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Original Article

Common disputes related to public work projects in Thailand

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Abstract

The construction industry is one of the key players in driving the economy, generating both employment and wealth. However, disputes have frequently been claimed to proliferate in the construction industry. Disputes often result in drawbacks and disharmonizations in the completion of the construction projects with considerable cost. The objectives of this research were to identify and evaluate the common dispute factors in public work projects. The paper reported on a questionnaire-based research investigation targeting main contractors with a focus on critical dispute problems during the project construction phase. Identified dispute factors have been evaluated for severity index by selected samples of 390 various construction practitioners consisting of owners, consultants, and main contractors. The paper presented survey results and main findings, which indicated that violating the conditions of the contract, insufficient work drawing details, delays in the progress payments by the owner, poor evaluation of completed works, inaccurate bill of quantities and unrealistic contract durations were all critical dispute problems during the project construction phase. These findings can be helpful to construction practitioners in understanding the dispute problems in public work projects. This can minimize the risk of cost overruns associated with disputes and conflicts.

Keywords: construction dispute, public works, Thailand

1. Introduction

Over the past decades, construction practitioners have tried to develop and implement the right contractual method, which fit the best approach of their needs and minimize disputes in construction project. Nonetheless, construction disputes have still been found from research papers. Assaf and Al-khali (1995) found 56 causes of disputes over delays and identified and reported that the contract disagreement was one of their main delay causes in large building projects. Ayman (2000) conducted a survey on the causes of delay on public projects in Jordan. The results indicated that design, change orders, weather, site conditions, late deliveries, economic conditions, and increase in quantity were the main causes of dispute and consequently delay the construction schedule. Similarly, Odeh and Battaineth (2002) reported that interference, inadequate contractor experience, financing and payment, labor productivity, slow decision making were the five most important causes of dispute and delay in construction project with traditional contract. Kululanga *et al*. (2001) identified four sources of dispute in construction, errors, defects and omissions in the contract documents, underestimating the real cost of the project in the beginning, and changed conditions and stakeholders involved in the project. In developing countries, where budget allocation is limited to public works, public works departments face several constraints, such as financial, skilled engineers and labors, and materials, particularly for large infrastructure projects. Large scale projects usually involved very complex phasing planning and designing, financing and legal aspects. Overlapping and interrelation between the parties involved usually occurred. Thus, this resulted in an increasing number

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of disputes and related costs between the main contractor and the project owner. Construction disputes are fairly common in both domestic and international funded projects, in projects with small, as well as large funding sources. It is common practice for public works authorities to deal with different donor regulations. These regulations are sometime difficult for the main contractors to implement them in the local construction standards. In fact, there is no project, which can be considerably shielded from disputes. Such disputes can lead to significant financial damages. The degree of dispute is depends on its nature of cause, content, and complexity of contract agreement. In Thailand, material procurement, waiting for information, and poor contractor management have been identified as important factors responsible for disputes and main contractor delays (Long *et al.,* 2004). Also, bad weather, labor shortages, and design delays generate disputes and further delays. The traditional design-bid-build is still the main public works contract in Thailand. A design-bid-build increases the likelihood of changing orders. These changed orders can end up lessening the initial value. Quality may be compromised because public owners generally may not consider factors other than price except in specific, narrowly-drawn, circumstances. This may likely to continue over the next decade. Furthermore, the main key players in public construction sector are owners, main contractors, and consultants. There is no solid strategy solution responsible for coordinating the activities of the main key players during the construction period and hence repetition on miscommunication can be seen. Similar problems have been reported in Nigeria (Aibinu and Odeyinka, 2006), Vietnam (Long *et al.*, 2004), and Malaysia (Lim and Mohamed, 2000). Singapore has introduced a system for the selection of consultants for public sector projects. It is called the Quality-Fee-Selection Method (QFM). This system emphasizes on the experiences, capabilities, and costs of engaging the service of tender firms. Thus, high technically skilled and experienced consultant firms can then be procured (Israngkura Na Ayudhya, 2006). In Hong Kong, the use of time limitations on claim notification (commonly referred to as 'time-bars') has been introduced in lump sum projects, especially where the client uses their design, partnering or target cost project. This amendment clause helps contractors to follow a strict regime of claim notification and re-notification in order to preserve their rights under a contract. Walton and Dutton (1969) found that conflicts in inter-organizational level results in low trust and low respect, which in turn has an adverse impact on performance. It required an effort and support from legal, design, and construction team in order to minimize the dispute among construction teams. Therefore, construction practitioners including the owner, consultant, and main contractor should fully understand the dispute impact. Although both owners and main contractors need to take solid steps to ensure that dispute is kept at minimum level. They also need to be prepared and well-versed in how to identify, prepare, and mitigate a dispute. For this reason, the dispute should be cleared and understood by all parties, especially main contractors, so that they know how to avoid dispute risks in a way that the agreed completion of the project date can be met. The key objective to study dispute problems was to identify the dispute problems that frequently occur during construction phase from owners, consultants, and main contractors' perspective by analyzing the common dispute factors, which were categorized into four main dispute problems, (1) contract and specification, (2) financial, (3) environmental, and (4) other common disputes.

2. Literature Review

Disputes are insidious often resulting in time overrun, cost overrun, litigation, and complete abandonment of projects (Sambasivan and Soon, 2007). Many construction disputes are arising out of disagreement and delay of hardship and expense during the construction project. The litigation in construction industry has therefore been frequency increased on large domestic and international funded projects. It is still very common in most parts of the world even in cases where modern management techniques have been adopted and implemented (Hinchey and Schor, 2002). However, the construction disputes have further been found in six studies and outlined the main causes of delay in large construction, building project and their relative importance in the United States of America (ENR, 2000), Ghana (Fugar and Agyakwah, 2010) Indonesia (Manfield *et al.,* 1994), Hong Kong (Kaming *et al.,* 1997; Kunaraswamy and Chan, 1998), Saudi Arabia (Assaf and AlHejji, 2006), Thailand (Ogunlana and Promkuntong, 1996; Israngkura Na Ayudhya and Kunishima, 2009) and Lebanon (Mezher and Tawil, 1998). These authors found substantial disputes among owners and main contractors that caused delays in the construction projects. Disputes in construction may be caused by one or a combination of several reasons. It may start with a simple reason and lead to a substantial set of interrelated complex disputes in the contract agreement. Most of the typical disputes are caused by factors such as unrealistic contract duration and costs, differing site conditions, change in orders, delays, impact and ripple effects of delays, evaluation of the quality and quantity of works, owner furnished items, differences in the interpretation of plans and specifications, unfulfilled duties, acceleration, inefficiency and disruption (Groton, 1997). Facts about site conditions that are overlooked at the bidding stage can increase the risk of disagreement. During the construction period, conflicts among owners and main contractors have become an increasingly prone activity. Cost overruns may amount to a substantial percentage of the overall contract value and delays may reach disturbing proportions. The results of imbalance in risk allocation may eventually end up in disputes between involved parties and probably seek for a settlement in court. However, in developing countries Matijevic (2008) have reported that there are distinctive problems that cause disputes in construction. The disputes can be classified into five main groups: (a) parties to the dispute, (b) causes of the dispute, (c) amount

of the dispute or financial value that is the subject of the dispute, (d) length or duration of dispute, and (e) manner of resolution (negotiations, litigation with expert analysis, arbitration-domestic or international). Poh (2005) classified different types of disputes arising from contractual relationships in the client organization into three main groups: (a) time related (claims from the contractor for extension of time for completion of the project), (b) money related (claims from the contractor for payment of the value of variations and/or reimbursement of loss and expense), and (c) quality related (assertions by the client of defective materials and workmanship). The review has underscored that the dispute factors in construction projects are many and vary from country to country and from one circumstance to another. Therefore, in principle, disputes hinder or even prevent the implementation of construction projects. The danger of appearance and consequence of dispute increases with the duration of project. Disputes are harmful and should be reduced to the objectively lowest level possible. For that purpose, authors try to identify and evaluate the dispute risks in construction projects and sufficiently use the methods and techniques that may be generally recognized by researchers. Recognition and assessment of identified possible dispute risks present a measure of the project team management's ability to control risks and thereby reducing the possibility of damage. The increased interests in construction disputes are due, in part, to efforts by the government to reduce construction delays. There has been a considerable and continued interest in the effect of construction dispute in both government and international construction funded projects.

3. Method

The data collection process involved two stages. The first stage consisted of literature reviews for information on the causes of dispute in other countries and non-structured interviews of 22 key players involved in the implementation process. The purpose of interviewing the key players was essentially to validate a preliminary set of construction dispute causes gleaned from the literature and to determine from their experience other factors, which cause construction disputes on public works in Thailand. Their positions are director of engineering division, director of law and land acquisition division, director of procurement division, director of accounting division, director of budget administration division, project managers, site engineers, accountants, and top executive positions in private construction and consultant companies. This phase resulted in the identification of forty-three (43) disputes factor. The second stage involved the development of questionnaire incorporating the 43 disputes identified and data collection. The questionnaires comprised open-ended and closed-ended questions. A hand-delivered questionnaire method was used in order to minimize a low responce. Furthermore, face-to face interview technique was used for each of thirty-three interviewees. The interviewees were randomly selected among construction practitioners in related projects. Interviewees were allowed to talk freely on the reasons for disputes in their involved projects. The questionnaires were dispensed to each category of the respondents-clients, consultants, and main contractors. The convenience or availability sampling approach was used in the selection of respondents. The survey resulted were analyzed by using the severity index approach. Based on the response to the survey, a severity index was calculated to interpret the degree of seriousness effect of those problems. This index was calculated as follows (Babbie, 1989)

$$\text{Severity index } (SI) = \frac{(\sum_{i=0}^{4} (a_i)(x_i)}{(4\sum x_i)} * 100\% \quad (1)$$

where

a_i = constant expressing weight given to ith response:
i = 0,1,2,3,4
x_i = variable expressing frequency of i

The response for $I = 0, 1, 2, 3, 4$ illustrated as follows:

x_0 = frequency of very often response and corresponds to $a_1 = 4$;
x_1 = frequency of often response and corresponds to $a_2 = 3$;
x_2 = frequency of moderate response and corresponds to $a_3 = 2$;
x_3 = frequency of not often response and corresponds to $a_2 = 1$;
x_4 = frequency of seldom response and corresponds to $a_1 = 0$;

Equation 1 was used to calculate the severity index for all disputes factors. The index was ranked for domestic and international funded public works projects. The severity index was categorized into five levels (Babbie, 1989). The range of 0-15.5% was categorized as none severe; 15.5-38.5% is categorized as fairly severe; 38.5-63.5% is categorized as moderately severe; 63.5-88.5% is categorized as severe; and 88.5-100% is categorized as most severe. The categorizations reflect the scale of the respondents answer to the questionnaire. The severity index of a category was the average severity indexes of all its related problems. The results of the survey are shown in Table 4.

4. Rank Agreement

The spearman's rank correlation, coefficient, r_s, was used to measure the degree of agreement in the ranking of owners and main contractors. These results were used to test the significance level at 5%. The coefficient can be computed as follows:

$$r_s = 1 - \frac{6\sum d^2}{N(N^2 - 1)} \quad (2)$$

where

r_s = Spearman's rank correlation coefficient.
d = Difference in ranking between the domestic and international funded public works projects.
N = Number of variables, equals to 43 and 4 for all the dispute problems and for the main categories of dispute problems, respectively.

The classification of construction disputes were caused by several factors. Based on literature review and interviews with owners, consultants, and main contractors in the related area of study resulted in the identification of 43 common dispute factors among them. In order to present the identified problems; they were classified into four main dispute groups. The classification of main group was based on Assaf *et al*. (2006) delay classification; with slightly modifications, into contract and specification dispute, financial dispute, environment dispute, and other common issue disputes. Each group reflects issues that have a common purpose.

5. Results and Discussions

Considering the above-mentioned dispute factors between owners and main contractors, Table 1 presented the survey results on type of organization with their response rate. The total rate of return was 72% (352). The owners returned questionnaire with a return rate of 74% (122), while private companies returned questionnaires with a return rate of 61% (230). The evaluation of the overall return rate was considered as excellent (Babbie, 1989). He suggested that any rate of return over 50% can considerably be reported, while the overall value above 60% and 70% can be mentioned as good and excellent, respectively. Information on profiles of financial sources was shown in Table 2. Comparison of the severity factors in domestic and international funded projects was shown in Table 3. These profiles indicated that disputes public works projects were fairly common in Thailand. In Table 4 showed overall dispute problems in public works projects. Table 5 showed the comparison of the spearman rank correlation on disputes between domestic and international funded public works projects, while Table 6 showed identified dispute factors from other researchers. These findings showed that three stakeholder (clients, consultants, and main contractors) types have different expectations and their perspectives of construction dispute under various source of funds. However, it was found from Table 4 that domestic and international funded projects have an overall level of severity of 38.9 and 41.8%, respectively. It was both categorized as moderately severe affect to construction performance. It was further found for the contract and specification dispute group in international funded projects insufficient work drawing details was the most serious dispute factor that affects project performance. This might be the results of bureaucratic obstacles and shortages of experienced engineers, which lead to unclear drawing details. While, violating condition of the contract factor was the highest severity index in domestic funded project. However, the cases identified did not provide an indication to make a solid conclusion on the impact of the dispute caused. It would appear that most construction disputes were actually settled before alternative dispute resolution (ADR) was introduced. The results from the rank correlation analysis

Table 1. Type of organization with their response rate.

Sector	Organization	Number of questionnaires		Percentage return
		Sent	Return	
Government	Bangkok Metropolitan Administration	15	13	87
	The Department of Highway	15	15	100
	The Royal Irrigation Department	15	14	93
	The Public Works Department	15	11	73
	The Royal State Railway of Thailand	15	8	53
	The Mass Rapid Transit Authority of Thailand	15	12	80
	Expressway and Rapid Transit Authority of Thailand	15	13	87
	The New Bangkok Airport Authority of Thailand	15	10	67
	Ministry of Defense	15	4	27
	Metropolitan Water Authority	15	14	93
	Government Lottery Office	15	8	53
	subtotal	165	122	74
Private	Contractor (Domestic)	100	68	68
	Contractor (International)	75	49	65
	Consultant	50	38	76
	Subtotal	225	155	69
	Total	390	277	71

Table 2. Profiles of financial sources.

Classification	Type of funds					Total
	ADB	IBRD	JBIC	Central	Local	
Bridges	-	-	7	3	3	13
Buildings	-	-	6	12	4	22
Express way	-	-	9	7	2	18
Highways	10	3	20	13	2	48
Underground railways	-	-	6	6	-	12
Water irrigations	-	-	7	6	-	13
Total	10	3	55	47	11	126

[1] Asian Development Bank, [2] International Bank for Reconstruction and Development, [3] Japan Bank for International Cooperation.

suggested that for the 126 cases there was a positive correlation between practitioners and owners rankings on main dispute groups (80%) and all dispute factors (98%).

5.1 Contract and specification dispute problems

The results of the findings, with regard to the dispute factors showed in Table 3 that most of the problems are associated with humans. It was found that unclear work drawings and violating conditions of the contract were rated as the most serious dispute problems in domestic and international funded project, respectively. These findings pronounced the need for the provision of clear work drawings and the violating conditions of the contract must be improved. Fair-contracts should be encouraged as much as possible. It might help to minimize the violation of the contract. Furthermore, change in orders in large construction project were a consequence of insufficient work drawing details, inaccurate bill of quantities, and unrealistic contract durations, which affect project durations during the execution of a project. This caused the dispute and delay between owners and main contractors. The main reason why considerable works had been frequently changed by most construction owners was due to insufficient time and efforts during the pre–construction phase for feasibility studies, design and site survey, as well as exploration.

5.2 Financial dispute problems

It was found that financial dispute problems were ranked second in the serious dispute problem group and second in the domestic and international funded project group. This was due to the nature of the main contractors who worry about the oversea payments even though international fund providers had already reserved the granted loan to the borrower's country. However, the payment was sometime delayed. This was due to bureaucracy in government agency departments and bank procedures. The payment procedure in Thailand has to comply with Bank of Thailand (BOT) rules and regulations, which might not suitable and workable with oversea rules and regulations. Therefore, there might be difficulties in bringing the performance of disbursement as it was stated in the contract agreement, eespecially for international funded projects. It further required an authorized representative person from the loan provider to sign necessary documents as a double-standard system before they could be further processed. This was due to disagreements on the quality and quantity of completed work. Furthermore, as the size and complexity of the project increased the monitoring of the control for quality assurance was forced to its limit with the inspection performance. This was due to shortage of government staff and high-tech equipment.

5.3 Environment disputes problems

It was found from Table 4 that unforeseen factors ranked as the first overall environmental dispute factors in both domestic and international funded projects. In order to alleviate the problem, a proper investigation on the historic background of the construction site should be done. It was also worth to be mentioned that noise and dust pollution were becoming concern issues among construction practitioners in construction site where high buildings were located. Noise and dust might cause inconvenience for neighbors. Restricted time was given to the main contractors. The approval of the environmental impact assessment from local authorities is now becoming a concern factor to contraction practitioners. The new construction site must pass the evaluation of the environmental impact assessment before construction can begin. The commencement of construction can be delayed for months if the evaluation of the environmental impact assessment failed.

5.4 Other dispute problems

Construction practitioners ranked other dispute problems as fourth among the four main dispute problem groups in international public funded projects. It was given as third

Table 3. Comparison of the severity index factors on public work projects.

Category	Domestic funded projects			International funded projects		
	SI (%)	Rank	Overall	SI (%)	Rank	Overall
Contract and specification dispute category	57.4	1		59.5	1	
Insufficient working drawing details	79.0	2	2	98.5	1	1
Inaccurate bill of quantities	61.5	5	7	72.0	3	4
Inability of main contractor to sublet the contract during bidding	31.0	10	25	21.5	10	38
Government's policy on hand-over the construction site	58.8	6	8	23.0	9	36
Violating conditions of the contract	87.0	1	1	84.8	2	2
Poorly written contract	67.8	3	5	60.3	6	10
Unrealistic contract durations	66.0	4	6	68.3	4	5
Mistakes and discrepancies in design documents	37.5	8	17	61.5	5	9
Change orders	49.8	7	13	51.5	8	14
Shop drawing approval	36.0	9	19	53.3	7	12
Financial dispute category	36.9	2		46.8	2	
Delay in progress payment by owner	72.3	1	3	82.3	1	3
Fiscal budget	25.3	8	31	32.3	9	24
Payment system of owner	34.0	5	22	27.5	12	32
Main contractor financial problems	57.3	3	10	66.0	3	7
Inflation	20.3	9	35	31.3	11	26
Exchange rate	27.3	7	28	52.8	5	13
Bank policies	19.5	10	36	36.3	7	21
Domestic payment procedure	30.8	6	26	30.3	10	27
Oversea payment procedure	15.3	12	43	33.0	8	22
Accuracy of project cost estimate	56.3	4	11	67.5	2	6
Evaluation of completed works	69.0	2	4	65.3	4	8
Fluctuation in materials cost and labor during construction	16.3	11	39	37.0	6	20
Environment dispute category	29.8	4		34.6	3	
Adverse weather conditions	44.8	2	15	40.8	3	18
Act of gods	29.3	4	27	46.8	2	15
Unforeseen problem underground	50.8	1	12	53.3	1	12
Inappropriate type of foundation	35.5	3	20	32.3	4	25
Noise pollution	15.8	8	42	29.0	5	28
Dust pollution	17.5	7	38	25.8	7	33
Approval environment assessing impact from local authority	26.0	5	30	28.8	6	29
Debris and construction junks	19.3	6	37	20.3	8	39
Others common dispute category	31.6	3		26.5	4	
Lack of communication between construction practitioners	36.3	4	18	39.5	3	19
Lack of skill labor and engineers	22.8	9	32	11.8	13	43
Slow in making decision from owner	22.5	11	34	22.0	9	37
Deficiencies in contractor's organization	33.8	6	23	28.3	5	30
Deficiencies in the organization of public agencies	32.5	7	24	24.0	7	34
Unexpected social events	35.3	5	21	32.8	4	23
Bureaucratic	16.3	12	40	13.8	12	42
Third party delays	22.8	10	33	18.8	10	40
Major accidents	47.5	2	14	45.8	1	16
Communication with engineers and main contractor	27.3	8	29	23.8	8	35
Unavailable of professional construction management	16.0	13	41	15.0	11	41
Poor quality of completed works	40.5	3	16	41.3	2	17
Poorly done planning and scheduling	57.0	1	10	28.0	6	31

Table 4. Comparison of the severity index factors in overall dispute problems in public work projects.

Overall	Responses					Mean	SI (%)	Rank
	Most severe	Severe	Moderately severe	Fairly severe	None-severe			
Domestic funded projects	1	5	11	25	2	1.55	38.9	2
Contract and specification	1	3	4	3	0	2.30	57.4	1
Financial	0	2	2	7	1	1.48	36.9	2
Environment	0	0	2	6	0	1.19	29.8	4
Other common	0	0	3	9	1	1.26	31.6	3
International funded projects	1	7	11	21	3	1.67	41.8	1
Contract and specification	1	3	4	2	0	2.38	59.5	1
Financial	0	4	1	7	0	1.87	46.8	2
Environment	0	0	3	5	0	1.38	34.6	3
Other common	0	0	3	7	3	1.06	26.5	4

Table 5. Comparison of the spearman rank correlation for disputes on public works.

Correlation	Spearman rank correlation coefficient	
	Main dispute groups	All dispute factors
Domestic-International funded projects	0.8	0.98

Correlation is signification at the 0.5 level of significant

place in domestic funded public projects. In order to alleviate the problems in this dispute problems group, owners and the main contractors should carefully review all aspects of the project in order to ensure that there were minimum errors. As far as major accidents in construction sites were concerned, loan providers took this matter seriously that every major or fatal accident must be immediately reported to authorities in order to investigate the cause of the accident. Therefore, construction activities must be ceased. Construction practitioners expressed their concern on the consequences of any accident. The authorities might start to look further into any breach of contracts, which start dispute on other related problems. Therefore, both parties should have a positive thinking attitude and a good-will when problems that arose need to be solved..

5.5 Comparison with other studies

In Table 6 showed the identified construction dispute factors from previous researchers. It ranges from unrealistic expectations, unpredictability of construction including weather effects, poorly prepared contract documents and terms, lack of communication and information leading to misunderstands, unexpected or changed conditions, variation orders, payment and financial issues, tendering pressures, unfair allocation of project risks and changes in the economic situation. With a questionnaire survey of construction practitioners, the results showed that the major cause of disputes in domestic and international funded projects was violating condition of the contract and insufficient work drawing details, respectively. However, similar recognized common dispute factors can also be found in this research. Thus, geography, complexity, and requirements of construction projects, scarcity of construction materials and workmanship has intertwined with existing socio-economic and political problems creating pressure on the construction project and resulting in disputes among construction practitioners. However, there were differing perceptions among interviewees as to the factors causing disputes. Based on their viewpoints in each survey, the degree of seriousness of each dispute is affected by many influences, especially, those from the people involved in the project. Therefore, construction practitioners must refrain from currently prevalent adversarial attitudes and shift to more cooperative and partnering methods in order to minimize and control disputes in construction projects.

6. Conclusions

Following conclusions can be drawn from the results of the analysis of the survey dispute problems. The study sought the views of clients, consultants, and main contractors on the relative importance of the dispute factors in public work projects in Thailand. The results, showed that

Table 6. Comparison of the results with other studies for source of disputes.

Research	Source of disputes
Bristow and Vasilopoulous (1995)	Unrealistic expectations, ambiguous contract documents, poor communications, lack of team spirit and change orders
Conlin et al. (1996)	Payment, performance, delay, negligence, quality and administration
Peckar (2005)	Payment and financial issues
Harmon (2003)	Unfair allocation of project risks and changes in the economic situation
Gebken and Gibson (2006)	Unexpected changed conditions, variation orders
Kumaraswarmy (1998)	Root causes and proximate causes
Rhys Jones (1994)	Management, culture, communications, design, economics, tendering pressures, law, unrealistic, expectations, contracts and workmanship
Ravi Kumar et al. (2007)	Unrealistic schedules and expectations, poorly prepared contract documents and terms and tendering pressures
Sykes (1996)	Misunderstandings and unpredictability

all the three groups of respondents generally agreed that out of a total of 43 factors the top five disputes factors arranged in descending order of severity are for domestic funded projects, (1) Violating condition of the contract, (2) Insufficient working drawing details, (3) Delay in progress payment by owner, (4) Evaluation of completed works, and (5) Poorly written contract. For International funded projects the five actors are (1) Insufficient working drawing details, (2) Violating condition of the contract, (3) Delay in progress payment by owner, (4) Inaccurate bill of quantities, and (5) Unrealistic contract durations.

The 43 factors were categorized into four main dispute problems groups and consequences were ranked. The results (Table 4) showed on domestic funded projects that clients, consultants, and main contractors all agreed that contract and specification dispute problems group was the most severe dispute problems, which affected construction performance. Financial dispute problems group was considered the second most severe dispute problem group in construction projects followed by other common and environment dispute problems. For international funded projects clients, consultants, and main contractors all agreed that contract and specification dispute problems were the most severe dispute problem group followed by financial, environmental and other common disputes.

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