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"The Aggressive-Cooperative Drivers of Construction Contracting"

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The Aggressive-Cooperative Drivers of Construction Contracting

Abstract

Construction contracting parties can take either a cooperative or aggressive stance in pursuing their goals. This paper aims at identifying the stimuli (known as drivers) that motivate cooperative or aggressive moves in construction contracting behavior (CCB). In this regard, a three-stage research work has been designed for the completion of the research objective. Based on literature reviews, aggressive and cooperative drivers were identified in the first stage. A questionnaire was designed to collect construction case-specific data on these drivers. Next, taxonomies of aggressive and cooperative drivers were developed by the use of Principal Component Factor Analyses (PCFA). A total of three and seven taxonomies for aggressive and cooperative drivers were identified respectively. These taxonomies enable the understanding of aggressive-cooperative nature of CCB in a more amenable and logical manner. With these taxonomies, factor scales were calculated to represent the relative importance of the respective taxonomies. The degree of significance of each factor scales was then evaluated in the third stage. The results showed that the most important cooperative taxonomy is '*openness of contracting parties'*, while the most important aggressive taxonomy is '*goal oriented*'. The findings also suggest that construction projects may not be inherently adversarial. Contract with equitable risk allocation and open discussion of problems would provide the platform for team building so that relationship among contracting parties can be maintained.

Introduction

Construction contracting behavior (CCB) is the attitude taken by contracting parties in performing a construction contract. It reflects the contracting parties' attitude and expectations in construction contracting transactions. To this end, cooperative contracting behaviour has long been promoted in view of the perceived benefits. This is because cooperative working environment can maintain a harmonious relationship among contracting parties, and can allow effective enforcement of contractual rights and obligations [1,2]. However, the reality is that conflicts are inherent in most construction projects [2,3,4,5,6]. Construction contracting behaviour remains largely adversarial as reported in a number of industrial reviews [7,8,9]. In this connection, a stream of studies conducted by the construction community has also affirmed the need to overhaul the adversarial approach. These studies include case studies [10,11,12,13,14,15,16] and identification of critical success factors [17,18,19,20,21]. It has generally been found that adversarial behavior undermines cooperation among contracting parties and goes against amicable completion of construction projects [1,22,23]. These studies also suggest that cooperation enables synergistic efforts to maximize common interest. It seems there is a mis-match between the confrontational practice and the preferred state of co-operation. This apparent divergence between practice and preference suggests the existence of drivers for both approaches. Drivers mean those strengths and stimuli that motivate cooperative or aggressive moves. This means contracting parties can take a cooperative or aggressive stance in pursuing their goals depending on the significance of the influence of the drivers. For example, where construction contracts are not fulfilling the intended role of establishing the contractual responsibilities of the contracting parties [24], opportunistic aggressive moves may be adopted. In this connection, this study aims to

identify the cooperative and aggressive drivers in construction contracting. The understandings of these drivers would help management to identify ways to prevent contracting parties from adopting aggressive moves during their contract administration or to facilitate an environment in fostering cooperative contracting. With these aims, a three-stage research work was designed in this study. Stage 1, entitled "Identification of Aggressive and Cooperative Drivers", aims to long-list the generic types of aggressive/cooperative drivers and their respective effects on CCB. Taxonomies of aggressive and cooperative drivers were developed in Stage 2 of the study. Based on the results obtained from Stages 1 and 2, Stage 3 involves the use of relative importance rankings to compare the significances of aggressive and cooperative drivers on CCB. Each of these stages is described *seriatim*.

Stage 1: Identification of Aggressive and Cooperative Drivers of Construction Contracting Behavior

The aim of this Stage is to identify the generic types of aggressive and cooperative drivers of CCB. To achieve this, a questionnaire survey was employed to collect case-specific data. The questionnaire is divided into four main sections. The first section required the respondents to provide their background information and the particulars of their most recently completed construction project. The second section was designed to assess the respondents' degree of aggressiveness/cooperativeness of construction contracting behaviors. The respondents were asked to select the description that best reflects their contracting behavior for their completed construction projects (Figure 1 refers).

< Figure 1 here >

This self-reported contracting behavior is then used in analyzing the importance of aggressive and cooperative drivers in the final stage of this study. Further details are provided in the discussion section of the paper. The next two sections were designed to address the aggressive and cooperative drivers of construction contracting behaviors. Comprehensive literature reviews were conducted to identify a list of aggressive drivers. A total of 17 (from AF-1 to AF-17) aggressive drivers were identified. The list of aggressive drivers is shown in Table 1. To facilitate interpretation, these drivers can be generally classified into five key attributes according to their natures: Quality of Previous Dealing(s); Level of Competitive Pressure; Intensity of Competitive Inertia; Likelihood of dispute(s) and Contract Incompleteness. Furthermore, 27 cooperative drivers were extracted from the study of Yiu [25]. These were generally classified into 13 attributes: (1)Teamwork Intensity; (2)Trust Intensity; (3)Effectiveness of Communication; (4)Goodness in Relationship among Contracting Parties; (5)Commitment Maintenance; (6)Goal Mutuality; (7)Availability of Information; (8)Involvement Intensity; (9)Incentive to Risk Savings or Sharing; (10)Effectiveness in Dispute Resolution; (11)Effectiveness in Solving/Sharing of Problems; (12)Contract Completeness and (13)Inter-party Reciprocity. The list of cooperative drivers is shown in Table 2.

<Table 1 here>

<Table 2 here>

The drivers enlisted in Tables 1 and 2 were then used in the data collection of the questionnaire. Targeted respondents were identified from the Hong Kong Builder Directory and the web-pages of professional institutes such as the Hong Kong Institute of Surveyors (HKIS) and the Hong Kong Institution of Engineers (HKIE). A total of 300

questionnaires were sent, 100 of them were completed and returned, which represents a 33% of response rate. The respondents are construction professionals, including project managers (15%), architects (15%), engineers (25%), quantity surveyors (42%) and construction lawyers/mediators (3%) from the government, consultancy firms and contractors. Over 57% of them had at least 10 years experience in construction.

Stage 2 Taxonomies of Aggressive and Cooperative Drivers

Based on the data collected from the questionnaire survey, this stage aims at developing taxonomies of aggressive and cooperative drivers of CCB. Taxonomy is a system by which categories are related to one another by means of class inclusion [40]. The taxonomies of aggressive and cooperative drivers can be developed by the use of Principal Component Factor Analysis (PCFA) that explores the structure of the inter-relationships among data by defining a set of common underlying constructs, known as factors [41]. Separate dimensions of the structure are then easily identified and interpreted. Against the drivers long-listed in Tables 1 and 2, the respondents were asked to rate their degree of significance in shaping their contracting behaviors by a Likert scale of 1(not significant) to 7(very significant).

The data collected for aggressive and cooperative drivers were subjected to a PCFA to develop their respective taxonomies. As such, two PCFA were performed. The suitability of the data set was first assessed by Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy. The KMO values for the taxonomies of aggressive and cooperative drivers are 0.872 and 0.769 respectively, both are above the threshold requirement of 0.5 [42,43,44]. The low significance of the Bartlett Test of Sphericity also supports the adequacy of the

data set to perform PCFA. Furthermore, the eigenvalue-greater-than-1 principle was applied to decide on the number of factors. Factors with the eigenvalue greater than 1 were considered significant, and those with eigenvalue below 1 were discarded. Varimax rotation was applied so as to simplify the factor structures and obtain factor solutions that are easier to interpret. To explain the correlation between aggressive/cooperative drivers and its factor, factor loadings are also shown in Tables 3 and 4. These loadings give an indication of the extent to which the drivers are influential in forming the factors [62]. According to Sharma [62], the loadings can be obtained by using the following equation:

$$l_{ab} = \frac{w_{ab}}{\hat{s}_b} \sqrt{\lambda_a} \quad \text{.....(1)}$$

where l_{ab} is the loading of the b^{th} driver for the a^{th} factors, w_{ab} is the weight of the b^{th} drivers for the a^{th} factors, λ_a is the eigenvalue of the a^{th} factor, and $\hat{s}_b$ is the standard deviation of the b^{th} driver.

<Table 3 here>

Factor Interpretation

As shown in Table 3, three factors were extracted for the aggressive drivers. These are 'Factor 1: Unfavorable Past Experience/Ambiguous Contract Terms'; 'Factor 2: Difficulties in Performing Contract' and 'Factor 3: Goal-orientated'. These results are generally supported by previous studies. For example, Luo [45] suggested that past dealings or experience might influence subsequent dealings between the same contracting parties. Having a favorable previous dealings or experience could help contracting parties to build up their trusting relationships [46], to appreciate their respective organizational

strength and management style [28,37] and to heighten situational flexibility [26,47]. Moreover, difficulties in performing contract are one of the drivers to the aggressive moves of contracting parties. Practical difficulties such as the existence of exculpatory and onerous provisions, the change of project content and the low interdependency between contracting parties may bring about ambiguity that creates a breeding ground for shrinking responsibility and shifting blame [38]. As such, contracting parties are more likely to invoke aggressive behaviors. When this happens, aggressive retaliation from the other contracting parties can be expected [24,29].

Furthermore, seven factors were extracted for the cooperative drivers. These are 'Factor 1: Openness to Contracting Parties/Contractual Settings', 'Factor 2: Good Relationships Among Contracting Parties'; 'Factor 3: Contract Completeness'; 'Factor 4: Good Teamwork'; 'Factor 5: Incentive to Risk-sharing'; 'Factor 6: Effective Communication'; 'Factor 7: Desire to Maintain Relationship'. To motivate cooperative moves, Factor 1 suggests that contracting parties need to be open to each other. Openness is defined as the active involvement within project teams with open/honest communications, exchange of thoughts and feelings and equitable risk sharing. With these, cooperation between contracting parties can be more enduring. Resistance against aggression will also be higher [48,49].

Factor 2 highlights the importance of having good relationships among contracting parties. Good relationship between project participants is the foundation of cooperation [39,50,51]. Contracting parties, in particular, with previous cooperative experience, would reciprocate in subsequent dealings [52]. Blau [53] and Luo [45] recognize that

current behavior is a response to previous behavior of the others, thus past dealings are having influence on the cooperation or otherwise between the same contracting parties.

As suggested by Turner [54], contract should aim at aligning contractor's objectives with the clients. An appropriate contractual arrangement could attenuate the leeway for opportunism and prohibit moral hazards in a cooperative relationship [55]. Factor 3, entitled contract completeness is a multidimensional concept and concerns not only term specificity but also contingency adaptability [45]. It also serves as a framework in governing ongoing cooperation and facilitating the contribution of cooperation to performance [45,56].

Successful project delivery requires the concerted effort of all contracting parties in executing and supervising the construction processes [51]. The stronger the teamwork, the greater the cooperative drivers the contracting parties possess. Factor 4 reveals that the capability of maintaining good teamwork spirits is one of the drivers to motivate contracting parties to adopt cooperative moves. Team effectiveness has been identified as a reliable indicator of the degree of cooperation of the contracting parties [45,57].

Factor 5 consists of those cooperative drivers that can be collectively described as the incentive to risk-sharing/problem-solving. As suggested by McKim [58] and Jannadia et al. [59], contracting parties would be less likely to adopt cooperative moves, or may even adopt aggressive moves, if the contract conditions are strict, harsh and onerous. Risk aversion attitude is the greatest obstacle against the use of cooperative contracting [24,39]. Similarly, the degree of cooperation between contracting parties could be indicated by whether there was mutual consultation concerning issues under uncertain conditions.

That means trust among project participants enable problems to be solved more effectively [45].

Factor 6, entitled Effective Communication, is essential for the initiation of cooperative moves [60]. It promotes open and efficient information exchange/interpretation among contracting parties [37]. Communication channel to identify project progress and problems enables the prompt resolution of these issues in a cooperative fashion and hence maintaining a climate of mutual cooperation among contracting parties [54]. In sum, the availability of information could affect the attitudes of contracting parties [61]. Contracting parties would more likely be cooperative if (a) there is satisfying past cooperation among them; (b) there is no constraint in getting information from each other and (c) they have considerable experience in handling projects of similar nature.

Finally, the extracted Factor 7 is entitled Desire to Maintain Relationship. With the desire to maintain future relationships, contracting parties would be more likely to reciprocate their cooperative endeavor with each other. This would imply that past, present and future relationships are linked to the cooperative moves of contracting parties.

<Table 4 here>

Stage 3 Relative Importance Rankings of the Aggressive and Cooperative Drivers

Examining the factors for aggressive and cooperative drivers as identified in the two PCFAs enables the understanding of aggressive-cooperative nature of CCB in a more amenable and logical manner. It is mindful that the significance of these drivers may vary with construction practitioners of different contracting behaviors inclinations. In this connection, ranking the relative importance of these factors for a particular contracting

behavior will help the contracting parties to adopt appropriate moves. Therefore, this stage aims at ranking the identified factors by their relative importance in the light of the contracting behaviors self-reported by the respondents. As described previously, the second section of the questionnaire includes an assessment of the degree of aggressiveness and cooperativeness of the CCB by the respondent. A majority of respondents described their contracting behaviors as neutral, accommodative and cooperative for their recent completed project. Only four of the 100 respondents reported confrontational contracting behaviors was adopted (Figure 2 refers).

<Figure 2 here>

Based on the factors previously extracted by the PCFAs, factor scores can be computed for each of these self-reported contracting behaviors. With these factor scores, the degree of significance of each extracted factors can be revealed in the views of the respondents with confrontational, neutral, accommodative and cooperative contracting behaviors. In this connection, the entire dataset was divided into four sub-groups. Each of these sub-groups represents the data collected from the respondents with confrontational, neutral, accommodative and cooperative contracting behaviors. For each sub-group, 10 factor scores (which are developed from the 3 and 7 factors of aggressive and cooperative forces respectively) can be calculated by averaging the mean score of the attributes of each factor. For example, factor 1 consists of eight attributes (AF-1, AF-2, AF-15, AF-6, AF-14, AF-4, AF16 and AF-17) (Table 3 refers). Its factor scale can be computed by averaging the mean scores of these attributes with the following formula:-

$$FS_{ij} = \frac{\sum_{k=1}^{n} M_{ijk}}{n} \quad \text{……..(2)}$$

where FS_{ij} is the factor scale of factor i in the j^{th} sub-group , M_{ijk} is the mean score of the k^{th} attribute of factor i in the j^{th} sub-group , and n is the number of attributes for each factor.

With Equation (2), the 10 factor scales were calculated and ranked for each of the five sub-groups of reported contracting behaviors (Table 5 refers).

<Table 5 here>

Discussion and Concluding Remarks

This study aims to identify the aggressive and the cooperative drivers in construction contracting. With the use of questionnaire survey, the respondents were asked to rate their own aggressive and cooperative drivers and to address the degrees of aggressiveness and cooperativeness of their contracting behaviors based on their recent completed construction project. As such the perceived behaviour of the respondents against actual contracting behaviour of the reported projects can be assessed. As shown in Table 5, it can be noted that the majority of the respondents did not consider their contracting behavior as aggressive despite the general view that construction contracting is confrontational. 30% of the respondents in fact rated themselves as cooperative and another 33% rated as accommodating. For these two groups of respondents, their cooperative taxonomies scores are higher than their aggressive taxonomies scores. These support their self-evaluations. The most important cooperative taxonomy is openness of

contracting parties that covers ten drivers (Table 4 refers). In essence, this is a pragmatic and effective approach to tackle construction problems that are characterized by multi-party involvement, interdependency and conflict laden. It also makes good sense that cooperation is supported by good teamwork (second most important cooperative taxonomy) and good relationship among contracting parties (3rd most important cooperative taxonomy). With regard to aggressive drivers, "Goal oriented" was ranked as the most important group of drivers. This reflects the downside of over-emphasizing self-interest in construction contracting. Whilst this may be attitudinal, the second most important aggressive driver group is related to what happens during construction. Perhaps this group of drivers can have better chance to be reduced by cooperative drivers. Unfavorable past experience was ranked in the third place. This cognitive factor can also be corrected by cooperative moves although the initial barrier can be substantial. As for the 'Neutral' group of respondents, the rankings of the aggressive taxonomies are similar to the 'Cooperative' group. In the case of cooperative drivers, the first top three ranked are the same except the top most and the third most are in reversed order. This suggests that the neutral group is more affective towards the strength of their relationship with their contracting partners. Only four respondents considered their contracting behavior confrontational. The number of response is too small for any form of generalization. Notwithstanding that construction is generally identified as a confrontational industry with the fact that many projects end up with significant disputes. It is of equal truth that cooperative contracting can bring substantial benefits. Thus it is reasonable to assume that in every construction project, both cooperative and aggressive drivers that affect the behavior of the contracting parties co-exist. The findings of this study suggest that

construction projects may not be inevitably adversarial. Most respondents of the study identified themselves as non-confrontational. Nonetheless, this does not help in explaining why projects remain ending with disputes. This invites further study in this respect. Contract with equitable risk allocation supported by open discussion of problems provide the platform for team building whereby relationships among the contracting parties can be maintained.

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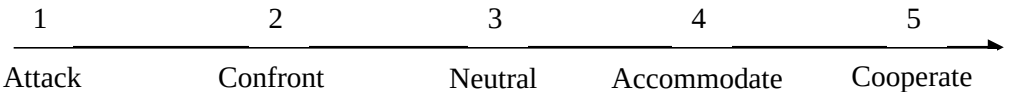

Figure 1. The measurement scale of degree of aggressiveness/cooperativeness

Table 1. List of aggressive drivers

Coding	Attributes	Aggressive Drivers	Reference
AF-1	Quality of Previous Dealing(s)	The quality of past dealing(s) between project participants was poor (low degree of satisfaction of previous cooperation)	[26,27,28]
AF-2		The previous dealing(s) were unsuccessful in achieving the goals of the project(s).	
AF-3	Level of Competitive Pressure	There had been great changes in the project content, due to environmental issues arising during the course of construction.	[29,30,31]
AF-4		The actions being taken by competitors/ other contracting parties were strongly aggressive.	
AF-5		Dealing with the issues that can increase profitability would increase the competitive pressure of your project team.	
AF-6		The capital necessary for the project operation had been in general insufficient.	
AF-7	Intensity of Competitive Inertia	Your project team would become more active to deal with the issues that can benefit to achieve your goal.	[32,33,34,35,36]
AF-8		Having fair expectations of future profits and rewards would make your project team more likely to gain an advantage over the other parties.	
AF-9		Perception to aggressive actions of competitor/ other contracting parties would more likely to make your project team to oppose.	
AF-10		The contract conditions were onerous and the performance specifications were harsh.	
AF-11		Complicated project had made your project team to gain an advantage over the other parties.	
AF-12		Low interdependency between the project participants had led to your party more likely taking advantage over the others.	
AF-13	Likelihood of dispute(s)	The existence of exculpatory clauses had caused disputes in this project.	[28,37,38,39]
AF-14	Likelihood of dispute(s), Contract Incompleteness	Not clearly stipulated contract conditions regarding the respective rights, benefits and responsibilities had caused disputes.	[38,45,55]
AF-15	Likelihood of dispute(s)	The unfavorable past cooperation between project participants had caused disputes.	[28,37,38,39]-
AF-16		Overly detailed contractual procedures to deal with contingencies had caused disputes.	
AF-17	Contract Incompleteness	There were many ambiguous terms in the Conditions of Contract used.	[38,45,55]

Table 2. List of cooperative drivers

Coding	**Attributes**	**Cooperative Drivers** [25]
CF-1	Teamwork intensity	Teamwork spirit facilitated dispute resolution effectively
CF-2	Trust intensity	Previous dealing(s) among project team members reinforced confidence in working with each other.
CF-3	Effectiveness of communication	Effective communication from previous dealing(s) among project team members.
CF-4	Teamwork intensity	Teamwork spirit among project team members facilitated project progress effectively
CF-5	Goodness in relationship among contracting parties	A good working relationship from previous dealing(s) among project team members
CF-6		A good personal relationship among project team members
CF-7	Teamwork Intensity	Trust developed among project team members facilitated project progress effectively
CF-8		Project team members were willing to share thoughts and feelings with each other.
CF-9		Project team member had open and honest communications.
CF-10	Commitment maintenance	A high degree of involvement within project team members.
CF-11		Your project team demonstrated open commitment within project team members.
CF-12	Goal mutuality	The contract design encouraged project team member to achieve common objectives in a rational manner.
CF-13	Availability of information	There were no constraints in getting information from other project team members.
CF-14	Goal mutuality	The project team members had mutual goals.
CF-15	Availability of information	Project team members had plenty of experience in handling project(s) with similar nature.
CF-16		Good information exchange from previous dealing(s) among project team members
CF-17	Involvement intensity	The involvement of your project team members had been highly voluntary.
CF-18	Incentive to risk savings or sharing	The contract provisions apportioned risks equitably between contracting parties.
CF-19		The contract provisions and specifications provided incentive for risk sharing among the contracting parties.
CF-20		Provision of tangible reward (e.g. bonus, a gain share fund, etc.) enabled the project team members to generate more incentive to save cost.
CF-21		A modest contract sum would make project team members less risk averse.
CF-22	Effectiveness in dispute resolution	Guidelines of handling various unanticipated contingencies had been incorporated in the Contract in most cases.
CF-23		Provision of a third party who was paid jointly by the contracting parties (e.g. an experienced mediator) enabled effective dispute resolution.
CF-24	Effectiveness in solving/sharing of problems	Mutual consultation among contracting parties enabled effective problem-solving.
CF-25	Contract completeness	The long project duration had led to the incorporation of detailed contract conditions and contractual procedures to deal with contingencies.
CF-26	Inter-party reciprocity	The previous dealing(s) among project team members enabled them to be more devoted to complete the project.
CF-27		Project team members desired to maintain relationships with the other during the project.

Table 3. Taxonomies of aggressive drivers

Aggressive Forces		Factor		
		1	2	3
Factor 1: Unfavorable Past Experience/Ambiguous Contract Terms				
AF-1	The quality of past dealing(s) between project participants was poor (low degree of satisfaction of previous cooperation).	.791	.050	.202
AF-2	The previous dealing(s) were unsuccessful in achieving the goals of the project(s).	.790	.125	.064
AF-15	The unfavorable past cooperation between project participants had caused disputes.	.754	.323	.007
AF-6	The capital necessary for the project operation had been in general insufficient.	.712	.133	.138
AF-14	Not clearly stipulated contract conditions regarding the respective rights, benefits and responsibilities had caused disputes.	.703	.146	.316
AF-4	The actions being taken by competitors/ other contracting parties were strongly aggressive.	.660	.263	.263
AF-16	Overly detailed contractual procedures to deal with contingencies had caused disputes.	.659	.493	.060
AF-17	There were many ambiguous terms in the Conditions of Contract used.	.620	.521	-.050
Factor 2: Difficulties in Performing Contract				
AF-11	Complicated project had made your project team to gain an advantage over the other parties.	-.107	.767	.222
AF-13	The existence of exculpatory provisions had caused disputes in this project.	.591	.619	.121
AF-3	There had been great changes in the project content, due to environmental issues arising during the course of construction.	.417	.613	.098
AF-10	The contract conditions were onerous and the performance specifications were harsh.	.491	.537	.091
AF-12	Low interdependency between the project participants had led to your party more likely taking advantage over the others.	.390	.517	.334
Factor 3: Goal-orientated				
AF-8	Having fair expectations of future profits and rewards would make your project team more likely to gain an advantage over the other parties.	.233	.220	.832
AF-9	Perception to aggressive actions of competitor/ other contracting parties would more likely to make your project team to oppose.	.227	.165	.792
AF-5	Dealing with the issues that can increase profitability would increase the competitive pressure of your project team.	.450	-.081	.702
AF-7	Your project team would become more active to deal with the issues that can benefit to achieve your goal.	-.169	.132	.694

Table 4. Taxonomies of cooperative drivers

Co-operative Drivers		Factors						
		1	2	3	4	5	6	7
Factor 1: Openness of Contracting Parties/Contractual Settings								
CF-10	A high degree of involvement within project team members.	.842	.180	-.029	.122	-.085	.029	-.035
CF-9	Project team member had open and honest communications.	.814	.149	.004	.193	-.111	.169	-.016
CF-12	The contract design encouraged project team member to achieve common objectives in a rational manner.	.805	.147	-.007	.037	.025	-.311	.117
CF-15	Project team members had plenty of experience in handling project(s) with similar nature.	.767	.196	-.262	-.028	.035	.133	.153
CF-18	The contract provisions apportioned risks equitably between contracting parties.	.760	.113	.115	-.094	-.073	-.035	.066
CF-19	The contract provisions and specifications provided incentive for risk sharing among the contracting parties.	.736	-.034	.143	.043	.325	.073	-.121
CF-13	There were no constraints in getting information from other project team members.	.715	.159	.110	.066	-.137	-.110	-.053
CF-8	Project team members were willing to share thoughts and feelings with each other.	.683	.239	.199	.052	.071	.005	-.023
CF-14	The project team members had mutual goals.	.682	-.090	-.129	.317	-.012	-.078	.219
CF-5	A good working relationship from previous dealing(s) among project team members	.553	.416	.055	.504	.046	-.057	-.121
Factor 2:Good Relationships Among Contracting Parties								
CF-17	The involvement of your project team members had been highly voluntary.	.315	.705	.203	-.126	-.024	-.040	.294
CF-6	A good personal relationship among project team members	.126	.633	.122	.371	-.048	.012	.325
CF-16	Good information exchange from previous dealing(s) among project team members	.288	.618	-.200	-.031	.163	-.310	-.017
CF-2	Previous dealing(s) among project team members reinforced confidence in working with each other.	.271	.591	.030	.355	.033	.202	-.004
CF-11	Your project team demonstrated open commitment within project team members.	.149	.490	.363	-.086	-.315	.227	-.380
Factor 3:Contract Completeness								
CF-25	The long project duration had led to the incorporation of detailed contract conditions and contractual procedures to deal with contingencies.	.035	.125	.867	-.038	-.040	.181	.009
CF-26	The previous dealing(s) among project team members enabled them to be more devoted to complete the project.	.084	-.002	.819	.083	.021	.170	.220
CF-23	Provision of a third party who was paid jointly by the contracting parties (e.g. an experienced mediator) enabled effective dispute resolution.	.059	.024	.569	.306	.164	-.121	-.451
Factor 4: Good Teamwork								
CF-4	Teamwork spirit among project team members facilitated project progress effectively	.072	.050	.052	.795	.098	.147	.155
CF-1	Teamwork spirit facilitated dispute resolution effectively	.516	.330	.043	.541	-.219	-.034	-.154
Factor 5: Incentive to Risk-sharing/Problem-solving								
CF-20	Provision of tangible reward (e.g. bonus, a gain share fund, etc.) enabled the project team members to generate more incentive to save cost.	.115	-.064	.092	.387	-.723	.128	-.044
CF-22	Guidelines of handling various unanticipated contingencies had been incorporated in the Contract in most cases.	-.013	-.053	.002	.133	.690	.249	-.012
CF-24	Mutual consultation among contracting parties enabled effective problem-solving.	.111	.030	.117	.302	.561	.219	-.213
CF-21	A modest contract sum would make project team members less risk averse.	-.106	.059	.415	-.046	.445	.232	.353
Factor 6: Effective Communication								
CF-3	Effective communication from previous dealing(s) among project team members.	-.036	.015	.151	-.024	.110	.816	-.014
CF-7	Trust developed among project team members facilitated project progress effectively	-.017	-.032	.146	.202	.208	.753	.066
Factor 7: Desire to Maintain Relationship								
CF-27	Project team members desired to maintain relationships with the other during the project.	.149	.258	.182	.154	-.056	.017	.754

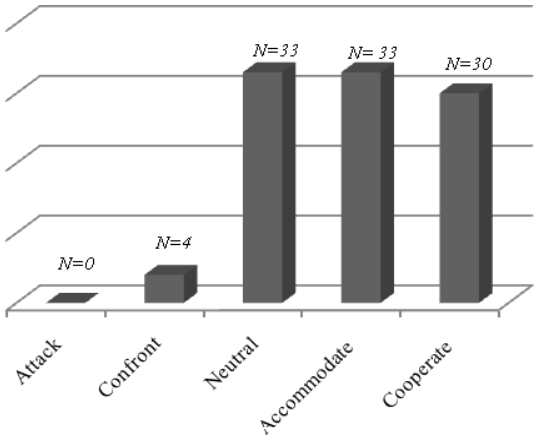

Figure 2. Self-reported contracting behaviors of the respondent (Total N =100)

Table 5. Rankings of Factor scale for different self-reported contracting behaviors

Taxonomies	**Reported Contracting Behaviors (Total N = 100): Factor Scores (*Ranking*)**				
	Attack *(N=0)*	Confront *(N=4)*	Neutral *(N=33)*	Accommodate *(N=33)*	Cooperate *(N=30)*
Aggressive Drivers					
Factor 1: Unfavorable Past Experience/Ambiguous Contract Terms	--	4.438 (*2*)	3.947 (*3*)	3.644 (*3*)	2.800 (*3*)
Factor 2: Difficulties in Performing Contract	--	4.550 (*1*)	4.000 (*2*)	3.661 (*2*)	3.260 (*2*)
Factor 3: Goal-oriented	--	4.188 (*3*)	4.341 (*1*)	4.530 (*1*)	4.333 (*1*)
Cooperative Drivers					
Factor 1: Openness of Contracting Parties/Contractual Settings	--	4.000 (*5*)	4.185 (*3*)	4.803 (*1*)	5.407 (*1*)
Factor 2: Good Relationships among Contracting Parties	--	4.300 (*2*)	4.442 (*1*)	4.661 (*3*)	5.280 (*3*)
Factor 3: Contract Completeness	--	4.083 (*4*)	3.859 (*6*)	4.394 (*4*)	3.811 (*6*)
Factor 4: Good Teamwork	--	4.125 (*3*)	4.258 (*2*)	4.773 (*2*)	5.300 (*2*)
Factor 5: Incentive to Risk-sharing/Problem-solving	--	3.938 (*6*)	4.136 (*4*)	3.955 (*6*)	4.283 (*5*)
Factor 6: Effective Communication	--	3.125 (*7*)	3.439 (*7*)	3.136 (*7*)	2.950 (*7*)
Factor 7: Desire to Maintain Relationship	--	5.000 (*1*)	4.121 (*5*)	4.333 (*5*)	4.667 (*4*)