Shivanthi, B.K.C., Devapriya, K.A.K. and Pandithawatta, T.P.W.S.I., 2019. Disputes between main contractor and subcontractor: Causes and preventions. In: Sandanayake, Y.G., Gunatilake, S. and Waidyasekara, A. (eds). *Proceedings of the 8th World Construction Symposium*, Colombo, Sri Lanka, 8-10 November 2019, pp. 286-296. DOI: doi.org/10.31705/WCS.2019.29. Available at: https://2019.ciobwcs.com/papers

DISPUTES BETWEEN MAIN CONTRACTOR AND SUBCONTRACTOR: CAUSES AND PREVENTIONS

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ABSTRACT

Disputes free subcontract is a key to success of modern construction industry which largely depends on subcontracting. Since this effort has to be made on the expense of time and cost, which can be used otherwise to add more value to the project, it is vital to decide an effective mechanism to mitigate subcontract disputes. Considering the need for addressing this fact, this paper aims to investigate causes of subcontract disputes and effective prevention measures. Mixed approach was followed in order to achieve the aim of the study. Thus, a preliminary survey was conducted to validate literature findings and a questionnaire survey was carried out with contractor and subcontractor representatives to identify causes of subcontract disputes and prevention measures. The findings of the preliminary survey were analysed using content analysis technique and data captured through questionnaire survey was evaluated using relative important index and weighted mean. Incompleteness of the contract was identified as the primary reason of disputes in subcontracts. Further, financial issues, risks and uncertainties, collaborative conflicts, opportunistic behaviours of contracting parties and wrong practices also have a significant impact on occurrence of disputes. Proper contract management and proper site management which includes scheduling and effective project management practices were identified as the most effective prevention measures. The contract administrators should identify the things they should necessarily address in the contract and project managers in dispute prevention regards should consider time and cost constraints to prioritize effective prevention measures.

Keywords: *Causes of Disputes; Disputes; Dispute Prevention Mechanisms; Sub-contracts.*

1. INTRODUCTION

Success of any construction project is measured using four basic dimensions, namely time, cost, quality and stakeholder's satisfaction (Long *et al*., 2004). However, in present construction world, it can be seen that two more dimensions have joined to determine the success of a project. According to the modern view, safely executed and dispute free projects which meets time cost quality requirements are identified as successful projects (Zack, 2016). Chang and Chang (2004) identified, satisfaction of parties, who involve in projects as a performance indicator of the project success. However, due to uncertainties of technology, budget and development process construction industry has become more dynamic. Further, a construction project is an effort of a team consists of client,

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consultant, contractor and subcontractor organizations to bring the conceptual project into a material reality within a limited time period (Cherns and Bryant, 1984). This environment has made the industry inevitable of disputes which affect the success of a project. Therefore, it is clear that disputes remain to be an unavoidable factor in constructions due to its complexity and uniqueness. Further, it impacts time, cost and quality measures of a project to a considerable extent and ultimately to the success of the entire project (Jaffar *et al*., 2011). Therefore, it would be helpful if causes of disputes can be identified more systematically. Most of the researches that have been conducted on this area, do not seem to be helpful in making decisions regarding dispute avoidance and mitigation. Hence, this research paper intends to identify underlying causes of disputes between subcontractors and the main contractor and to identify most effective mechanisms to avoid or mitigate these causes.

2. LITERATURE FINDINGS

Disputes are unavoidable within the construction industry (Cheung and Pang, 2012). The adversarial nature of the industry contributes to origin and growth of disputes (Cheung *et al*., 2006). Most of the disputes occur due to unclearly assigned risks, which can be turned into disputes with improper resolution (Acharya *et al*., 2006). Though some of the literature sources have not distinguished conflicts and disputes as two different words, many have identified these as two separate terminologies. A conflict is a long-term more entrenched issue whereas a dispute is a short-term issue that is readily resolved (Burton, 1990). Moreover, conflicts are manageable to an extent of avoiding disputes and unmanaged conflicts can grow into disputes which needs costly (Cakmak and Cakmak, 2014).

2.1 CAUSES OF DISPUTES IN CONSTRUCTION PROJECTS

Construction disputes have distinct characters and thus sources of disputes vary from project to project (Hohns, 1979). However, the author further proposed the five primary sources of construction disputes as existence of errors in the contract documents, cost estimation errors, changed condition, consumer reaction and people involved. Acharya *et al*. (2006) by researching the Korean construction industry has proposed six critical conflicting factors. They are differing site condition, local people obstructions, differences in change order evaluation, errors and omissions in design, excessive quantity of work and double meanings in specification. Mitkus and Mitkus (2014) has presented a different view after evaluating many literatures. According to authors ninety percent of conflicts are occurred due to poor communication process. Further, authors argued that unpredictable site conditions will not create disputes, if parties to the contract agree on risk bearing in advance. If the agreement is unclear about this fact, that means the communication has not happened properly hence it will make conflicts. Moreover, as per Mitkus and Mitkus (2014), unfair behaviour and effects of psychological defences are other two factors that make conflicts.

Harmon (2013) has identified some other causes of disputes. As per author, the size and duration of the project, the complexity of the contract documents, changed conditions, poor communication, limited resources, financial issues, inadequate design, labour issues, and force majeure events are the causes of conflicts. Moreover, Harmon (2013) has described limited resources such as time, money, labour, materials and/or equipment as triggers of conflicts. Moreover, the findings of the author have been affirmed by Chang

and Ive (2003), where they identify that disputes occur over the attributes of construction works unspecified in the contract and opportunistic intention to take advantage of one party's defencelessness. Mitropoulos and Howell (2001) have also presented a similar kind of idea in their model for understanding, preventing and resolving project disputes. Accordingly, contractual problems, opportunistic behaviours and uncertainties are the major causes of disputes.

Considering all these causes of disputes, Cheung and Pang, (2012) elaborated a new categorization for causes of disputes. According to authors, incompleteness of the contract is the primary cause of disputes. However, the authors also agreed to the fact that it is impossible to prepare a complete contract document since construction projects face vast uncertainties. Moreover, task and people factors have been identified by authors as fuel of disputes and have categorized all disputes under two categories namely contractual and speculative. Hence the categorization of the Cheung and Pang, (2012) was used. Accordingly, three main groups of disputes were identified as incompleteness of contract, task factors and people factors. Other factors which cannot categorize under any of these groups were identified under the category named other.

3. RESEARCH METHODOLOGY

Initially a preliminary survey was conducted in the form of semi-structured interviews to identify major causes of disputes and effective prevention mechanisms. Moreover, experts were requested to rank each attribute considering the probability of causing dispute of each attribute and effectiveness of respective prevention mechanisms. This ranking was used to weight each attribute. Table 1 represents the details and qualifications of each expert. It was identified that all five experts have been representatives of contractor and subcontractor in different projects.

Table 1: Profile of the interviewees

Reference	Discipline	Designation	Experience (Years)
E1	Contractor	Manager contract administration	13
E2	Contractor	Manager contract administration	19
E3	Contractor	Chief quantity surveyor	11
E4	Consultant	Director	26
E5	Consultant	Director	45

Then the questionnaire was prepared as an online form and sent to the respondents to identify most critical factors that cause disputes and to recognise effective prevention measures. For the purpose of this research, a sample of fifty respondents from C1 and C2 contractor organisations and forty respondents from MEP subcontractors were selected by using purposive sampling technique.

RII was used to analyse ratings given by respondents to find most critical attributes of disputes between main contractor and subcontractor and applicable prevention methods. RII was tabulated using equation (01).

$$\sum w/AN = (5n5+4n4+3n3+2n2+1n1) / 5N \quad (01)$$

Where w is the weighting given to each factor by the respondent ranging from 1 to 5, A is the highest weight, N is the total number of samples, n5 total no of respondents who

gives 5 to a certain attribute. Then the weighted mean was calculated for each factor considering the RII as the marks to each attribute of a factor and the mean of experts score as the weight (wi). Further, the weighted mean was calculated for each factor group (Fm) by considering factor weighted mean value (Wm) as the marks of each factor and mean of each attribute weight as factor weight (Fw).

Factor weighted mean:

$$Wm = (\sum(wi*RII)) / (\sum wi) \quad (02)$$

Factor group weighted mean:

$$Fm = (\sum(Fw*Wm) / \sum Fw \quad (03)$$

Weight of each factor group:

$$wi = (\sum_{i=0}^{n} wi)/n \quad (04)$$

where, *wi* = weight of each attribute

4. RESEARCH FINDINGS

4.1 MAJOR CAUSES OF DISPUTES AND EFFECTIVE PREVENTION MEASURES

Foremost objective of this research paper is to identify causes of disputes between main contractor and subcontractor which have a high probability of turning into disputes. According to the analysis it was found out that both contract incompleteness and task factors have the highest weighted mean of 0.8. This means that incompleteness of the contract and task factors such as risks and uncertainties and collaborative conflicts are the major causes of disputes. Moreover, if these factors exist in the project there is a high probability of occurring disputes. Factors categorized under other factor category got a score of 0.7 which means factors such as wrong practices, unavailability of resources and project issues also affect to the occurrence of disputes to a considerable extent. The weighted mean of people factors was noticeably low which was 0.1. Each factor group was analysed in detail, considering the attributes of each factor to gain a comprehensive idea about what actually contributes for disputes and what are the effective prevention mechanisms.

4.1.1 Analysis of Contract Incompleteness Factors that Cause Disputes

Table 2 presents the contract incompleteness factors that have arranged in descending order of weighted mean of factors. Moreover, each attribute within the factor has been arranged in descending order of RII of each factor. Accordingly, ambiguity of the contract document is the major reason which contributes to the disputes in subcontracts of Sri Lankan construction industry. This was also stressed by E2 in the preliminary interview. According to E2 ambiguities of contractual agreements may cause interpretational difficulties. Construction parties with different interest may try to interpret liabilities and obligations in different ways, when the document itself open to more than one interpretation.

Table 2: Analysis of contract related factors that cause disputes

Factor Group	*F*m	Factor	*Wm*	Attributes	RII
Contract incompleteness	0.8	Ambiguity	0.808	The scope of work is unclear	0.82
				The specification is unclear	0.79
		Deficiency	0.753	Rules of variations are not addressed	0.81
				The drawings provide insufficient details	0.71
		Defectiveness	0.736	The details in the drawings are inconsistent	0.75
				Some items are missing from the contract bills	0.72
		Inconsistency	0.725	The drawings are inconsistent with the contract bill	0.77
				The drawings contradict with the specification	0.68
		Non-compliance with legal requirements	0.609	VAT qualifications are not fulfilled	0.63
				Legislation issues	0.62
				Taxation issues	0.58

Moreover, according to Table 2, factors such as deficiency, defectiveness and inconsistency of contract document have weighted means between 0.75 and 0.70. This means lack of information, defects of information given and inconsistencies throughout the contract document have a high contribution to the occurrences of disputes in subcontracts. However, non-compliances with legal requirements have quite less weighted mean when comparing with the other factors.

a) Prevention mechanisms for contract incompleteness factors

Clearly written contract with no ambiguity has been identified as the most effective way of avoiding disputes arises due to contract incompleteness (refer Table 3). However, most experts said that this option is not that easy and practical due to limitations such as time available, information available and cooperate level of design parties. However, the parties involve in contract documentation should try their best to avoid the ambiguities.

Table 3: Prevention mechanisms for contract incompleteness

Avoidance mechanisms	RII
Clearly written contract with no ambiguity	0.90
Follow proper contract process,	0.89
Sign MoU after clarifying details if necessary	0.87
Use standard contracts	0.86
Corresponding subcontracts	0.86
Reasonable time allowance for the design team to produce clear and complete contract documents with no or minimum errors and discrepancies	0.84
Efficient quality control techniques and mechanisms during the design process to minimize errors, mismatches, and discrepancies in contact documents,	0.83
Read the contract several times before signing it to understand any unclear clauses and	0.81

Avoidance mechanisms	RII
Use special contracting provisions and practices that have been used successfully on past project	0.74
Check the compliance with legal requirements of each party	0.74
Let a third party to read contract documents before the bidding stage	0.70

4.1.2 Analysis of Task Factors that Cause Disputes

Causes of task factors are also contribute to the occurrence of disputes to a considerable extent and it has same impacts as issues related to the contract incompleteness (refer Table 4). Moreover, it is clear that collaborative conflicts or clashes between the responsibilities of parties contribute to disputes to a greater extent. Construction process is a collaborative task and each party depend on others. When one party fails to do his part on required manner or in according to the contract requirement disputes can occur if these issues are not addressed on timely manner. Out of the collaborative conflicts, contractor delays progress payment has got the highest RII value.

Table 4: Analysis of task related factors that cause disputes

Factor Group	*F*m	Factor	*Wm*	Attributes	RII
Task Factors	0.8	Collaborative Conflicts	0.776	Contractor delays progress payment	0.84
				Slow progress of subcontractor	0.84
				Contractor fails to meet milestones on time	0.83
				Contractor fails to issue instructions on time	0.82
				Engineer fails to provide adequate site investigation details	0.77
				Architect fails to issue instruction within time	0.75
				Client request changes unreasonably	0.75
				Nominated supplier delays in works	0.74
				Consultant fails to give information within due time	0.74
				Client requests acceleration unreasonably	0.74
				Nominated subcontractor delays in works	0.73
		Risk and Uncertainties	0.734	Shortage of labour	0.8
				Shortage of materials	0.79
				Variations	0.79
				Force majeure events	0.77
				Fluctuations in material price	0.64
				Fluctuations in labour cost	0.6

The results of the analysis can be explained through the perspectives of the experts. Experts identified collaborative issues as more crucial factors of disputes. In construction industry subcontractors procure the services of suppliers on credit basis and payments to labours and staff done at the end of the month, when the subcontractor receives the interim payments. Hence, if the payments get delay subcontractor cannot continue the work and it will disrupt the works. This will subsequently cause disputes on site. Moreover, risks

and uncertainties, which are considered as unavoidable features of constructions, also have a significant impact on subcontract disputes. Out of the risks and uncertainties, shortage of labour and material have a significantly high RII value. This means if a material or labour shortage occur, there is a high probability of dispute occurrence. Variations also scored a high value for RII. According to E1, not having written communication system is the main reason to the disputes relates with variations. However, fluctuations of labour prices and material prices have scored a lesser value. The reason was explained by E2. The expert stated that "generally parties come to an agreement on price fluctuations at the beginning of the project or they keep contingencies to cover these uncertainties". But E3 mentioned that, when there is no proper agreement and when the profit margin of subcontractor is low, issues will arise with price fluctuations. This is mainly because of the subcontractor's inability to manage the cash flow as expected.

a) Prevention mechanisms for tasks factors

Prevention mechanisms for tasks factors are provided in Table 5. Using standard contracts has been identified by the respondents as the most effective mechanisms to avoid disputes relates to risks and uncertainties. According to E1 within the Sri Lankan context, many contractors does not use standard contract forms for small scale subcontracts and use own preferred formats of contract. As a result of that, there is a high chance that these ad hoc formats do not cover all the risks and uncertainties that may arise. Appropriate allocation of risks and cost allowances for potential risks have also gained a high weight. However, the weight obtained by risk sharing is comparatively low.

Table 5: Prevention mechanisms for tasks factors

Factor group	Avoidance mechanisms	RII
Risks and Uncertainties	Using standard contracts	0.84
	Allocating risks appropriately	0.78
	Cost allowances for potential additional costs in uncertainty areas	0.76
	Risk assessment and identify actions to address them	0.75
	Conducting constructability review	0.75
	Risk sharing	0.66
Collaborative conflicts	Record keeping	0.88
	Proper supervision	0.87
	Proper documentation	0.87
	Follow good communication procedures	0.87
	Adhere to proper contract administration procedures	0.85
	Disputes resolving tools should be implemented contractually.	0.84
	The use of conflicts resolution techniques at site level	0.83
	Improve the communication of plans from planners to users	0.77
	Appoint a dispute resolution expert (DAB)	0.77
	Establish reliable production management process	0.76

To avoid disputes, cause from collaborative conflicts, record keeping, proper supervision, proper documentation and following good communication procedures have been

identified as important mechanisms. Appointing dispute resolution expert or Dispute Adjudication Boards (DAB) has not been recognized much by respondents. According to the opinions of E2, industry considers DAB as an additional cost to the project. This high cost associate with the DAB process might be the reason for the low RII value.

4.1.3 Analysis of other Factors that Cause Disputes

According to Table 6, availability of resources namely financial issues of contractor and subcontractor have a high contribution to the disputes. According to E2, if the contractor waits to pay subcontractor until he receives his payments from employer, subcontractor will not be able to do his procurement on time. If contractor plans to do payment in such a way, he should select financially capable subcontractor at the beginning. Moreover, sometimes contractor delays payment to the subcontractor to receive the interest of money deposited by employer. Not having written communication has been stressed as the most serious wrong practice out of many wrong practices. The probability of happening disputes due to complexity of the project is rather low. According to the experts, this is mainly because the parties accept the project complexity and adjust their selves quickly to work on it.

Table 6: Analysis of other causes of disputes

Factor Group	Fm	Factor	Wm	Attributes	RII
Other	0.6	Unavailability of Resources	0.757	Financial issues of contractor	0.80
				Financial issues of subcontractor	0.73
		Wrong Practices	0.733	Not having written communication	0.87
				Not having a proper agreement	0.70
				Not evaluating bids properly	0.70
				Awarding contract to the lowest bid	0.67
		Project Issues	0.564	Limitation of the site and environment	0.65
				Complexity	0.47

a) Prevention mechanisms for other factors

Prevention mechanisms for other factors are provided in Table 7.

Table 7: Prevention mechanisms to other factors

Avoidance mechanisms	RII
On time payments	0.92
Have procurement systems align with the project attributes	0.85
Proper evaluation before selecting parties	0.84
Do not select only based on lowest bid	0.81
Regular discussions with respective parties	0.75

On time payments has been identified by the respondents as the most critical factor in avoiding disputes. According to E4, subcontractors are generally paid when main contractor get the payment. Hence, payment delays by any party to the contract may affect the project seriously. Therefore. every one of the projects should not delay their liabilities related to payments without any proper reason. Procurement systems align with the

project attributes has been identified as the second most effective mechanism to avoid disputes. “Avoid selection of subcontractors solely based on lowest bid” got a low RII value. This means the industry accept the fact that competitive bidding process will lead to a lesser number of disputes. As per E5, after selecting a set of equally competent sub-contractors, cost is the only basis which provide a criterion to evaluate them. Using this kind of legitimate selection method always reduce the number of disputes within the project.

4.1.4 Analysis of People Factors that Cause Disputes

The overall weighted mean of people factors is considerably low which is only 0.1. However, as per the findings opportunistic behaviours and other attributes have obtained a significantly high RII values (0.75-0.70) and affective conflicts had obtained a considerably low RII value (0.47) (refer Table 8). This implies that emotional features of parties do not create a considerable impact on origins of disputes. Since the opportunistic behaviours are manageable through provisions of contract it is avoidable before turning into a dispute. However, having high RII values demonstrates the difficulty or the inability to prepare a contract document to cover all these aspects. Moreover, majority of the experts agree that domestic subcontractors cause less disputes due to long-term relationships.

Table 8: Analysis of people related factors that cause disputes

Factor Group	Fm	Factor	Wm	Attributes	RII
People Factors	0.1	Opportunistic behavior	0.751	Contractor rejects outright monetary claim submitted by the subcontractor	0.83
				Contractor rejects outright extension of time claim submitted by the subcontractor	0.82
				Subcontractor over claims costs for progress acceleration	0.76
				Subcontractor purposely works below the specified standard	0.71
				Subcontractor purposely fails to disclose the specification of the materials used	0.7
				Subcontractor purposely fails to notify omission of items in the contract bills of quantity	0.67
		Other	0.731	Poor communication	0.84
				Capability level of staff to manage the process	0.76
				Cooperate level of parties	0.69
				Interpersonal skills	0.59
		Affective Conflicts	0.47	Excessively neat or overly exact attributes are displayed by member(s) of the project team	0.49
				Psychological distress such as fear, sadness, anger, and guilt are displayed by member(s) of the project team	0.47
				Emotions such as dominance, assertion, bullying, and forcefulness are displayed by member(s) of the project team project team	0.46

a) Prevention mechanisms for people factors

When analysing people factors that contribute to the causes of disputes (refer Table 9), it is clear that opportunistic behaviours of parties makes a higher contribution than others. Hence, most prevention mechanisms were directed to avoid these opportunistic behaviours of contracting parties. Proper record keeping and documentation process will massively help to prevent disputes relates to opportunistic behaviour as it gives a written evidence about the things happened in the site. Promote relations at multiple levels has get the least RII value in the prevention factor list. According to E3, it is not practical to manage relations at multiple levels and it is always advisable to have single point communications to avoid disputes.

Table 9: Prevention mechanisms to people factors

Avoidance mechanisms	RII
Record keeping and documentation	0.87
Keep each other informed about their actions during the project	0.85
Assign managers and superintendents with strong cooperative skills and attitudes	0.84
Parties to the contract should take proactive steps to foster a cooperative attitude towards dispute avoidance	0.81
Quality management	0.77
Fair contract and resolution process	0.77
Selecting parties who have work together in previous projects or based on their reputation	0.76
Set up joint training in negotiations and problem-solving	0.73
Discuss interests and expectations	0.69
Conduct teambuilding to develop common project goals and processes (Partnering)	0.67
Promote relations at multiple levels	0.55

5. CONCLUSIONS

With the advanced and sophisticated clients' requirements it has become more difficult for the contracting firms to undertake a project single-handedly, due to the limited number of resources. Therefore, construction product is a collaborative effort of different specialists. However, if a dispute occurs between these specialists and the main contractor, it will be harmful to the progression of the project. Therefore, it is vital to have a proper understanding about strategies and prevention mechanisms to avoid any dispute between these parties. As per the findings of this research, attributes that come under the contract incompleteness factors and task factors are the causes that have the highest probability to turn into disputes. Attributes that come under people factors are the lowest probable causes of disputes. Clearly written contracts with no ambiguities, proper contract processes, signing MoU after clarifying details, using standard contracts and corresponding subcontracts were identified as most effective preventing mechanisms of disputes related to contract incompleteness. Moreover, using standard contracts, appropriate allocation of risks and cost allowances for uncertain areas were identified as the most suitable avoidance mechanisms for disputes related to risks and uncertainties. Further, to avoid disputes relate to collaborative conflicts, record keeping, proper supervision, proper documentation and good communication procedures were recognised

as effective prevention mechanisms. Moreover, it was identified that affective conflicts such as dominance, assertion and bullying do not have a considerable high probability to cause a dispute. Further, different mechanisms to avoid disputes should be done at different stages of the project and some mechanisms should be continued throughout the project.

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