

APPRAISING THE POTENTIAL FOR JOINT RISK MANAGEMENT

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Construction risks are apportioned by contract conditions that are eventually interpreted by 'self-interested economic agents' of the contracting parties. This may lead to prolonged claims and costly disputes. Moreover not all the risks are foreseeable at the planning stage, some foreseeable risks may change as a project progresses and some others may need joint efforts of the contracting parties for their effective management. Contract conditions alone are thus not sufficient to allocate risks properly. Unforeseen risks need to be managed with a Joint Risk Management (JRM) strategy that will work dynamically through coordinated efforts, provision for which should be made in the contract conditions. Attitudes of the contracting parties and cooperative relationships among the project participants are therefore important for successful project delivery. These are examined in the light of Transaction Cost Economics (TCE) and Relational Contracting (RC) principles. It is found that RC should reduce transaction costs, while also fostering cooperative relationships and better teamwork that in turn facilitate JRM. The usefulness of the latter is reinforced by relevant observations from a Hong Kong-based survey, and a pilot study on a follow-on (second) survey.

Keywords: indexicality, joint risk management, relational contracts, risk allocation, survey, transaction cost economics.

INTRODUCTION

Risks are inherent in construction projects. Severely damaging consequences are likely to befall all contracting parties if these risks are not addressed properly. A series of recent reports commissioned by industry/ government in Australia, the UK, and Singapore have advocated strategic alliances/ partnering/ cooperation/ teamwork to improve inter-organizational relations and project performance, including risk management. Proactive and systematic risk management has been recommended to minimize potentially damaging consequences in the Henry Tang (CIRC 2001) report in Hong Kong. Risk management is therefore an important issue within an overall project delivery system, that needs to be addressed carefully to benefit the industry and all parties concerned, to construct facilities of satisfactory quality within programme and budget, and to achieve the much touted shift from existing adversarial relationships to greater cooperation.

It has become almost a truism that the party best able to manage a risk should bear the risk (Nunn 2000). Risks are usually allocated to different parties through contract conditions, but contract language alone is insufficient to clearly specify risk liabilities between the contracting parties. Different groups of contracting parties, as well as individuals within the same group, interpret contract clauses differently (Hartman *et al.* 1997); because contract documents are never 'unindexical' and interested economic agents interpret contract clauses to their own benefits (Clegg 1992). Differences in

opinion are therefore inevitable and these may well give rise to claims and disputes. A clear “meeting of minds” of the contracting parties appears necessary. On the other hand, construction risks are often project-specific. The nature and extent of risks may change as a project progresses, new risks may emerge and existing risks may change in importance or be re-allocated, as not all the risks are foreseeable at the outset. Some of these risks may also require the combined efforts of contracting parties for their effective management. Flexibility in contracts is therefore necessary. Worldwide innovative initiatives to address these risks (e.g. partnering, alliancing) point to the need for improved risk management and reinforce requirements for flexibility in contract conditions.

Since all possible risks are difficult to foresee at the outset, unforeseen risks would need to be dealt with, using a 'Joint Risk Management' (JRM) strategy that continues into the post-contract stage. For such a joint strategy to work well in the complex, multiparty construction projects, conflicts between the diverse participants need to be minimized through better relationships and cooperative teamwork (Dissanayaka and Kumaraswamy 1999). Previously advocated Transaction Cost Economics (TCE) theories and Relational Contracting (RC) approaches can be revisited and mobilized to improve such relationships, team working and JRM. The TCE approach provides a useful framework for analysing the inevitable differences in interest between the different parties who are members of the project coalition (Winch 1989); while RC encourages long term provisions on the basis of understanding each other's objectives and introduces a degree of flexibility into the contract, by considering a contract to be a relationship among the parties (Macneil 1974, 1978, 1980).

This paper will first briefly discuss TCE and RC approaches to demonstrate how transactionally efficient RC can (1) address indexicality and (2) improve JRM at the post-contract stage. This will then be reinforced by relevant observations on the perceived desirability of JRM, based on a recent survey. Finally, observations from a pilot study preceding a second survey on implementing RC and JRM will be discussed in this paper.

INDEXICALITY AND TRANSACTION COST ECONOMICS

Clegg (1992) argues that contractual documents are never unproblematic, never unambiguous, because they can never be 'unindexical'. Indexicality is a technical term that refers to a situation where the meaning of something is always contingent upon someone interpreting it (Clegg, 1992). Such an interpretation always 'indexes' the particulars of the occasion of its interpretation. It is dependent on the interpreter - his interests, knowledge, and the time of the unfolding drama of the site. Different knowledge, different positions of a hierarchy, different personnel in a network of inter-organizational relations, different times in the temporal flow of events or spaces in their spatial location, can always produce differentially interested interpretations of the matter-at-hand. Therefore contracts can never be without need for interpretation, and indexicality is a part of the human condition that is irremediable. Thus, conflict is always possible wherever there is indexicality (Clegg 1992). It is evident here that indexicality relates to the 'human condition' of an economic agent pursuing self-interest in the project organization. In this context, Winch (1989) found that three of the influential perspectives for analysing construction management - socio-technical systems; organization and environment; and project management - do not contain any framework for analysing the inevitable differences in interest between the different

firms who are the members of the project coalition. He then suggested the Transaction Cost Economics (TCE) approach to analyse those differences.

According to TCE, any problem that can be posed directly or indirectly as a contracting problem is usefully investigated in transaction cost economizing terms (Williamson 1987). The main contention is that, in addition to the cost of production, there are also costs of transactions between parties (Winch 1989). A transaction occurs when a good or service is transferred across a technologically separable interface (Williamson 1987) and the transaction is the basic unit of analysis in the study of economic organization. Transaction cost includes the cost of 'effort to identify, explicate and mitigate contractual hazards' (Williamson 1996), which relates to the costs arising out of indexicality. TCE considers contracts to be 'governance structures', i.e. as frameworks for conducting transactions in a changing world. These structures may be of several different degrees of formality and flexibility, the optimal choice of which mainly depends on 'bounded rationality' and 'opportunism' (Williamson 1996). Bounded rationality means that a party to a transaction cannot always plan and monitor perfectly because of the lack of information needed at the planning stage and this may give rise to opportunism (that relates to indexicality). Therefore parties need protecting from each other, because human cunning is such that promises do not guarantee performance, and TCE suggests that necessary measures are to be provided in the contract to counter opportunism (Williamson 1975).

Construction projects involve many complex processes and numerous uncertainties, and in order to achieve transient market benefits, contracts may need adapting from time to time. Different types of contract are therefore required to support efficient trading relations, where the type of contract is contingent upon the characteristics of the transaction. Thus, before entering into a contract, the transactors (i.e. contracting parties) first need to precisely determine their requirements and objectives, while being cognizant of both: (1) the nature and characteristics of the proposed transaction(s); and (2) the factors that cause transactional difficulties. Then the transactors need to select the most appropriate project procurement systems - including contract types containing necessary mechanisms for addressing disagreements towards negotiation, organizational arrangements (governance structures), proper selection strategies and risk management - that will minimize total costs of making their transaction(s). In doing so, owners must appreciate their superior power in bargaining and hence the responsibilities associated with this power in making contractual agreements (Skibniewski 2000). At the same time, contractors should consider that they are supposed to make a decent profit, but not too much (Vegas 2000).

RELATIONAL CONTRACTING AND TCE

Relational (or Relationship) Contracting (RC) is based on a recognition of mutual benefits and win-win scenarios through more cooperative relationships between the parties. RC principles embrace and underpin various approaches such as partnering, alliancing, joint venturing and other collaborative working arrangements and better risk sharing mechanisms (Alsagoff and McDermott 1994, Jones 2000). Macaulay (1963) observed that in most long term contractual and business relationships, the legal mechanisms offered by specific contracts are not strictly followed, but the parties themselves govern the transaction within mutually accepted social guidelines. While argued to be commonplace in the business fraternity, it implies that

businessmen operate within a dynamic standpoint constantly pulled by contractual (legal), economic and behavioural forces. These situations were discovered as more pronounced in complex, lengthy and evolving transactions where the circumstances underlying the contract may change over time (as it is seen in construction projects). It was felt that the need to maintain relationships is more important than the short-term gains seized by enforcing the appropriate contractual machinery (Alsagoff and McDermott 1994).

RC considers contracts as promises of doing something in the future that has dynamic ongoing states of interrelated past, present and future (Macneil 1974). It is not a world entirely of segmental personal engagements; rather it is one tending to engage many aspects of the total personal beings of the participants. Macneil (1980) described contract broadly as 'the relationship among parties, to the process of projecting exchange into the future'. Because not all the events can be 'presentiated' (perceived or realized at present), and as all the information needed cannot be 'presentiated' at the time of contracting, mutual future planning is required. This leads parties to negotiation, because negotiation costs are less than higher premiums that may otherwise be incorporated in the bids of contractors, and also less costly than terminating contracts (Campbell 1997). However, no real life human cooperation will be found entirely transactional and lacking some whole personal relations, some diffuse communication and some non-economic personal satisfaction. Nor will contractual relations be found entirely lacking in transactional discreteness. Accordingly, Macneil (1978) classified contracts into three types: classical, neoclassical, and relational. Williamson (1987) formulated an optimal match of this classification with TCE as: classical contracting is described as market governance, neoclassical contracting involves trilateral governance (where third-party 'assistance' is employed in resolving disputes and evaluating performance), and relational contracts are organized in bilateral (where the autonomy of parties is maintained) or unified governance (where the transaction is removed from the market and organized within the 'firm' subject to an authority relation i.e. vertical integration) structures. Lyons and Mehta (1997) summarized 5 key elements of RC as: (1) The identities and personal attributes of parties are crucial, (2) Normally of indeterminate duration, (3) Norms of behaviour, or shared codes of conduct, inform responses to new developments as they unfold (4) Written documentation is treated as a record of what has been agreed, and (5) Norms of behaviour or shared codes of conduct overrule written documents in settling disputes.

Problems of 'presentation' in RC that relate to 'bounded rationality' of TCE lead parties to future mutual planning, which may give rise to 'opportunism' - a 'strategic behaviour' of an economic agent (Campbell 1997) - translating into a behavioural risk of encountering actions that benefit one party at the expense of other(s) (Lyons and Mehta 1997). Mutual planning also needs trust and trustworthy behaviour (to counteract opportunism) among the parties. Two types of trust work as safeguards against this risk: self-interested trust (SIT) and socially oriented trust (SOT). SIT is forward looking in expecting direct rewards from cooperation in the form of continuing business. On the other hand, SOT is backward looking, and based on a history of working relationships and social relations that create shared values, moral positions and friendships that discourage opportunism, even if the probability of future trade is low. SOT is nurtured on a daily basis by face-to-face contact, and firms invest in activities to promote it (Lyons and Mehta 1997).

However, calculative trust (Williamson 1996) or SIT is seen as developing from the strategic interaction of self-interested economic agents and is maintained as long as it serves their interest, the possibility of defection being restrained by the sanction or retaliation, which would then be deployed against them. By contrast, trusts in terms of personal or social factors (i.e. SOT) see goodwill trust, in particular, as counter-posed to rationality, self-interest, and contract. Between these two extremes of egoism and altruism as alternative sources, in the much more complex nature of most modern business relationships like construction projects, the most effective organizations of business trust are based on communities of shared ethical values, shared principles of fairness and convergent mutual expectations about informal obligations (Deakin *et al.* 1997) - through motivation and individual attitudes that considerably influence the project outcomes and are critical to the relationships of the contracting parties (Drexler and Larson 2000). Such trust can sustain cooperative behaviour and the envisaged JRM in the face of unforeseen problems. Results from recent studies (discussed in latter sections) show that this motivation and attitude is present in the industry.

Lyons and Mehta (1997) found that organizations display an acute awareness of the costly hazards of opportunism and of the difficulties of organizing exchange when the legal system is perceived to provide inadequate support for, and protection of, their interests. More informal relational contractual arrangements supply a reasonably efficient solution where recurrent transactions (e.g. claims, variation orders) require investments of specific assets and are accompanied by a high level of uncertainty. However, while non-legal enforcement mechanisms clearly play a major role in relational contracting of bilateral governance, legal mechanisms may also play a part in such exchange arrangements. Equally, more formal (i.e. classical and neoclassical) contractual arrangements are accompanied by an armoury of supportive non-legal mechanisms. This is seen in the present construction industry in practicing RC (e.g. through partnering): Project partners work as a team on the basis of a 'charter' that is not legally binding and if there is any problem the original contract will take precedence.

RC approaches appear useful in achieving the overall objective, which is to reduce the sum of production and transaction costs (Walker and Chau, 1999). RC offers a cost-effective means of encouraging collectively beneficial behaviour, when transactions are exposed to opportunism, but a fully contingent contract is too costly (if not impossible) to specify. RC is characterized by the subordination of legal requirements and related formal documents, to informal agreements such as verbal promises, or partnering 'charters'. This mode of governance firstly calls upon both parties to recognize the positive gains from maintaining the business relationship. Secondly, for the parties to transcend the anonymity associated with market transactions. Disagreements are then negotiated towards solutions that do not jeopardize the relationship between the parties. Such objectives and approaches also provide an ideal framework for the joint management of risks that cannot be foreseen or clearly allocated to one party at the outset.

SURVEY ON RISK ALLOCATION: JRM AND ATTITUDE

TCE analysis in relation to a particular transaction assumes that an economic agent to a contract is always opportunistic, but the problem can be mitigated by the appropriate choice of contractual form (or overall governance structure) by providing necessary measures in the contract. So this depends on the characteristics of each transaction -

not the transactors (Lyons and Mehta 1997). On the other hand, RC assumes contracts to be a relation among the parties, where the behaviour of the parties gives rise to prescriptive norms and to standards of proper conduct. These prescriptive norms 'connote both actual behaviour and principles of right action' (Macneil 1980). This suggests the need for proactive behaviour. It therefore appears useful to address both the nature of the transaction (in terms of uncertainty or risk) and that of the transactors (in terms of their attitude and willingness for collaborative risk management), in choosing an appropriate contractual form, where duties and responsibilities of contracting parties should be clearly allocated - along with necessary provision for flexibility in filling the gaps i.e. efficient management of risks as they occur during the construction process.

A recently conducted Hong Kong based survey identified perceptions on (1) present risk allocation, and (2) how the risks should be allocated (preferred allocation, including an option for JRM) - against an inventory of 41 risks that are commonly found in standard forms of contracts for conventional construction projects. In responding to the first question to a carefully designed and pilot-tested questionnaire, respondents identified a percentage (say X, from 0 to 100) of a particular risk that is perceived to presently lie with the contractor. This implied that (100-X)% of that risk presently lies with the owner. Respondents also specified the forms of standard contract conditions (e.g. the FIDIC) on which their perceptions on this question were based. For the second question, respondents stated the percentages of a particular risk that should, in their opinion: (a) be borne by the owner, (b) be born by the contractor and (c) earmarked for joint management (JRM) at post-contract stage (totalling 100). Responses on this question were not sought according to any particular contract conditions.

The survey results are based on 47 responsive responses - 20 from Hong Kong, 25 from Mainland China (most of the latter being from respondents who had also had experience in Hong Kong) and 2 from other countries through the Internet. The detailed survey outcomes are planned to be reported in another paper that is still under review (Rahman and Kumaraswamy, under review). Since those results are not directly relevant to improved risk management, most of the detailed analyses are not reported here. Nevertheless, relevant observations from the survey that are summarized below are useful in demonstrating the perceived need for JRM, since these reinforce the above theoretical arguments for JRM through RC approaches.

The survey results reflect marked differences in both interpretations of present risk allocation and of preferred allocation, both between and within different project participant groups (owners, contractors and consultants). This is consistent with previous observations (Hartman *et al.* 1997) in Canada. However, extreme divergence (i.e. from zero to 100) within the same contracting groups is also observed in the present study. Such diverse perceptions are a source of potential conflict during project execution. Divergence in the same group may well arise from varied personal experiences and therefore highlight a need for cooperative learning or developing a culture of RC (e.g. partnering) within the organizations before embarking on such approaches with others. Better inter-group and intra-group understanding may be developed through coordinated training programmes and co-operative learning strategies. These should then generate cooperative teamwork and improved relationships that in turn create an ideal environment for JRM.

It has also been observed that considerable percentages of most of the 41 risks cited in the survey questionnaire are perceived to need JRM. In doing so, respondents preferred reduced risk liabilities (than the present risk liabilities) of either one or both of the contracting parties, instead of allocating more risks on other party. This is a very relevant and important finding, as joint management of risks at post-contract stage needs non-adversarial teamwork, where better relations, mutual understanding, strong cooperation among the contracting parties and an appreciation of the situation are preconditions.

Table 1 summarizes the results of average perceptions on JRM in each category of contract conditions and in terms of number of risks as against percentage ranges recommended for JRM. In the total sample, 16 risk items (i.e. 10 + 6) were recommended for JRM by more than 20%. Respondents under the FIDIC category recommended 14 risk items for JRM in the range of 11% to 20%, 5 risk items in the range of 21% to 30% and 2 risk items in the range of 31% to 40%. This is very important in the context of the FIDIC conditions that are being widely used in international projects in many countries; and being considered to be one of the best drafted conditions of contract in terms of clarity and balanced risk allocation. Yet the respondents' recommendations for JRM may relate to the reality that some of the risks cannot be foreseen at planning or design stage, while other risks are unique or project specific, and some risks, in any case, need the combined efforts of more than one contracting party for their efficient management.

Table 1: Summary of average perceptions on Joint Risk management (JRM) based on contract categories (i.e. standard conditions of contract)

% of risk that should be jointly managed	Number of risks (out of 41 used in the survey) in each category*			
	Total (47)	FIDIC (25)	HKGCC (8)	GENERAL (9)
0	0	0	0	1
1 - 10	12	20	9	5
11 - 20	13	14	5	11
21- 30	10	5	10	7
31 - 40	6	2	7	11
41 - 50			4	4
51 - 60			5	1
More than 60			1	1
Total No.:	41	41	41	41

*Figures in parentheses () indicate the number of responses. Five responses were based on some other different contract conditions and those are not compared here as a separate category.

Notes: FIDIC: Fédération Internationale des Ingénieurs-Conseils

HKGCC: the general conditions of contract for civil engineering works in Hong Kong

GENERAL: Not according to any particular conditions of contract

Respondents under the HKGCC (the General Conditions of Contract for Civil Engineering Works in Hong Kong) suggested 5 risk items for JRM in the percentage range of 11 to 20, and another 27 risk items from 21% to over 60%. In particular, 6 risk items were advised for more than 50% of JRM. This may indicate that Hong Kong project participants are quite receptive to calls for more cooperative (and less adversarial) working arrangements (CIRC 2001). Respondents in the General category (i.e. where the responses were not based on any particular contract conditions) recommended JRM for 24 risk items from 21% to over 60%. This may reflect the present need of the industry to move towards more collaborative and teamworking based approaches to address construction risks effectively. As any collaborative

teamwork needs better understanding and good relationships among the project participants, this may also reinforce the need for a paradigm shift away from the present confrontational culture and adversarial attitudes of the stakeholders.

Table 2 shows the average perceptions on JRM based on the groupings of the respondents on 'working organizations' and 'nature of present job'. It indicates that out of 41 risk items, 11 to 40 percent of 29 (i.e. 13 + 10 + 6) risk items are generally perceived to need JRM. Within specific groupings under working organization, academics believe that 11 to 50 percent of 37 risk items should be managed with a JRM approach, in comparison to consultants, who think that 11 to 50 percent of 26 risk items should be managed jointly. Contractors think that 11 to 60 percent of 28 risk items are suitable for JRM. By contrast, owners recommended 27 risks for JRM of more than 10 percent. But the range of percentages that they considered suitable, exceeds 50% for JRM of two of these risk items. This may indicate a new development compared to previous observations that owners are risk evasive (Ahmed *et al.* 1999). Moreover, in each of the percentage range slots of 21-30, 31-40 and 41-50, owners recommended a greater number of risks for JRM than contractors. This may mean that owners are more ready (than contractors) to approach JRM. It is also very important in the context that any arrangement for collaborative teamwork is expected to be client-led as they are the 'formulators' and main beneficiaries of the project and the most important stake holders in the project teams; and also because they have effective control on the governance structure/ contractual form, selection process, contract content and project organization.

Within the groupings under 'nature of present job' and in comparison to the academics, the respondents who are engineers believe that 11 to 40 percent of 23 risk items need JRM. On the other hand, the 'managerial' respondents recommend 11 to 60 percent of 30 risk items for JRM. This is important in the sense that the managers are expected to drive and motivate the project team comprising many disciplines/ professionals towards better performance in terms of cost, programme and quality, and in achieving owner satisfaction without disrupting relationships between the contracting parties. However, the academics appear to have the greatest enthusiasm towards teamworking based JRM as they recommend the highest number of risks (37 out of 41) for more than 10% of JRM.

Table 2: Average Perceptions on Joint Risk Management (JRM) based on groupings of 'working organization' and 'nature of present job'

Percentage of risk that should be jointly managed	Number of risks (out of 41, used in the survey) in each category*						
	Total (47)	Working organization			Nature of present job		
		CSL (14)	CTR (8)	OWN (15)	ACA (10)	ENG (18)	MGR (19)
0	0	0	7	1	0	0	1
1 - 10	12	15	6	13	4	18	10
11 - 20	13	13	17	8	20	12	12
21- 30	10	9	5	8	13	6	8
31 - 40	6	3	4	6	3	5	7
41 - 50		1	1	3	1		1
51 - 60			1	1			2
Over 60				1			
Total No.:	41	41	41	41	41	41	41

* Figures in parentheses () indicate the numbers of respondents in each group.

Notes: CSL - Consultants CTR - Contractors OWN - Owners
 ACA - Academics ENG - Engineering MGR - Managerial

SURVEY ON IMPLEMENTING RC AND JRM

Based on the findings of the preliminary survey as stated above, a fresh survey based study was formulated in early 2001 - to address the implementation of the RC and JRM issues. It was decided to conduct a pilot study, by interviewing some key industry experts from both the public and private sectors, to collect necessary preliminary information for the study. It was also intended to ensure that the survey addresses the present status and attitude of the industry, particularly in response to the recent call for 'wider adoption of partnering' by the Construction Industry Review Committee (CIRC 2001), and to ensure realistic responses from potential respondents. A questionnaire was framed, for which again a pilot test was carried out with five knowledgeable persons to test for clarity and check for relevance and completeness. The questionnaire was then improved with feedback from the pilot test. This improved questionnaire has recently been launched in the local industry, as well as on the Internet. The preliminary interviews and responses from the pilot test reveal some interesting developments in the local construction industry. These include the realization of the public sector owners that they should lead any change. It was also found that the top executives of the public sector are now trying to collectively decide on the nature and extent of the 'change' they should lead at a series of monthly meetings following the Henry Tang Report (CIRC 2001). This is expected to lay the foundations for a very important attitudinal change that should influence the local industry as a larger part of construction works are carried out by the public sector in Hong Kong.

Meanwhile, the private sector is seen to actively embrace RC based approaches. Some private owners have already started to bring in contractors at the outset or design stage of the projects, which resulted at least 11% savings in cost (Ho 2000). In order to maximize benefits, interviewees were seen to favour the inclusion of subcontractors and major suppliers in this process. It was found that there is a need for learning such approaches internally before contracting with external parties. It was also perceived that government departments may take a longer time to embrace such approaches, while quasi- governmental organizations may take a relatively short time. Most of the interviewees emphasized the need for 'knowledgeable clients', i.e., for the owners to understand the 'approach' and the 'procedure of such approaches', to identify clearly 'what they need', and to realize that 'they need to pay properly for what they need'. It is expected that the recently launched survey will reveal some more improvements in attitudes towards RC and JRM approaches, and in selecting project partners in implementing such approaches.

CONCLUDING OBSERVATIONS

Construction risks are apportioned among different parties through the contract conditions. But different 'economic agents' interpret the contract conditions to their own benefits. Moreover, while construction risks are project specific, some of them may change in nature and scope through the project cycle. Other risks may not be foreseeable at the planning stage, whereas some others may need combined efforts for their effective management. This requires flexibility in contract conditions to foster a non-adversarial environment where parties to the contract may discuss among themselves to reach common interpretations of the foreseeable risks, while others can be managed with joint team efforts - as the situation demands and as they happen. Transaction Cost Economics (TCE) and Relational Contracting (RC) principles, as

examined in this paper, can provide the basis for such teamwork e.g. through partnering.

Convergence of TCE and RC provides a focus for selecting appropriate procurement method, contractual form, contract content and team partners to suit the transaction. It allows necessary measures to be provided in the contract conditions to address indexicality (or opportunism). At the same time, it provides for a flexibility in contract conditions that encourages establishment of a common platform for the contracting parties to discuss unclear issues leading to a common understanding and thereby to effectively address unforeseen risks jointly.

The construction industry is notorious for its fragmented and adversarial environment. This has been particularly so in Hong Kong where large claims and disputes have been common. Interestingly, a markedly positive attitude towards Joint Risk Management (JRM) has been observed in the present study, irrespective of the contracting party and specific 'groups' to which they belonged. This is recognized to be a very important outcome, as JRM needs the commitment and efforts of all parties. Furthermore, the owners group has been seen to be more enthusiastic towards JRM, which (in comparison to previous studies) may imply that the Hong Kong owners are now more ready to embrace teamworking concepts for better project implementation. Further investigation revealed a realization that the 'knowledgeable clients' should lead any change and that there is a need for 'learning' and developing RC approaches before contracting with the external parties. After completing the ongoing second survey, the next stage in the present series of interlocking research study exercises will focus on formulating and validating a viable JRM model through transactionally efficient RC based approaches.

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