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Factors Influencing Disputes in Construction Projects: A Case Study on Local Cambodian Construction

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Abstract
The construction industry is a driver of growth in another sector due to its heavy reliance on an extended and varied supply chain. Like Cambodia as a developing country, the construction industry significantly contributed to the economic development and created many jobs. The construction becomes one of the important pillars supporting the Cambodian economy. However, the construction is typically more prone to disputes. Understanding the cause of disputes in construction projects improves the efficiency of a local company and the success of projects. The study was carried out using a quantitative research method with 385 respondents from local construction companies, located in Phnom Penh city, Cambodia. The confirmation factor analysis (CFA) analysis the three important groups of disputes: Human Behavior Conflict, Contractual Conflict, and Technical Conflict. The findings are useful for local Cambodian construction companies in the avoidance of disputes and better improvement on customer satisfaction.
Keywords: Construction Dispute, Human Behavior Conflict, Contractual Conflict, Technical Conflict
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1. Introduction

Over the last few decades, the construction industry has increased in size, technology complexity, interdependencies, and variations in demands from clients (Yong, 2013). Global forecasts for the construction industry account for more than 11% of the global GDP and it is estimated that by 2020 it will account for 13.2% of the world's GDP (Betts et al., 2011). Cambodia's average annual economic growth has been around 7% for the last past 20 years, together with the garment industry, tourism, and agriculture, construction is the engine of the growth. In Cambodia, the industry of construction is booming cause of the rising foreign investments. This sector attracted a total investment of US$3.39 billion, which is an increase of 57% over the same period last year (Liyana Hasnan, 2019). Meanwhile, construction project activity in Cambodia has increased significantly in recent years, the construction sector is also facing many complex issues that cause loss of time and money, construction materials, and building safety problems accumulated over the entire building process, especially the dispute between parties involved in the construction project. Not only in economic production but also in business management, disputes and conflicts are often unavoidable (Han, 2020). The failure of a project can be interpreted as the failure of a contractor to meet the owner's requirements and satisfy them thoroughly. Jasper (2008), disputes and conflicts always occur in the construction industry. If the parties cannot reconcile their dispute, then the construction contract will be applied for a settlement in accordance with laws, and the court's ruling will be final. Understanding the factors affecting project disputes will boost project effectiveness and the satisfaction of the parties involved (Dang Vo, et al., 2020). This study will explore factors affecting disputes in construction projects in Cambodia for local Cambodian construction companies.

2. Literature Review

The involvement of multidisciplinary in the construction project also leads to disputes among the parties. Disputes seem to be very synonym with the construction project and give the impressions of problems includes in increasing project cost, project delays, reduce productivity, loss of profit, or damage to business relationships (Jaffar, N., Abdul Tharim, A.H., and Shuib, M.N., 2011). Kumaraswamy, M.M., (1997) defined 20 common causes of construction dispute, including speed of construction, cost and quality control, technological advances, stringent building regulations, and economic difficulties that becomes the basis for many studies later regarding conflict and disputes in the construction industry. Jaffar, N., et al., (2011); Williamson, O. (1979); Cakmak, E., & Cakmak, P.I., (2014) identified three large root causes of dispute that are behavioral problems, contractual problems, and technical problems due to uncertainty and low experience. *Behavioral problems* include human interaction, personality, culture, and professional background among the project team. Other issues in human behavior such as an individual's ambition, frustration, dissatisfaction, desire for growth, communication, level of

power, fraud, and faith are also causes of disputes (Vorster, M.C., 1993). Words like belonging imitation, loyalty, recognition, superiority, and status are descriptive of the human elements of gregariousness. Try to make the other party feel as if he belongs to the pack. Find out the group the other party feels is important. Show him how the resolution of the dispute will help him achieve or strengthen his membership in the group (Carmicheal, D.G., (2002). All people have an idea of themselves that they feel must be defined (McManamy, R. (1994). According to Camicheal (2002) construction disputes and confrontations arise because the people involved have needs. From the contractor's side, the needs are usually money or profit related. The participation of different parties in a project is governed by a contract that defines the exchange of construction materials and money service. MacNeil (1974) A contract is a set of promises or a set of promises for the breach of which the law gives a remedy or the performance of which the law in some way recognizes as a duty. *Contractual disputes* include the definition, interpretation, and clarification of the contract. The contractual issues cause significant disputes in many projects (Diekmann & Girard, 1995). Kumaraswamy & Yogeswaran (1998) indicated in their study that the sources of construction disputes are mainly related to contractual matters, including variation, an extension of time, payment, quality of technical specifications, availability of information, administration and management, unrealistic client expectation and determination. Hohns (1979) in project operation, standard contract documents are guided by an industry organization, codes, and regulations. This concept of a standard contract to a certain degree guides operations toward standard practices. Therefore, a standard contract provides enough common ground for contractual definitions, clarifications in construction operations, and specific project requirements. Hall (2000) states that contract documents are one major origin of disputes. Document errors become the fault of the owner when they cost the contractor an un-bid or unforeseeable amount of money. The other contractual cause of conflicts is plans or drawings (Hellard, 1992). *Technical disputes* are considered the most common issues in project operations due to uncertainty. According to Galbraith (1973) uncertainty is the difference between the amount of information required to do the task and the amount of information already processed by the organization. The amount of information needed depends on the task complexity that is the number of different factors that have to be coordinated or performance requirements such as time or budget constraints. Technical disputes also basically include engineering clarification which is a part of engineering decision-making processes. The engineering decision-making process is fairly straightforward and reasonably justifiable for each participant. If technical disputes are unresolved, there are ways of resolving those disputes in project management unlike the resolution of contractual disputes during project operations. From the overview of the literature review, the factors of dispute in the construction industry which is hoped to give a clearer scenario to all project teams. The main dispute factors into three main factors which are dispute factors due to behavioral problems, contractual problems, and technical problems. The dispute would arise due to behavioral problems such as poor communication among the project team, multicultural team problems, and reluctance to check for constructability, clarity, and completeness of the project. Besides that, the dispute also arises due to the factors of the contractual problem which include delaying in term payment from the client, the client's failure to respond promptly, application of extension of time, and improper project schedules. Another factor is the contractor's quality of work, error in pricing or costing, and late instructions from the architect or engineer. The following are the factors affecting construction disputes.

1	**Human Behavior Conflict**	**Code**
1.1	The absence of team spirit among the participants	CC1
1.2	Poor communication	CC2
1.3	Project participants with an unexpected condition	CC3
1.4	Blaming	CC4
1.5	Different profession	CC5
1.6	Fraud and faith in works	CC6
1.7	Impolite and lack of courtesy among each professional party	CC7
1.8	Desire to be always rights on the opinion given	CC8
1.9	Anger, rudeness, and hatred toward other parties	CC9
2	**Contractual Conflict**	
2.1	Disputes over payment	CC10
2.2	Miscalculations and over calculations	CC11
2.3	Contract clause, which unrealistically and unfairly shifted	CC12
2.4	Ambiguous contract provision	CC13
2.5	Overdesign by the design team	CC14
3	**Technical Conflict**	
3.1	Roles conflict among the participants	CC15
3.2	Contract's low bid submitted by the contractor	CC16
3.3	Late instruction from designer	CC17
3.4	Unrealistic client expectation	CC18
3.5	Error and incomplete technical specification	CC19

3. Methodology

Saunders, Lewis, and Thornhill (2009) state that research methodology in a research study is considered an important element, and therefore determining the method of research methodology is a very important section of the study. The quantitative method is used in this study with primary and secondary data. The relevant data and information were gathered from top management of construction companies, contractors, country inspectors, national government officials, project owners, etc. who currently work at the site where located in Phnom Penh city in Cambodia. According to the report from the Ministry of Land Management Urban Planning and Construction, the number of construction and design companies registered is 1205 which 932 is a local construction company and 273 is foreign companies (MLMUPC, 2012). Most statisticians agree that 10% of the population is a good maximum sample size (Conroy, R.M., 2018). Therefore, in this study, the target site survey for local construction in Phnom Penh; is about 94 construction sites. And based on the Board of Engineers, Cambodia (2019), the total number of engineers is about 4014 registered including civil engineers, mechanical engineers, rural and geology engineers, electrical engineers, and architects. A sample is a subset of a population selected to participate in the study (Daniel, W.W., 1999) and it is a fraction of the whole selected to participate in the research projects. According to Daniel's formula (1999), the sample size in this research is defined in the following:

$$n = \frac{N * X}{X + N - 1}$$

$$X = \frac{Z_{\alpha/2}^2 * p * (1-p)}{MOE^2}$$

Where:

$n = Sample\ Size$

$N = Total\ Population$ (4014)

$Z_{\alpha/2} = Critical\ value\ of\ the\ Normal\ Dirstribution\ at\ \alpha/2$

$MOE = Margin\ of\ Error$

$p = the\ largest\ posible\ proportion$ (0.5)

The total sample size in this research is 351 respondents using a value of the reliability of 5% (Z-value, 1.960), and a sampling error of 5%. After collecting the data, data preparation is the first part of the process of transforming raw data into usable information (Hair, 2003), (1) data validation, (2) editing and coding, (3) data entry, (4) error detection, and (5) data tabulation. After making the necessary coding, Statistical Package for Social Science (SPSS) and AMOS were used to analyze the usage data collected from the respondents. The finding outputs are separated into two parts. First, is descriptive statistics describing a set of data in terms of its

frequency and percentage for identifying the respondents such as: Gender, Education, Work experience, etc. And for the second part used structural equation modeling (SEM), correlation analysis, and reliability test to find the important factor of dispute in the construction projects in the case of local Cambodian constructions companies

4. Data Analysis and Interpretations

4.1. Demographics of the respondents with 385 samples

Gender		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	120	31.2	31.2	31.2
	Male	265	68.8	68.8	100.0
	Total	385	100.0	100.0	

Major		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Civil Engineer	209	54.3	54.3	54.3
	Mechanical Engineer	4	1.0	1.0	55.3
	Electrical Engineer	57	14.8	14.8	70.1
	Architect	115	29.9	29.9	100.0
	Total	385	100.0	100.0	

Education Level		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Master Degree	98	25.5	25.5	25.5
	Bachelor Degree	286	74.3	74.3	99.7
	Undergraduate	1	.3	.3	100.0
	Total	385	100.0	100.0	
Year Experience		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	< 1 Year	11	2.9	2.9	2.9
	1-4 Years	216	56.1	56.1	59.0
	4-9 Years	121	31.4	31.4	90.4
	9-15 Years	36	9.4	9.4	99.7
	15-20 Years	1	.3	.3	100.0
	Total	385	100.0	100.0	

Project Role		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Main Contractors	104	27.0	27.0	27.0
	Sub-Contractors	1	.3	.3	27.3
	Inspector	71	18.4	18.4	45.7
	Site Engineer	12	3.1	3.1	48.8
	Project Owner or/and Client	1	.3	.3	49.1
	Consultant	71	18.4	18.4	67.5
	Designing Team	125	32.5	32.5	100.0
	Total	385	100.0	100.0	

Company Type		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Building Construction	207	53.8	53.8	53.8
	Finishing Work	72	18.7	18.7	72.5
	MEP Work	64	16.6	16.6	89.1
	Management	3	.8	.8	89.9
	Design & Consultant	39	10.1	10.1	100.0
	Total	385	100.0	100.0	

4.2. Reliability and Validity Analysis

Using Pearson Product Moment Correlation by SPSS program at a 5% of significance level, the critical value of the r_{xy} is 0.195 and the r_{xy} value obtained from the program is 0.573 > r_{xy} critical, Validated. Hair et al., (2006) the most common measure of reliability is the internal consistency of the scale. Cronbach's alpha coefficient can range from 0.0 to 1.0. Sekaran (2003) indicated the following table:

Close 1.0	High Internal Consistency Reliability
> 0.8	Is Considered Good
> 0.7	Is Considered Acceptable
Less than 0.6	Is Considered Poor

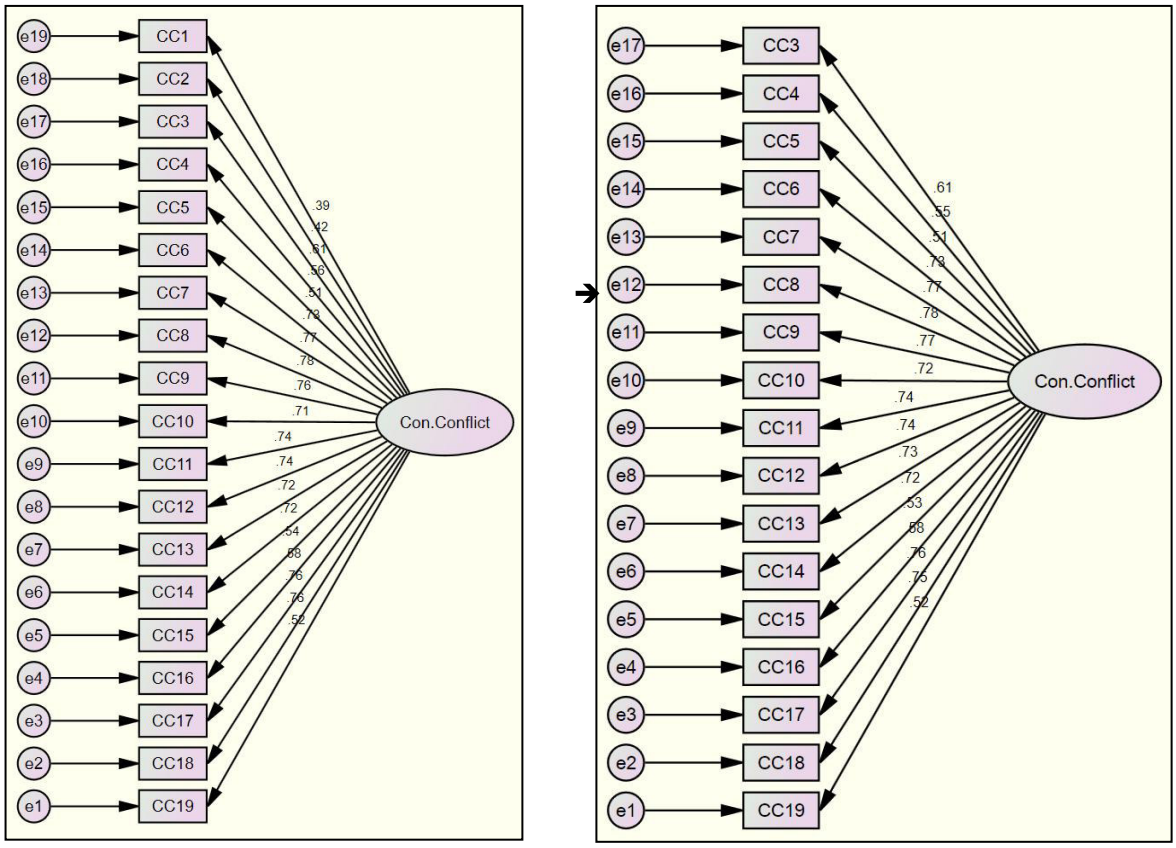
The result of the reliability test from SPSS is 0.933 which consider as good.

4.3. Factor Analysis

Factor analysis is used to uncover the latent structure of a set of variables. It reduces attribute space from a large number of variables to a smaller number of factors and as such is a non-dependent procedure. And to evaluate the criteria for the measurement model, CFA uses maximum likelihood (P-Value) estimation. To investigate the model's goodness of fit, several statistics were used overall χ^2 (Hooper et al., 2008), root means a square error of approximation (Steiger, 1990; Hooper et al., 2008). The model fit acceptance in AMOS comprises as the following indexes:

Acronym	Explication	Accepted if	Reference
Likelihood	P-Value	≥ 0.05	Joreskog & Surbon (1996)
CMIN/DF	Chi-square divided by degree of freedom	≤ 3 = acceptable fit ≤ 5 = reasonable fit	Kline (1998); Marsh & Hocevar (1985)
GFI	Goodness of Fit Index	1 = Perfect fit ≥ 0.95 = Excellent ≥ 0.90 = Good > 0.80 = Acceptable	Kline (2005); Hu & Bentler (1998); Steiger (1990); Hooper et al. (2008)
CFI	Comparative Fit Index	1 = Perfect fit ≥ 0.95 = Excellent ≥ 0.90 = Good > 0.80 = Acceptable	West et al. (2012); Fan et al. (1995); Steiger (1990); Hooper et al. (2008)
RMSEA	Root Mean Square Error of Approximation	> 0.10 = Poor < 0.10 = borderline fit < 0.08 = acceptable fit ≤ 0.05 = excellent fit	MacCallum et al (1996); Steiger (1990); Hooper et al. (2008)

Code	Weight	Status	CFI	Status	GFI	Status	RMSEA	Status
CC1	0.39	NO	0.841	acceptable	0.813	acceptable	0.103	borderline
CC2	0.42	NO						
CC3	0.61	OK						
CC4	0.56	OK						
CC5	0.51	OK						
CC6	0.73	OK						
CC7	0.77	OK						
CC8	0.78	OK						
CC9	0.76	OK						
CC10	0.71	OK						
CC11	0.74	OK						
CC12	0.74	OK						
CC13	0.72	OK						
CC14	0.72	OK						
CC15	0.54	OK						
CC16	0.58	OK						
CC17	0.76	OK						
CC18	0.76	OK						
CC19	0.52	OK						



Code	Weight	Status	CFI	Status	GFI	Status	RMSEA	Status
CC3	0.61	OK	0.872	acceptable	0.837	acceptable	0.101	borderline
CC4	0.55	OK						
CC5	0.51	OK						
CC6	0.73	OK						
CC7	0.77	OK						
CC8	0.78	OK						
CC9	0.77	OK						
CC10	0.72	OK						
CC11	0.74	OK						
CC12	0.74	OK						
CC13	0.73	OK						
CC14	0.72	OK						
CC15	0.53	OK						
CC16	0.58	OK						
CC17	0.76	OK						
CC18	0.75	OK						
CC19	0.52	OK						

Based on the CFA, two constructs were eliminated.

4.4. Structural Equation Modeling

Structural equation modeling (SEM) is a set of statistical techniques used to measure and analyze the relationships between observed and latent variables. Similar but more powerful than regression analyses (Tanya, N., & Claudio, V., 2010). Xia et al., (2015) introduce three steps to test the structural model hypothesis framed work.

4.4.1. Asses reliability and validity of model measurement

From the 17 construct measurements after CFA, the compound reliability (C.R) obtains 0.96 > 0.7 showing Good. In addition, the convergent validity of model measurement (AVE) is equal to 0.52 which is also

acceptable. Moreover, the discriminant validity of model measurement is better after we dropped some items CC3, CC4, CC5, CC12, CC13, CC15, CC16, and CC19 since those items have a regression weight score little.

4.4.2. Structural model fit

The predicting capability of the model can be done by the sum of the variance of independent variables in the dependent variables (Xia et al., 2015). The superior value is assumed by most potential. In SEM analysis, the value of variances is calculated by squared multiple correlations associated with dependent variables. Squared multiple correlations (R) are called the coefficient of determination which is defined as the proportion of the total variation explained by the model.

Squared Multiple Correlations	Estimate
CC6: Fraud and faith in works	.534
CC7: Impolite and lack of courtesy among each professional party	.596
CC8: Desire to be always rights on the opinion given	.616
CC9: Anger, rudeness, and hatred toward other parties	.595
CC10: Disputes over payment	.489
CC11: Miscalculations and over calculations	.552
CC14: Overdesign by the design team	.522
CC17: Late instruction from designer	.581
CC18: Unrealistic client expectation	.550

Hair, Babin, & Anderson (2019) suggest that loadings of the items should be at least 0.50 and ideally 0.70. Higher loadings indicate that items are strongly related to latent variables. The squared multiple correlations of the dependent variables of the study are 0.606

4.4.3. Refined model measurement into SEM

After eliminating in section 4.4.1, we observed model is fit. The value of CMIN/DF (4.124 < 5, Ok), GFI (0.807 > 0.8, Ok), CFI (0.841 > 0.8, Ok), RMSEA (0.090 < 0.10, Acceptable), and convergent validity of the factors are more acceptable which value is bigger than 0.50.

5. Conclusions

The study shows some important factors affecting the dispute in the construction project. The dispute in construction projects is divided into three shares one is Human Behavior Conflict which has four important factors influence the dispute in the construction project such as: 1-Fraud and faith in work (0730), 2-Impolite and lack of courtesy among each professional party (0.772), 3-Desire to be always rights on the opinion given (0.771), and 4-Anger, rudeness, and hatred toward other parties (0771). The second part is Contractual Conflict which has three important factors affecting the dispute in the construction project such as: 1-Dispute overpayment (0.699), 2-Miscalculation and over calculations (0.743), and 3-Over design by the design team (0.723). And for the last part is Technical Conflict which has only two important factors such as: 1-Late instruction from the designer (0.762), and 2-Unrealistic client expectations (0.741).

References

1. Betts, M., Robinson, G., Blake, N., Burton, C., and Godden, D., (2011). *Global construction 2020: A global forecast for the construction industry over the next decade to 2020.* London: Global Construction Perspective Limited and Oxford Economics Limited.
2. Cakmak, E., & Cakmak, P.I., (2014). *An Analysis of Causes of Dispute in The Construction Industry Using Analytical Network Process: 2nd World Conference on Business, Economics and Management.* WCBEM 2013.
3. Carmicheal, D.G., (2002). *Disputes and international projects:* A.A.Balkema Publishers.
4. Jaffar, N., Abdul Tharim, A.H., & Shuib, M.N., (2011). *Factors of Conflict in Construction Industry: A Literature Review.* The 2nd International Building Control Conference 2011.
5. Conroy, R.M., (2018). *The RCSI Sample size handbook.* Doi: 10.13140/RG.2.2.30497.51043
6. Dang Vo, et al., (2020). *Disputes in Managing Projects: A Case Study of Construction Industry in Vietnam.*
7. Daniel, W.W., (1999). *Biostatistics: A Foundation for Analysis in the Health Sciences.* 7th edition. New York: John Wiley & Sons.
8. Diekmann, J.E., & Girard, M.J., (1995). *Are contract disputes predictable?* Journal of Construction Engineering and Management.
9. Galbraith, J., (1973). *Designing complex organizations:* Addision-Wesley.
10. Hall, J.M., (2000). *Ineffective communication: Common causes of construction disputes.* Alliance's Advisory Council Legal Notes.
11. Han, J.H., (2020). *The effects of personality traits on subjective well-being and behavioral intention*

associated with serious leisure experiences. Journal of Asian Finance, Economics and Business. https://doi.org/10.13106/jafeb.2020.vol7.no5.167
12. Hellard, R., (1992). *Construction conflict: management and resolution.* Paper presented at the First international conference on construction conflict: management and resolution, Manchester.
13. Hohns, H.M., (1979). *Preventing and solving construction contract disputes.* New Your: Van Nostrand Reinhold.
14. Kumaraswamy, M.M., (1997). *Conflicts, claims and disputes in Construction.* Journals of Engineering, Construction, Architecture Management.
15. Kumaraswamy, M., & Yogeswaran, K., (1998). *Significant sources of construction claims.* International Construction Law Review.
16. Liyana Hasnan. (2019). *Construction in Cambodia lacks safety.* The Asean Post, from http://www.theaseanpost.com/article/construction-cambodia-lacks-safety.
17. MacNeil, I.R., (1974). *The many futures of contracts.* Southern California Law Review.
18. McManmy, R., (1994). *Industry pounds away at disputes.* Engineering news record, 24,3.
19. Saunders, M., Lewis, P., & Thornhill, A., (2009). *Research Methods of Business Students.* Pearson, New York.
20. Tanyan, N., & Claudio, V., (2010). *Structural equation modeling in medical research: a primer.*
21. Vorster, M.C., (1993). *Dispute prevention and resolution.* Austin, Texas: Construction Industry Institute (CII).
22. Yong, Y.C., (2013). *Critical Success Factors for Malaysian Construction Projects: An Investigative Review.* Doi: 10.11113/ijbes.v4n2.180.