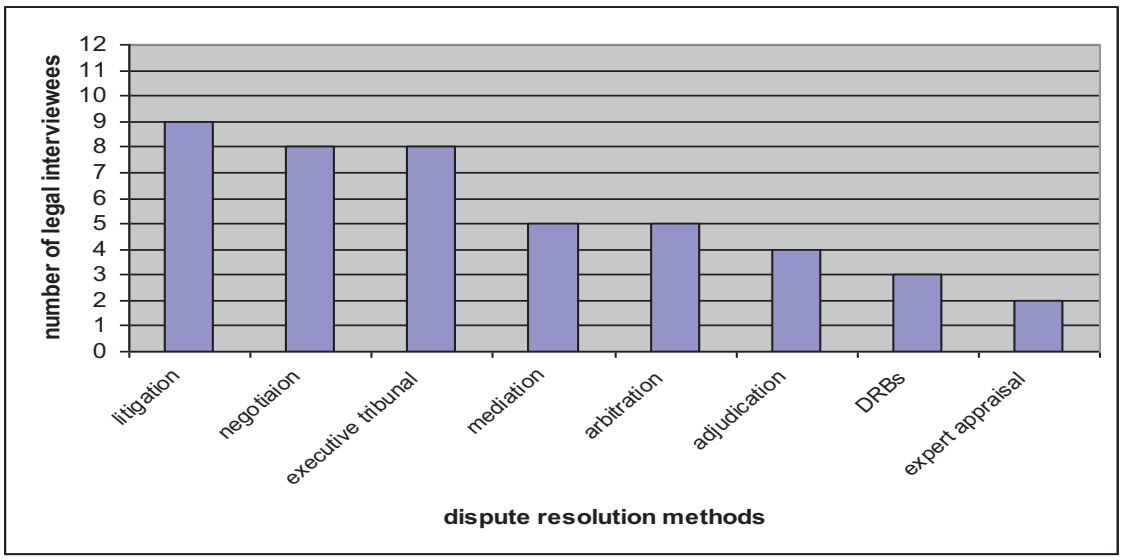

Figure 1: Frequency of the legal interviewees who had been involved in each method

Figure 1 reveals that most of the legal interviewees were involved in litigation, which is followed by negotiation and executive tribunal, arbitration and mediation, adjudication, DRBs and finally expert appraisal. When compared with the results that had been obtained from the survey with fifty project managers (Figure 2), it can be seen that the ranking of some of the methods are considerably different. If this is taken as an indicator of the involvement of the legal professionals in various dispute resolution methods, then Figure 1 and Figure 2 show that although expert appraisal is a frequently used method in the construction industry, rarely a role is given to legal professionals in this process. On the other hand, legal professionals are more frequently involved in litigation, arbitration and executive tribunals compared to the other processes and as a result these methods get a higher ranking among the legal interviewees than they do among project managers.

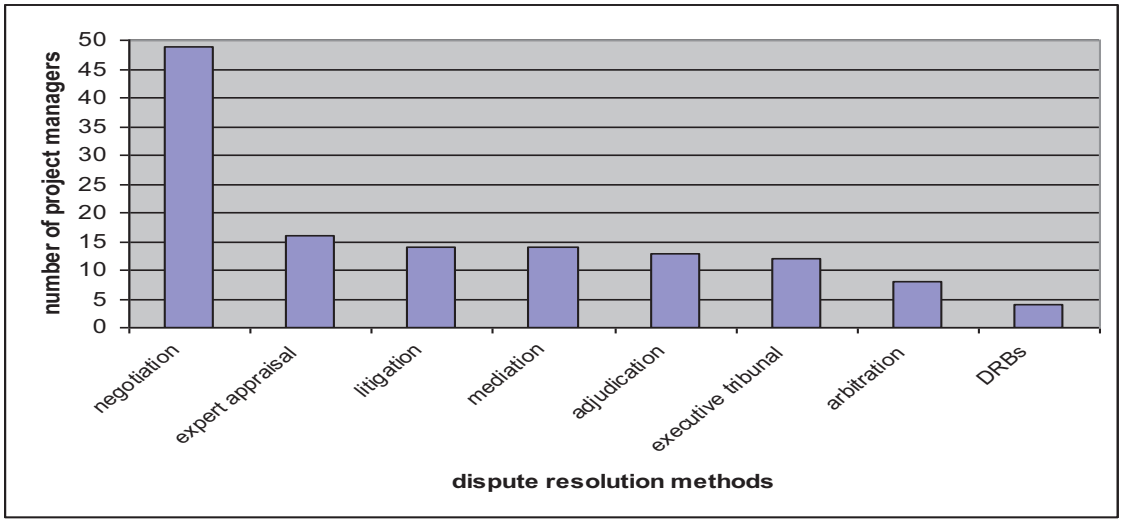

Figure 2: Frequency of project managers who had been involved in each method

4. Performance of ADR methods

Figure 3 and Figure 4 show the perceptions that legal interviewees and the project managers have about the performance of various dispute resolution methods respectively.

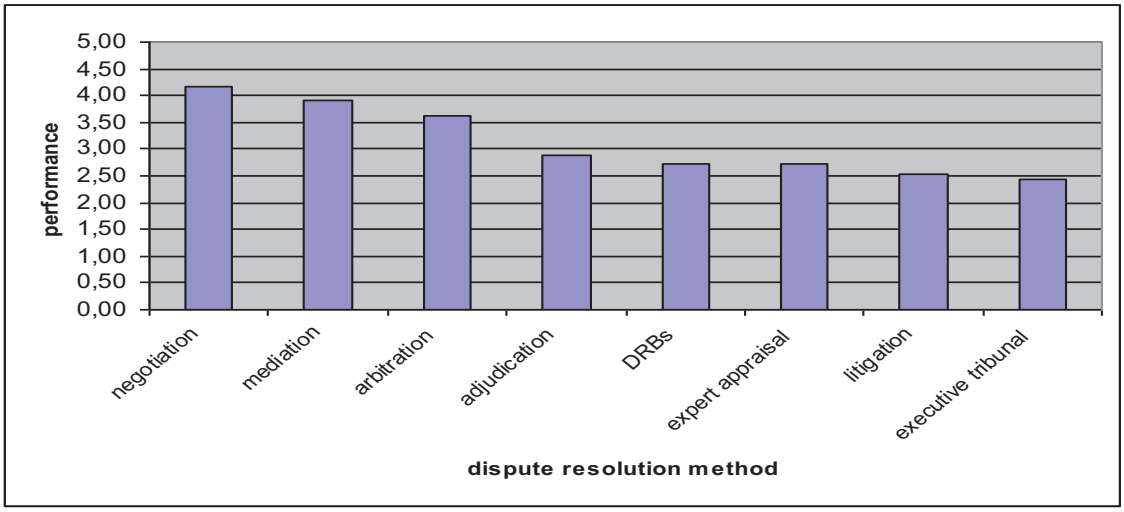

Figure 3: Perceptions that the legal interviewees have about the performance of various dispute resolution methods

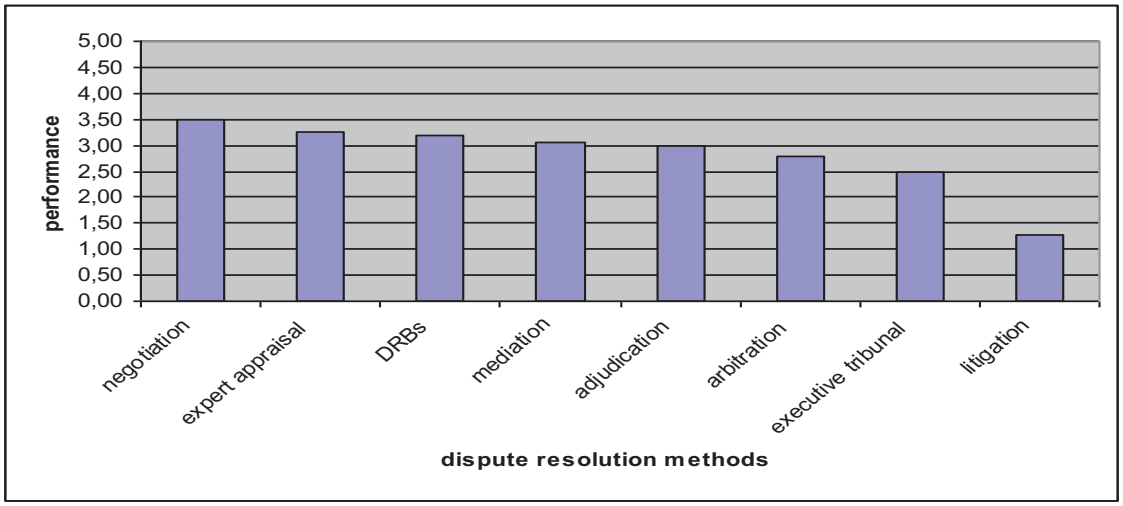

Figure 4: Perceptions that the project managers have about the performance of various dispute resolution methods

These figures reveal that the opinions of the project managers and the legal interviewees on the performance of various dispute resolution methods are considerably different as well. It can be seen that while the processes that involve technical opinion of neutrals, such as expert appraisal, DRBs and adjudication are favoured by project managers, adversarial methods, namely litigation and arbitration get higher scores among legal interviewees. This finding is a strong indication of the different perspectives that construction and legal professionals have regarding the resolution of disputes in the construction industry.

5. Use of ADR in the Turkish construction industry

The survey had revealed that despite the low level of knowledge of ADR and very low level of current use of ADR among project managers (except for negotiation), nearly all project managers would think of using ADR in future. After these results were presented to the legal interviewees, they were asked to give their opinions on the current and future use of ADR in the Turkish construction industry. All of the legal interviewees agreed with the findings of the survey in this regard and stated that construction disputes constitute one of the most suitable dispute types for the implementation of ADR methods. One of the interviewees explained this statement with the fact that disputes are inevitable in construction projects and that construction disputes cause delays and cost over runs immediately, which require a prompt resolution. The legal interviewees think that ADR methods are perceived as "intermediate techniques" by most of the legal professionals who prefer litigation and arbitration since they have a more conclusive nature. Some legal interviewees added that it is the responsibility of the professional institutions to raise the awareness about ADR among legal professionals.

6. Role of lawyers in ADR

Figure 5 shows the legal interviewees' opinions regarding the role of lawyers in various dispute resolution methods

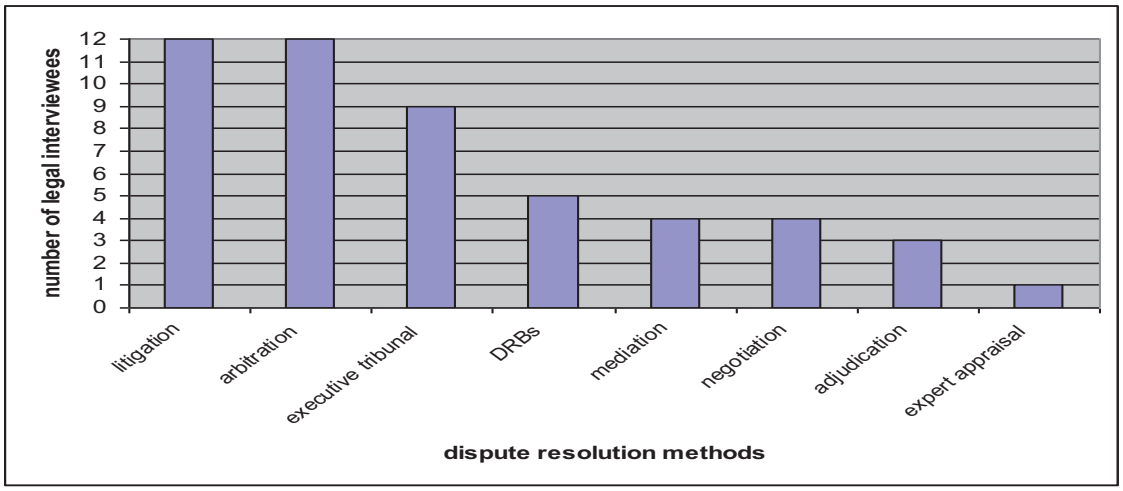

Figure 5: Legal interviewees' opinions regarding the role of lawyers in various dispute resolution methods

According to the results revealed in Figure 5, all of the legal interviewees think that lawyers should be present in litigation and arbitration. Nine out of twelve legal interviewees believe that lawyers should be present in executive tribunal due to the involvement of upper management of the parties in the process. On the other hand less than half of the interviewees believe that lawyers are needed in DRBs, mediation, negotiation and adjudication. Only one interviewee believes lawyers are needed in

the expert appraisal process. These results are compatible with the implications made in the third section (experience of legal professionals with ADR).

7. Preferred professional background of neutrals

In order to shed light on the expectations of the Turkish construction industry in this regard, respondents' perceptions of the professional background of a neutral working in the industry had been investigated in the survey with project managers. The results revealed that 78% of the project managers would prefer a neutral working on construction disputes to be an architect or an engineer provided that s/he has a fundamental training in law, while 22% would prefer an architect or an engineer as a neutral but did not think that training in law should be a requirement. None of the project managers preferred a lawyer to resolve their dispute, however, it should be noted that all of the project manager respondents are architects and engineers themselves. This finding shows that potential users of ADR methods in the Turkish construction industry are likely to prefer their disputes to be resolved by neutrals with relevant technical knowledge, rather than legal qualifications. On the other hand, while 75% of the legal interviewees would prefer a neutral working on construction disputes to be an architect or an engineer provided that s/he has a fundamental training in law, while the rest of the interviewees would prefer a neutral to be a lawyer. This means that while approximately 75% of each respondent group (project managers and legal interviewees) agree on neutrals working on construction disputes to be an architect or an engineer provided that s/he has a fundamental training in law, the rest would prefer to see a professional colleague as a neutral.

8. Barriers to the widespread use of ADR

Figure 6 and Figure 7 show legal interviewees' and project managers' perceptions of the barriers to the widespread use of ADR in the Turkish construction industry respectively.

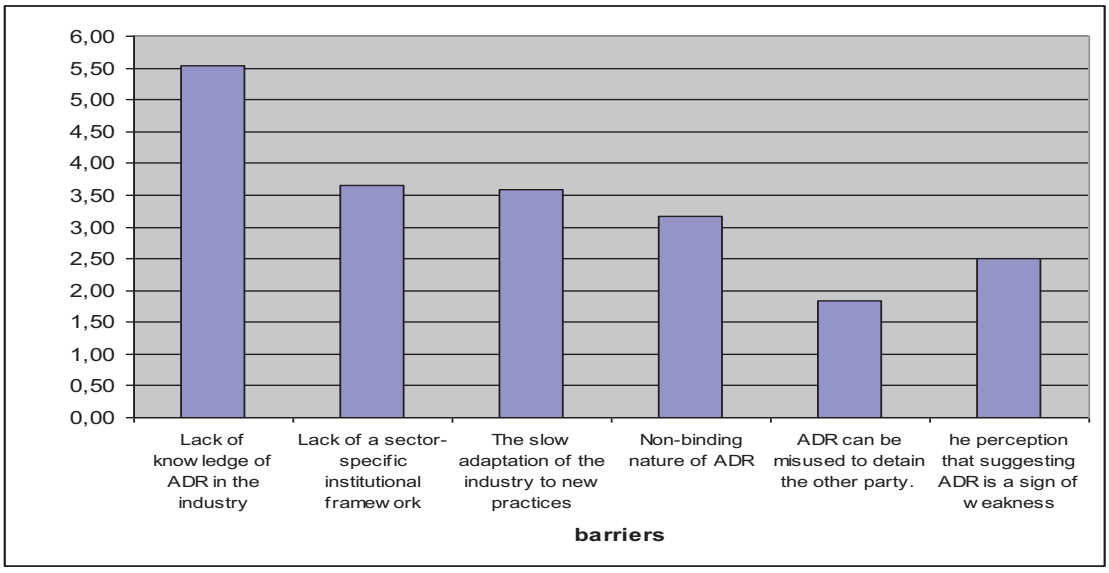

Figure 6: Legal interviewees' perceptions of the barriers to the widespread use of ADR in the Turkish construction industry

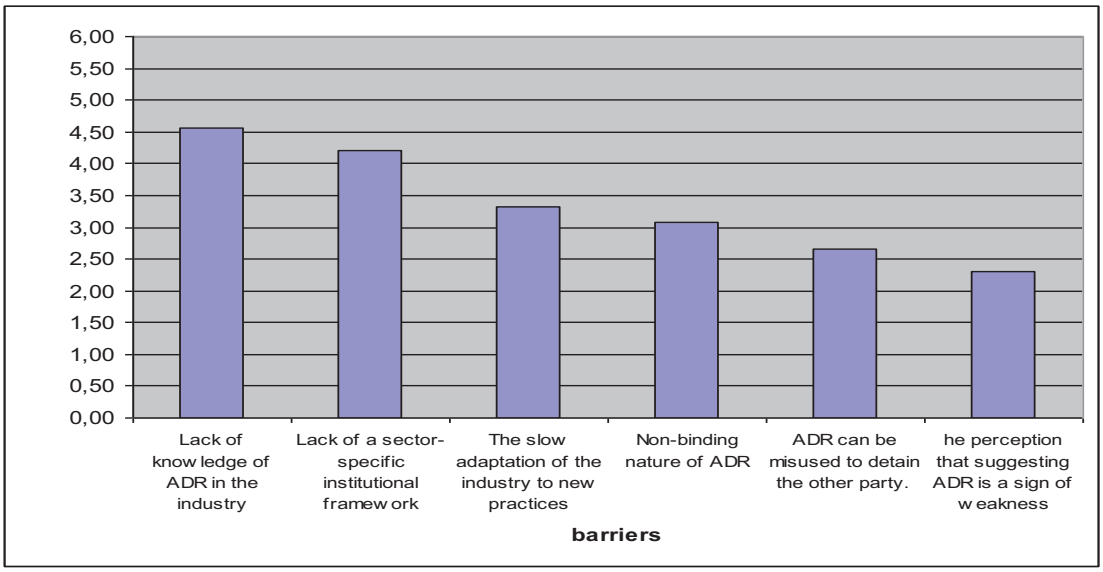

Figure 7: Project managers' perceptions of the barriers to the widespread use of ADR in the Turkish construction industry

Figure 6 and Figure 7 reveal that "lack of knowledge of ADR in the industry" is perceived as the most important barrier to the widespread use of ADR in the Turkish construction industry by both legal interviewees and project managers. "Lack of a sector specific institutional framework", "the slow adaptation of the industry to new practices" and "non-binding nature of ADR" follow. It can be seen that while "the perception that suggesting ADR is a sign of weakness" is perceived as a more important barrier among legal interviewees, "the possibility of ADR to be misused to detain the other party" is perceived as a more important barrier among project managers.

9. Conclusions

Given the inherent positive attributes of ADR in resolving construction disputes, it is needed to explore the perceptions of ADR among different stakeholders present in the Turkish construction industry, where no such study has previously been carried out, in order to make projections for its further development.

Findings from the project managers' survey that had been completed at an earlier stage of the research had shown that despite the low level of knowledge and current use, ADR has been perceived positively by most of the contractors and employers. All of the legal interviewees agreed with the findings of the survey in this regard and stated that construction disputes constitute one of the most suitable dispute types for the implementation of ADR methods. However, the legal interviewees also think that ADR methods are perceived as "intermediate techniques" by most of the legal

professionals and added that it is the responsibility of the professional institutions to raise the awareness about ADR among legal professionals.

Another remarkable finding reveals that the opinions of the project managers and the legal interviewees on the performance of various dispute resolution methods are considerably different. While the processes that involve technical opinion of neutrals, such as expert appraisal, DRBs and adjudication are favoured by project managers, adversarial methods, namely litigation and arbitration get higher scores among legal interviewees. This finding is a strong indication of the different perspectives that construction and legal professionals have regarding the resolution of disputes in the construction industry.

The perceptions that project managers and legal interviewees have about the preferred professional background of neutrals working in the construction industry are different as well. Approximately 75% of each respondent group (project managers and legal interviewees) agree on neutrals working on construction disputes to be an architect or an engineer provided that s/he has a fundamental training in law, while the rest would prefer to see a professional colleague as a neutral in construction disputes.

Finally, regarding the barriers to the widespread use of ADR in the Turkish construction industry "lack of knowledge of ADR in the industry" is perceived as the most important by both legal interviewees and project managers. "Lack of a sector specific institutional framework", "the slow adaptation of the industry to new practices" and "non-binding nature of ADR" follow. While "the perception that suggesting ADR is a sign of weakness" is perceived as a more important barrier among legal interviewees, "the possibility of ADR to be misused to detain the other party" is perceived as a more important barrier among project managers.

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