

# Analysis of Accepted Claims for Extension of Time and Additional Cost in Water Building Projects in Banten Province

Asep Rachmatullah\*, Sarwono Hardjomuljadi\*\*

\*(Master of Civil Engineering, Mercu Buana University, Jakarta, Indonesia  
Email: [seprach@yahoo.co.id](mailto:seprach@yahoo.co.id))

\*\* (Master of Civil Engineering, Mercu Buana University, Jakarta, Indonesia  
Email: [sarwonohm2@gmail.com](mailto:sarwonohm2@gmail.com))

\*\*\*\*\*

## **Abstract:**

Claims in water building projects are problems that can lead the contractors to request for extension of time and additional cost to employer. Therefore, a research is required to explain ranking factor that causes project delay and ends up in construction claims for extension of time and additional cost, so that the employer can approve. Research data is obtained by using interview and opinion survey to respondents through distribution of questionnaire among competent stakeholders. The research method used for data processing is descriptive statistical method in which the validity and reliability test are done using SPSS 24. KMO Measure of Sampling is used for comparing the range between correlation coefficient and partial correlation coefficient. The Principal Components Analysis method is used for factors extraction. The collective of respondents' opinion data tabulation, and analysis result in the ranking of factors in project delay. The top factors are those that cause the claims for extension of time and additional cost are accepted by the employer. The ranking becomes consideration for employers to take the next steps in determining attitude toward the extension of time and additional cost claims. Among 24 incidents or events that cause project delay, the top 5 rankings are; 1) absence of contractor's work performance progress evaluation, 2) design change, 3) low bid price ratio, 4) inconsistence of payment term with the contract, and 5) late drawings submission. Those five causative factors, based on the analysis result, can represent this whole research results. Therefore, the contractors' claims for extension of time and additional cost caused by any of those five factors, are supposedly accepted by the employer.

**Keywords — Claims, Extension of Time, Additional Cost, Water Building, Principal Components Analysis.**

\*\*\*\*\*

## **I. INTRODUCTION**

Construction execution is an action to build designed construction. A construction work can be evaluated as good or bad based on the resulting cost, quality, and time. Project performance is a way to determine how a project works by comparing actual work result with how the project is planned in the contract that has been agreed between the employer and the service provider or contractor. Construction project performance is highly affected by risk factors that attached in every construction project stage. Risk factors are uncertainties. However, in the field, there happens to be numbers of problem that cause disputes between contractor and employer, mainly in water building projects under the scope of Banten Province Government.

The claims for extension of time and additional cost is one of the demands from contractor that naturally cannot always be granted by the employer, and as the result, the employer experiences difficulties in taking technical decisions, even though they have been accompanied by supervising consultant.

Based on the explanation above, it is required to formulate the problems of factors that cause project delay and the dominant causative factors that are not the contractor's doing. This research uses two types of data, primary and secondary. Primary data is obtained from respondents' questionnaire answers, while secondary data is used directly from the source without being processed. The data can be literal study such as books, journals, papers, work order letter, or previous studies,

The respondents for this study include Heads of Work Unit, Commitment-making Official, and Technical Executive Officer of the Activity from the user. Then, planning consultant, supervising consultant, and executing contractor from the service provider of projects in Banten Province.

The independent variables of this study are events that cause project delay that can become the base to propose claims for extension of time and additional cost. Meanwhile, the dependent variables are decision that will be made by the employer based on the result of the quality and ranking of respondents' opinion toward the independent variables.

The result of respondents' opinion data collecting, tabulation, and analysis, results in ranking of causative factor of project

delay., in which the top ranked factors to claim extension of time and additional cost are those that supposedly can be accepted by the employer. The ranking becomes consideration for employers to take the next steps in determining attitude toward the extension of time and additional cost claims.

## II. LITERATURE REVIEW

### A. Construction Claims

Hardjomuljadi et al (2006), defines claim as an action to ask for something that previously has been lost because the concerning person assumes that they have the right to get it back. Claim that is often considered as a demand is a misconception or mistake, although there are times if it is not granted, can result in regret within a Justice Institution or Arbitration Institution. The simplest way to propose a claim is by verbal, but there are ways to make it well documented to comply with administration, which is by submitting written proposal and is equipped by supporting data. The disputing parties in a contract prefer not to use the resolution that involve Justice Institution, because not only it costs time and money, but also it opens the problem to public. Therefore, they prefer to take peaceful way so that it finishes faster and costs less money. There is another way that involves mediator in solving problem, through Arbitration Institutions, because it takes shorter time, opens to choose professional arbiters, and results in final decision that binds both parties. In difference with Justice Institution, within Arbitration Institution way, it is not allowed to take legal effort in any forms, such as appeal, cassation, or judicial review once the decision has been out.

### B. Type of Construction Claims

According to Yasin (2004), there are three types of claim that can be proposed by service providers or contractors against employer, they are:

- Extension of time and additional cost claim caused by the mistakes made by the service providers that results in project completion delay, and reviewed from cost and time.
- Indirect cost claim is a claim that is caused by work completion delay proposed by the contractor because the employer asks for overhead cost as the project is not finished. This claim is divided into two kinds; field overhead and home office overhead.
- Extension of time claim (without additional cost) is the same as explained before, only it is reviewed from the matter of time.

### C. Types of Project Delays

Types of project delays, (Sarwono : 2014) caused by :

- Contractor itself, so it can not get extension of time and additional cost, also has to pay the employer certain compensation
- Neutral events such as weather anomaly that caused completion delay, in this case, contractor will not get additional cost but can get extension of time and be free from paying compensation costs.
- Employer or engineer that caused delays, so in this case, contractor get extension of time and additional cost, also free from paying compensation costs.

## III. RESEARCH METHOD

The method used in this study is quantitative approach that is based on positivism philosophy that emphasizes in objective phenomena and reviewed quantitatively. Maximalization of objectivity for this research design is carried out by using numbers in statistical processing, structure, and controlled experiment. The questionnaire is arranged based on the result of reviewing previous studies regarding factors that caused project delay, emphasizing in events that are he independent variables in this study. There are 25 factors that furthermore are symbolized by X1, X2, X3,...and so on.

Table I  
Independent Variables

Sym bol	Causative Factor
X1	Poor DED quality
X2	Inexecutable drawing
X3	Poor quality of preliminary survey
X4	Materials quality change
X5	Change of tools usage specifications
X6	Materials standard in technical specification is unavailable
X7	Difficulty of access to construction area
X8	Delay in land handover or use
X9	Delay in existed building demolition (total rehab)
X10	Delay in land status settlement
X11	Approval of work execution progress takes too long time
X12	Material check is late
X13	Absence of contractor's work performance progress evaluation
X14	Approval of change takes too long time
X15	Incomplete shop drawing
X16	Low bid price ratio
X17	Inconsistency of payment term with the contract
X18	Late drawings submission
X19	Project delay due to certain reason
X20	Delay in giving approval permit and decision
X21	Structural change of Commitment-making Official
X22	CCO frequency (change)
X23	Design change
X24	Increase in materials price and labor wages
X25	Government's policy that is counter-productive

In order to determine assessment weight for causative factors of project delay, a scoring scale of those 25 factors is arranged using Likert scale, and it can be used as the basis for employer to accept extension of time and additional cost claims proposed by the contractors.

Table II  
Attitude Scale of Research Variables Measurement

Score	Assessment	Explanation
1	Rejected	Employer does not need to consider any claims from contractor
2	Slightly considered	Employer will consider the claims under certain requirements
3	Considered	Employer will approve claims through field coordination meeting
4	Strongly considered	Employer asks supervising party to approve claim
5	Accepted	Employer must approve extension of time that is written in contract addendum

After the result data from distributed questionnaire is obtained, a data tabulation and processing are conducted and converted into certain adjusted numbers.

#### IV. ANALYSIS AND DISCUSSION

Data analysis is a very crucial part to obtain research result. The steps in analyzing data can be done such as data compiling, data classification, data processing, and data processing result interpretation. The outline of data analysis can be seen in fig. 1 below.

The result of data tabulation used for analysis input contains of 25 causes of water building project delay as independent variables that will be assessed by 35 respondents. Formulation of the problem in conducting data analysis is by determining the rank among the factors that cause project delays that can be used as a basis for submitting an extension of time claims and additional cost. Validity test is conducted to measure whether a questionnaire is accurate to reveal what is intended to be measured. Validity can be tested by doing bivariate correlation between each score with total construct score, then comparing the value of  $r$  from calculation result (corrected item-total correction) with value of  $r$  from the table. Reliability test is conducted by considering the value of Alpha-Cronbach coefficient of every variable, in which if the values of Alpha-Cronbach coefficient is greater than 0.6, the variables is considered as reliable to be used as instrument in this study. The analysis of validity and reliability is done using SPSS 24 in one process, and the result is as follows (Table III) :

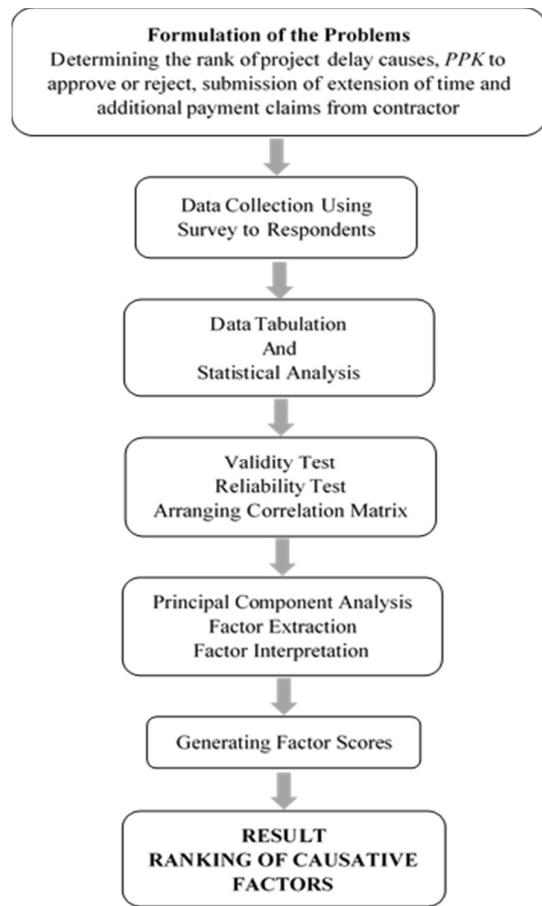


Fig.1. Data Analysis Outline

Table III  
Result of Reliability Analysis

	Item-Total Statistics			
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
X1	80.69	358.163	.578	.934
X2	80.46	350.197	.570	.934
X3	80.94	357.055	.530	.934
X4	80.74	352.491	.527	.934
X5	80.71	354.798	.518	.934
X6	80.51	358.198	.459	.935
X7	80.46	358.020	.529	.934
X8	80.29	349.622	.645	.933
X9	80.77	351.123	.618	.933
X10	80.31	366.928	.285	.937
X11	80.46	349.726	.641	.933
X12	80.77	349.005	.602	.933
X13	81.29	340.975	.704	.932
X14	80.74	363.020	.465	.935

<b>Item-Total Statistics</b>				
Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	
X15	81.29	.346.269	.642	.933
X16	81.37	.342.299	.651	.933
X17	80.91	.346.081	.669	.932
X18	80.83	.348.146	.651	.933
X19	80.66	.344.938	.646	.933
X20	80.49	.352.610	.632	.933
X21	80.54	.348.550	.638	.933
X22	80.69	.351.928	.556	.934
X23	80.03	.350.323	.703	.932
X24	80.94	.343.232	.653	.932
X25	80.49	.354.316	.561	.934

Source: Processing result of SPSS 24

**Table IV**  
**Result of Comparison with r-Table**

No.	Variable	(Corrected Item-Total Correlation) rCount	r Table	Explanation
1.	X1	0,578	0,381	Valid
2.	X2	0,570	0,381	Valid
3.	X3	0,530	0,381	Valid
4.	X4	0,527	0,381	Valid
5.	X5	0,518	0,381	Valid
6.	X6	0,459	0,381	Valid
7.	X7	0,529	0,381	Valid
8.	X8	0,645	0,381	Valid
9.	X9	0,618	0,381	Valid
10.	X10	0,285	0,381	Not Valid
11.	X11	0,641	0,381	Valid
12.	X12	0,602	0,381	Valid
13.	X13	0,704	0,381	Valid
14.	X14	0,465	0,381	Valid
15.	X15	0,642	0,381	Valid
16.	X16	0,651	0,381	Valid
17.	X17	0,669	0,381	Valid
18.	X18	0,651	0,381	Valid
19.	X19	0,646	0,381	Valid
20.	X20	0,632	0,381	Valid
21.	X21	0,638	0,381	Valid
22.	X22	0,556	0,381	Valid
23.	X23	0,703	0,381	Valid
24.	X24	0,653	0,381	Valid
25.	X25	0,561	0,381	Valid

As seen from the result of comparison with r-table (Simple Correlation Coefficient) from 25 variables and 5% significance, the value of r-table is 0.381, however in variable X10, its value of r is lower than the value of r-table. This means that this variable is not valid and must be eliminated and the analysis of reliability must be redone.

**Table V**  
**Result of Repeated Reliability Analysis**

<b>Item-Total Statistics</b>				
Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	
X1	76.94	.344.997	.581	.935
X2	76.71	.337.622	.562	.935
X3	77.20	.343.929	.531	.936
X4	77.00	.339.412	.528	.936
X5	76.97	.341.676	.520	.936
X6	76.77	.345.593	.447	.937
X7	76.71	.344.916	.529	.936
X8	76.54	.337.608	.624	.934
X9	77.03	.338.440	.611	.935
X11	76.71	.336.504	.648	.934
X12	77.03	.335.205	.621	.934
X13	77.54	.327.844	.712	.933
X14	77.00	.349.647	.471	.936
X15	77.54	.333.020	.650	.934
X16	77.63	.328.593	.668	.934
X17	77.17	.333.440	.664	.934
X18	77.09	.335.022	.656	.934
X19	76.91	.332.022	.647	.934
X20	76.74	.339.550	.634	.934
X21	76.80	.335.871	.633	.934
X22	76.94	.338.467	.567	.935
X23	76.29	.338.269	.680	.934
X24	77.20	.330.635	.648	.934
X25	76.74	.341.491	.556	.935

Source: Processing result of SPSS 24

**Table VI**  
**Result of Repeated Comparison with r-Table**

No.	Variable	(Corrected Item-Total Correlation) r Count	r Table	Explanation
1.	X1	0,581	0,388	Valid
2.	X2	0,562	0,388	Valid
3.	X3	0,531	0,388	Valid
4.	X4	0,528	0,388	Valid
5.	X5	0,520	0,388	Valid
6.	X6	0,447	0,388	Valid
7.	X7	0,529	0,388	Valid
8.	X8	0,624	0,388	Valid
9.	X9	0,611	0,388	Valid
10.	X11	0,648	0,388	Valid
11.	X12	0,621	0,388	Valid
12.	X13	0,712	0,388	Valid
13.	X14	0,471	0,388	Valid
14.	X15	0,650	0,388	Valid
15.	X16	0,668	0,388	Valid
16.	X17	0,664	0,388	Valid
17.	X18	0,656	0,388	Valid
18.	X19	0,647	0,388	Valid

No.	Variabel	(Corrected Item-Total Correlation) r Count	r Table	Explanation
19.	X20	0,634	0,388	Valid
20.	X21	0,633	0,388	Valid
21.	X22	0,567	0,388	Valid
22.	X23	0,680	0,388	Valid
23.	X24	0,648	0,388	Valid
24.	X25	0,556	0,388	Valid

The result of repeated comparison shows that all variables are qualified because all 24 variables' r-count is greater than r-table of 0.388.

The result of KMO and Bartlett test is 0.620 which is greater than 0.5 and shows that the number of samples in this study is sufficient, as well as significance value of 0.000 which is lower than 0.05. It means that the studied variables can be analyzed and predicted.

Table VII  
Result of KMO and Bartlett's Test

<b>KMO and Bartlett's Test</b>		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.620
Bartlett's Test of Sphericity	Approx. Chi-Square	634.182
	Df	276
	Sig.	.000

Source: Processing result of SPSS 24

Principal Componen Analysis method is used for extracting factors in this study because this method has observation indicator that can be formed into linier combination and it is also simpler.

Table VIII  
Result of Factors Extraction

<b>Communalities</b>		
	Initial	Extraction
X1	1.000	.677
X2	1.000	.667
X3	1.000	.785
X4	1.000	.630
X5	1.000	.783
X6	1.000	.783
X7	1.000	.556
X8	1.000	.719
X9	1.000	.608
X11	1.000	.726
X12	1.000	.734
X13	1.000	.908
X14	1.000	.718
X15	1.000	.811

	<b>Communalities</b>	
	Initial	Extraction
X16	1.000	.786
X17	1.000	.632
X18	1.000	.705
X19	1.000	.840
X20	1.000	.699
X21	1.000	.616
X22	1.000	.721
X23	1.000	.763
X24	1.000	.763
X25	1.000	.648

Extraction Method: Principal Component Analysis.

Source: Processing result of SPSS 24

The calculation result shows that the extraction value is greater than 0.5, therefore, the communality for 24 variables is qualified, so it is not required to start over the factor analysis step because there is no variables that is not qualified in communality. The exact main factor from this extraction has not been shown yet, so it will be difficult to interpret the factor, therefore, it is continued to rotation step so the structure can be simpler.

Table IX  
Result of Factor Rotation

	<b>Component Matrix<sup>a</sup></b>				
	Component				
	1	2	3	4	5
X13	.748	-.217	-.494	.200	-.127
X23	.719	.152	.375	.224	-.182
X16	.710	-.252	-.385	-.056	.259
X17	.710	-.286	.017	-.073	-.202
X18	.706	-.404	.153	-.083	.113
X11	.695	-.420	.192	.150	.079
X15	.690	-.255	-.466	.228	-.014
X19	.686	.008	.186	.265	.514
X24	.682	.312	-.195	.081	-.395
X20	.680	-.383	.286	.059	.067
X21	.676	-.048	.216	-.244	-.227
X8	.665	.208	.466	.097	.084
X12	.665	-.316	-.299	-.206	.246
X9	.652	.059	-.041	-.402	-.127
X22	.617	-.204	.139	-.412	-.331
X1	.609	.405	-.343	.057	-.144
X2	.603	.354	.182	.334	-.183
X25	.595	.204	.440	-.243	-.011
X7	.571	.151	-.034	-.449	-.069
X4	.560	.341	-.130	-.234	.358
X3	.555	.542	-.429	-.002	-.009
X5	.547	.493	.080	-.198	.442
X14	.520	-.516	.048	.419	-.058
X6	.484	.544	.072	.497	-.021

Extraction Method: Principal Component Analysis.  
a. 5 components extracted.

Source: Processing result of SPSS 24

Table X  
Result of Factor Interpretation

Compo nent	Total Variance Explained				
	Initial Eigenvalues		Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumula tive %	Total	% of Variance
1	9.928	41.366	41.366	9.928	41.366
2	2.625	10.937	52.303	2.625	10.937
3	1.900	7.915	60.217	1.900	7.915
4	1.595	6.648	66.865	1.595	6.648
5	1.232	5.133	71.999	1.232	5.133
6	.952	3.967	75.965		
7	.868	3.616	79.582		
8	.770	3.208	82.789		
9	.720	2.999	85.788		
10	.579	2.414	88.202		
11	.492	2.051	90.253		
12	.409	1.703	91.956		
13	.382	1.592	93.549		
14	.343	1.429	94.977		
15	.284	1.182	96.159		
16	.235	.980	97.139		
17	.186	.775	97.915		
18	.155	.648	98.562		
19	.115	.479	99.041		
20	.100	.416	99.458		
21	.050	.207	99.664		
22	.039	.161	99.825		
23	.028	.116	99.941		
24	.014	.059	100.000		
Extraction Method: Principal Component Analysis.					

Source: Processing result of SPSS 24

The result of factor interpretation gives clue that there are 5 factors that appear sequentially have eigenvalues of 9.928; 2.625; 1.900; 1.595; and 1.232, so, from these 5 factors eigenvalue's, it can be obtained the total of variance percentage of:

$$4,366\% + 10,937\% + 7,915\% + 6,648\% + 5,133\% = 71,999\%$$

This means that the 5 factors that are formed from the interpretation can explain 71.999% of all studied variables. Out of 5 factors that are known and formed based on the sorting of eigenvalues, it is not yet known which variables that are construct factors. The next step is the sorting of factor score in order to sort which variables that become construct factors.

Factor rotation is re-conducted since the result of factor interpretation has not been defined yet and to obtain

Component Score Coefficient. The result of sample separation between the first and second sub-sample, also between the sub-sample and the whole sample, shows 24 factors that are formed. This concludes that the 24 formed factors are likely stable and able to represent the whole population.

The final goal of this study is determining ranking or order of variables that form scoring scale with other variables. In the Principal Component Analysis process, there are 3 ways to be done after factor interpretation, they are; factor score, summated scales, and surrogate variable. According to the goal of this study, the chosen way is factor score.

Table XI  
Component Value Coefficient

	Rotated Component Matrix <sup>a</sup>				
	Component				
	1	2	3	4	5
X14	.776	.025	.260	.046	-.215
X11	.746	.272	.298	-.038	.070
X15	.704	.070	.014	.555	.055
X18	.686	.418	.157	-.046	.183
X16	.682	.185	-.111	.370	.370
X13	.680	.157	.034	.647	.008
X20	.670	.358	.317	-.108	.096
X12	.646	.302	-.181	.243	.366
X19	.564	-.034	.474	.013	.544
X17	.552	.505	.166	.209	-.020
X22	.300	.784	.072	.105	-.017
X21	.285	.657	.283	.128	.089
X9	.200	.639	.064	.294	.262
X7	.086	.604	.041	.267	.333
X25	.078	.565	.464	-.038	.325
X6	.023	-.132	.728	.447	.188
X23	.292	.353	.722	.168	.060
X2	.134	.154	.699	.364	.072
X8	.232	.322	.680	-.005	.314
X3	-.015	.120	.183	.761	.398
X1	.091	.195	.249	.718	.232
X24	.134	.368	.374	.686	.005
X5	-.001	.198	.312	.185	.782
X4	.111	.221	.119	.305	.680
Extraction Method: Principal Component Analysis.					
Rotation Method: Varimax with Kaiser Normalization.					
a. Rotation converged in 36 iterations.					

Source: Processing result of SPSS 24

Factor extraction step is re-conducted to determine ranking among the 24 variables in the process of creating factor score. The sorting is not based on eigenvalues but the number of fixed factors in the correlation matrix. The next steps are doing the

analysis of variable result, eliminating dimensions, doing data extraction, and the last step is determining the number of factors.

Table XII  
Component Scores

Component	
	1
X1	.609
X2	.603
X3	.555
X4	.560
X5	.547
X6	.484
X7	.571
X8	.665
X9	.652
X11	.695
X12	.665
X13	.748
X14	.520
X15	.690
X16	.710
X17	.710
X18	.706
X19	.686
X20	.680
X21	.676
X22	.617
X23	.719
X24	.682
X25	.595
Extraction Method:	Principal Component Analysis.
a. 1 components extracted.	

Source: Processing result of SPSS 24

The result above is sorted manually, and it results in variables ranking as follows:

Table XIII  
The Ranking of Component Scores

Cause	Weight	Rank
X13	0,748	1
X23	0,719	2
X16	0,710	3
X17	0,710	4
X18	0,706	5
X11	0,695	6
X15	0,690	7
X19	0,686	8
X24	0,682	9

Cause	Weight	Rank
X20	0,680	10
X21	0,676	11
X8	0,665	12
X12	0,665	13
X9	0,652	14
X22	0,617	15
X1	0,609	16
X2	0,603	17
X25	0,595	18
X7	0,571	19
X4	0,560	20
X3	0,555	21
X5	0,547	22
X14	0,520	23
X6	0,484	24

Therefore, the result of questionnaire variables analysis above results in the causative factors of project delay that become the basis of extension of time and additional cost construction claims that can be accepted by the employer, they are:

Table XIV  
The Ranking of Causative Factors of Project Delay

No	Var	Cause of Delay	Weight
1	X13	Absence of contractor's work performance progress evaluation	0,748
2	X23	Design change	0,719
3	X16	Low bid price ratio	0,710
4	X17	Inconsistency of payment term with the contract	0,710
5	X18	Late drawings submission	0,706
6	X11	Approval of work execution progress take s too long time	0,695
7	X15	Incomplete shop drawing	0,690
8	X19	Project delay due to certain reason	0,686
9	X24	Increase in material price and labor wages	0,682
10	X20	Delay in giving approval permit and decision	0,680
11	X21	Structural change of Commitment-making Official (PPK)	0,676
12	X8	Delay in land handover or use	0,665
13	X12	Material check is late	0,665
14	X9	Delay in existed building demolition (total rehab)	0,652
15	X22	CCO frequency (change)	0,617
16	X1	Poor DED quality	0,609
17	X2	Inexecutable drawings	0,603
18	X25	Government's policy that is counter-productive	0,595

No	Var	Cause of Delay	Weight
19	X7	Difficulty of access to construction area	0,571
20	X4	Materials quality change	0,560
21	X3	Poor quality of preliminary survey	0,555
22	X5	Change of tools usage specifications	0,547
23	X14	Approval of change takes too long time	0,520
24	X6	Materials standard in technical specification is unavailable	0,484

## V. CONCLUSION

The result of data compiling, data tabulation and data analysis from 35 respondents who have been involved in water building projects under regional government has generated the ranking of causative factors of project delay. The top factors are the cause of extension of time and additional cost claims can be accepted in regional government water building projects. The ranking becomes consideration for employers to take the next steps in determining attitude toward those claims. Among 24 incidents or events that cause project delay, the top 5 rankings are; absence of contractor's work performance progress evaluation, design change, low bid price ratio, inconsistence of payment term with the contract, and late drawings submission. Those five causative factors, based on the analysis result, can represent this whole research results. Therefore, the contractors' claims for extension of time and additional cost caused by any of those five factors, are supposedly accepted by the employer. However, in order to avoid the result of this study to discredit certain parties, this study strongly emphasizes only in the factor of causative events, not in the subjects.

## VI. RECOMMENDATIONS

There are numbers of actions that can be done to follow up the result of this study, among them are;

A research to create a standard procedure for submitting claims based on the causes of delay stated in this study, so that all parties of a project can immediately take quick and precise decisions in the approval process of extension of time and additional cost claims.

There are matters that need to be put forward in managing water building construction projects under the regional government, especially for he PPK or employer that has no educational background in construction. They can take technical decision by considering the result of this study, so that if a delay happens, it will not end up in construction dispute.

## REFERENCES

- [1] Alnaas, Khaled Ahmed Ali., Khalil, Ayman Hussein Hosny., and Nassar, Gamal Eldin. 2014. "Guideline for preparing comprehensive extension of time (EoT) claim". Housing and Building National Research Centre (HBRC) Journal.
- [2] Dipohusodo, Istimawan. 1996. Manajemen Proyek & Konstruksi. Kanisius. Jogjakarta.
- [3] El-adaway, Islam., Fawzy, Salwa, M.ASCE., Ahmed, Muaz., and White, Rob. 2016. "Administering Extension of Time under National and International Standard Forms of Contracts: A Contractor's Perspective". American Society of Civil Engineers (ASCE) Journal.
- [4] Fawzy, Salwa A., El-adaway, Islam H, F.ASCE., Perreau-Saussine, Louis., Wahab, Mohamed S. Abdel., and Hamed, Tarek H. 2018. "Claims for Extension of Time and Additional Payment under Common Law FIDIC: Civil Law Analysis". American Society of Civil Engineers (ASCE) Journal.
- [5] Hardjomuljadi, Sarwono. 2015. Manajemen Klaim Konstruksi (FIDIC Conditions of Contract), Buku Kedua, Logoz Publishing. Bandung.
- [6] Hardjomuljadi, Sarwono. 2014. "Analisis Extension of Time dan Dampaknya pada Kontrak Konstruksi (FIDIC Conditions of Contract MDB Harmonised Edition)". Jurnal Konstruksia. Volume 5 Nomer 2.
- [7] Siregar, Sofyan. 2010. Statistika Deskriptif Untuk Penelitian. Jakarta: PT Rajagrafindo Persada.
- [8] Shabbar, Haroon., Ullah, Fahim., Ayub, Bilal, Aff.M.ASCE., Thaheem, Muhammad Jamaluddin, Ph.D., Aff.M.ASCE., and Gabriel, Hamza Farooq, Ph.D. 2017. "Empirical Evidence of Extension of Time in Construction Projects". American Society of Civil Engineers (ASCE) Journal
- [9] Peraturan Presiden Nomor 18 Tahun 2018 Tentang Pengadaan Barang/Jasa Pemerintah.
- [10] Perera, B. A. K. S., Wijewickrama, M. K. C. S., Goonawardana, P. J. A. & Jayalath Chandana., 2019. "Improving the efficacy of delay notification process of construction projects in Sri Lanka". International Journal of Construction Management.
- [11] Taurano, Galih Adya dan Hardjomuljadi, Sarwono. 2013. "Analisis Faktor Penyebab Klaim Pada Proyek Konstruksi Yang Menggunakan FIDIC Conditions Of Contract For Plant And Design Build". Jurnal Konstruksia. Volume 5 Nomer 1.
- [12] Undang Undang Nomor 2 Tahun 2017 Tentang Jasa Kontruksi.
- [13] Yasin, H. Nazarkhan. 2004. Mengenal Klaim Konstruksi & Penyelesaian Sengketa Konstruksi. PT. Gramedia. Jakarta.
- [14] Yuswulan, N. M., Adnan, H., Rashid, Z. Z. A. and Hashim, N. 2017. "Reasons for the Unsuccessful Extension of Time (EoT) Claim in the Malaysian Construction Industry". Pertanika J. Soc. Sci. & Hum. 25 (S): 281 – 290.
- [15] Yuswulan, Norazian Mohamad dan Adnan, Hamimah. 2018. "Extension of Time Claim Assessment in Malaysian Construction Industry: Views from professionals". Asian Journal of Environment-Behaviour Studies (ajE-Bs). 3(10) Sep / Oct 2018 (p28-35).