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Development of Contractor's Performance Assessment Guidelines for Commitment Making Officials (PPK) in Indonesia's Ministry of Public Works and Housing

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***Abstract*—** The need for performance assessments of construction service companies is very important to produce quality construction services with good quality. Performance assessment is part of the development of construction business which is the task of the Commitment Making Officer (PPK) in Indonesia's government procurement. The current performance assessment guidelines use 4 indicators which are divided into 4 aspects: Quality and Quantity Aspects, Cost, Time, and Service. This research aims to develop contractor's performance assessment guidelines that can be used by PPK in Indonesia's Ministry of Public Works and Public Housing (PUPR). This research validates 27 indicators which are divided into 5 aspects, (X1) Quality and Quantity, (X2) Cost, (X3) Time, (X4) Service, and (X5) Construction Safety Management System (SMKK). Using the Analytical Hierarchy Process (AHP) method, it is known that the largest assessment weight is in the indicator (X3.1) Timeliness during construction. The proposed guidelines were solved and some managerial implications were recommended.

***Keywords*—** assessment, construction, contractor's performance, indicator's performance

I. INTRODUCTION

Construction industry is an important sector of any economy, and it has direct or indirect linkages with other sectors. It contributes significantly to the socioeconomic development and employment opportunities in the country (Tripathi & Jha, 2018). In 2024, the construction industry of Indonesia also contributes approximately 10,49% of Indonesia's gross domestic product (GDP) after the manufacturing industry is 19,08%, trade is 12,96%, and agriculture is 11,39% (Badan Pusat Statistik, 2024).

Ministry of Public Works and Housing of Indonesia (PUPR) is obliged to organize the construction sector in Indonesia as mandated in Presidential Regulation Number 27/2020 mentioned in Article 4, PUPR carries out the function of developing construction services in Indonesia. Also mentioned in Government Regulation Number 22/2020 article 107 that monitoring and evaluation of construction services by PUPR is carried out through a performance assessment of construction services business entities (contractor).

Contractor's performance is a result achieved when working on a task or project. The success of a contractor is seen from its performance, and is largely determined by the performance of each individual in the contractor company (Koriawan, 2011). It is also important to know contractor performance factors to determine the results that have been achieved (Hutagalung, 2019).

This study will determine aspects, indicators and weights that better accommodate the performance measurement parameters of construction work. This study also uses the Analytical Hierarchy Process (AHP) as a method for determining the weight of each assessment criterion and the Delphi method as a method for data collection and expert validation. AHP is a Multicriteria Decision Making (MCDM) method that is most often used for both decision making and weighting. The advantage of AHP compared to other MCDM methods is that AHP can analyze simultaneously and integrate qualitative and quantitative criteria (UmaDevi et al., 2012).

II. THEORITICAL STUDY

Contractor Performance

A construction project is said to be successful if it is completed on time, within budget, according to specifications and to stakeholder satisfaction (Takim & Akintoye, 2002). In a similar argument, Teo and Ofori (1999) stated that the main reason and impetus for the development and implementation of procurement arrangements for construction projects is to increase the likelihood of participants in the construction process to meet the client's objectives. However, as has been observed by Enshassi et al. (2009) the business

environment for the construction sector continues to change rapidly. In such circumstances, changes in the business environment affect the way contractor performance is measured.

Assessment Guidelines

Based on Indonesia's Lembaga Kebijakan Pengadaan Barang/Jasa Pemerintah (LKPP) Regulation Number 4/2021 on appendix I, performance assessment is an activity and process for measuring contractor's performance in carrying out work based predetermined indicators.

This assessment is based on contractor's performance during contract. The aspects, indicators and weights are as shown in Table 1.

Table 1. *Existing Aspects, indicators, and weights of contractor's performance assessment*
Source: LKPP Regulation Number 4/2021

No	Aspects	Indicators	Weight
1.	Quality and Quantity	Suitability	30%
2.	Cost	Cost Control Capabilities	20%
3.	Time	Accuracy	30%
4.	Service	Communication and response rate	20%

III. METHOD

This research was conducted through data collection of the project and AHP method through questionnaire survey. The data used in this study are primary data sourced from experts as respondent through questionnaires, as well as secondary data sourced from the book, international journal, etc. Five experts involved were invited based on criteria (1) a minimum S1 educational qualification, (2) has at least 10 years experiences in construction projects in Indonesia's Ministry of Public Work and Housing (PUPR), (3) at least or have been Commitment Making Officials (PPK). This research is divided into 2 stages, the first stage is the identification and classify the aspect and indicators. Five experts were requested to deliberate all aspect and indicator related to contractor performance assessment. The results of classified aspect and indicator was developed using the AHP method at the second stage. In conclusion, using the Microsoft Excel 2013, the AHP model were suggested in addition to the discussion.

IV. RESULT AND DISCUSSION

As previously explained, develop the assessment guidelines is carried out in 2 steps. The first is identification and classify aspect and indicator conducted to contractor performance assessment. Identification and classify aspect and indicator using questionnaire survey method. The aspect are classified into six perspective; namely Quality and Quantity Aspect, Cost Aspect, Time Aspect, Service Aspect, and Safety (SMKK) Aspect. The author validates aspect and indicator with 5 experts with experience data shown in Table 2.

Table 2. *Expert experience and background data*

Position	Sector	Number of Expert
PPK	Housing	1
Head of Work Unit	Human Settlement	1
PPK	Water Resources	1
PPK	Highway	1
PPK	Highway	1

Validation of aspect and indicator was carried out through a questionnaire survey in which experts were asked to provide approval responses on a list of aspect and indicator related to contractor performance assessment. The data obtained from the validation results are shown in Table 3.

Table 3. *List of validated aspect and indicator*

Code	Aspect	Code	Indicator
(X1)	Quality and Quantity	(X1.1)	Understanding of contracts and specifications
		(X1.2)	Capabilities of Project Manager and the adequacy of their authority
		(X1.3)	Quality of work and workmanship

		(X1.4)	Conformity of volume
		(X1.5)	Resource management capability
		(X1.6)	Equipment management capability
		(X1.7)	Site personnel management capability
		(X1.8)	Conformity to standards or contract specifications
		(X1.9)	Quality Management System during construction
		(X1.10)	Accuracy of the construction work methods
		(X1.11)	Accuracy in selecting subcontractors and suppliers
(X2)	Cost	(X2.1)	Amount of additional costs and accountability
		(X2.2)	Ease/speed of billing completion
(X3)	Time	(X3.1)	Timeliness during the implementation period
		(X3.2)	Realistic level of scheduling
(X4)	Service	(X4.1)	Speed of contractor response
		(X4.2)	Quality of administrative document workmanship
		(X4.3)	Handling communication and correspondence with PPK
		(X4.4)	Collaborative/spirit of teamwork
		(X4.5)	Proactive in solving problems
(X5)	Safety (SMKK)	(X5.1)	Concern/awareness of environmental problems
		(X5.2)	Cleanliness and tidiness in the field during the construction
		(X5.3)	Preparation and Implementation of a Construction Safety Plan (RKK)
		(X5.4)	Preparation and Implementation of a Construction Work Quality Plan (RMPK)
		(X5.5)	Preparation and Implementation of Quality Programs
		(X5.6)	Preparation and Implementation of the Environmental Management and Monitoring Work Plan (RKPPL)
		(X5.7)	Preparation and Implementation of a Work Traffic Management Plan (RMLLP)

AHP method is carried out to determine hierarchy model and develop classified criteria to measure its priorities. It is intended to determine the important criteria in the assessment system. AHP method is carried out through questionnaire survey with five experts in which experts were asked the rating of importance criteria. Pair-wise comparison matrix is prepared for computation process. The priorities of each criterion are measured, it validated by consistency of the criteria rating. The results of the measurement can be seen in Table 4, Table 5, Table 6, Table 7, Table 8 and Table 9

Table 4. *Result of Measurement Aspect*

Pair-wise comparison matrix for Aspect						**Weight**	**Eigen Value**	**Parameter**	
	X1	X2	X3	X4	X5				
X1	0,380	0,382	0,423	0,428	0,310	0,385	1,013	CI	0,015
X2	0,076	0,076	0,066	0,067	0,098	0,077	1,004	RI	1,12
X3	0,213	0,274	0,237	0,262	0,257	0,249	1,048	CR	0,01
X4	0,087	0,113	0,089	0,098	0,135	0,104	1,063	CONSISTENT	
X5	0,245	0,155	0,185	0,145	0,200	0,186	0,930	CR <= 0,1 Consistent	
SUM	1,000	1,000	1,000	1,000	1,000	1,000	5,058		

Tabel 5. *Result of Measurement Indicator X1*

Pair-wise comparison matrix for Indicator X1											
	X1.1	X1.2	X1.3	X1.4	X1.5	X1.6	X1.7	X1.8	X1.9	X1.10	X1.11
X1.1	0,053	0,044	0,046	0,061	0,054	0,062	0,047	0,049	0,059	0,045	0,064
X1.2	0,045	0,037	0,037	0,045	0,040	0,046	0,043	0,035	0,033	0,021	0,059
X1.3	0,180	0,157	0,156	0,205	0,132	0,149	0,114	0,162	0,128	0,135	0,107
X1.4	0,165	0,157	0,144	0,189	0,219	0,248	0,189	0,215	0,189	0,248	0,132

X1.5	0,044	0,042	0,054	0,039	0,045	0,041	0,031	0,060	0,034	0,045	0,046
X1.6	0,044	0,042	0,054	0,039	0,056	0,051	0,054	0,069	0,041	0,056	0,073
X1.7	0,044	0,034	0,054	0,039	0,056	0,037	0,039	0,034	0,038	0,026	0,045
X1.8	0,196	0,195	0,176	0,160	0,137	0,135	0,210	0,182	0,194	0,245	0,193
X1.9	0,083	0,103	0,113	0,093	0,123	0,116	0,095	0,087	0,093	0,055	0,117
X1.10	0,111	0,165	0,109	0,072	0,096	0,087	0,142	0,070	0,159	0,094	0,123
X1.11	0,033	0,025	0,059	0,058	0,039	0,028	0,035	0,038	0,032	0,031	0,040
SUM	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000

	Weight	**Eigen Value**	**Parameter**	
X1.1	0,053	1,000	CI	0,03
X1.2	0,040	1,082	RI	1,51
X1.3	0,148	0,947	CR	0,02
X1.4	0,190	1,006	CONSISTENT	
X1.5	0,044	0,966		
X1.6	0,053	1,027	CR <= 0,1 maka Konsisten	
X1.7	0,041	1,036		
X1.8	0,184	1,011		
X1.9	0,098	1,058		
X1.10	0,112	1,186		
X1.11	0,038	0,945		
SUM	1,000	11,264		

Tabel 6. *Result of Measurement Indicator X2*

Pair-wise comparison matrix for Indicator X2			**Wght**	**EIGEN VALUE (λ Max)**	**PARAMETER**	
	X2.1	X2.2				
X2.1	0,780	0,780	0,780	1,000	CI	0
X2.2	0,220	0,220	0,220	1,000	RI	0
SUM	1,000	1,000	1,000	2,000	CR	0
					Consistent CR <= 0,1 Consistent	

Tabel 7. *Result of Measurement Indicator X3*

Pair-wise comparison matrix for Indicator X3			**Wght**	**EIGEN VALUE (λ Max)**	**PARAMETER**	
	X3.1	X3.2				
X3.1	0,780	0,780	0,780	1,000	CI	0
X3.2	0,220	0,220	0,220	1,000	RI	0
SUM	1,000	1,000	1,000	2,000	CR	0
					Consistent CR <= 0,1 Consistent	

Tabel 8. *Result of Measurement Indicator X4*

Pair-wise comparison matrix for Indicator X4						**Wght**	**EIGEN VALUE (λ Max)**	**PARAMETER**	
	X4.1	X4.2	X4.3	X4.4	X4.5				
X4.1	0,180	0,209	0,163	0,163	0,180	0,179	0,996	CI	0,006
X4.2	0,180	0,209	0,260	0,218	0,206	0,215	1,026	RI	1,12
X4.3	0,126	0,091	0,114	0,110	0,131	0,114	1,006	CR	0,01
X4.4	0,236	0,205	0,220	0,214	0,203	0,215	1,008	Consistent	
X4.5	0,279	0,285	0,243	0,295	0,280	0,276	0,987	CR <= 0,1 Consistent	
SUM	1,000	1,000	1,000	1,000	1,000	1,000	5,023		

Tabel 9. *Result of Measurement Indicator X5*

Pair-wise comparison matrix for Indicator X5								Weight	EIGEN VALUE (λ Max)	PARAMETER	
	X5.1	X5.2	X5.3	X5.4	X5.5	X5.6	X5.7				
X5.1	0,129	0,104	0,153	0,156	0,117	0,098	0,119	0,125	0,970	CI	0,01
X5.2	0,115	0,093	0,086	0,097	0,081	0,090	0,086	0,092	0,998	RI	1,32
X5.3	0,155	0,198	0,183	0,166	0,188	0,224	0,201	0,188	1,024	CR	0,01
X5.4	0,197	0,228	0,263	0,238	0,291	0,238	0,185	0,234	0,984	CONSISTENT	
X5.5	0,166	0,173	0,147	0,123	0,151	0,180	0,161	0,157	1,043		
X5.6	0,148	0,115	0,092	0,113	0,094	0,113	0,165	0,120	1,066	CR <= 0,1 maka Konsisten	
X5.7	0,090	0,090	0,076	0,107	0,078	0,057	0,083	0,083	0,997		
SUM	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	7,083		

Based on the priorities measurement, ranking of each criterion obtained shown in Table 10

Tabel 10. *The Ranking of Importance Aspect and Indicator*

Code	Aspect/ Indicator	Weight		Rank
		Local	Global	
X1	Quality and Quantity	38%		1
X1.4	Conformity of volume	19%	7%	1
X1.8	Conformity to standards or contract specifications	18%	7%	2
X1.3	Quality of work and workmanship	15%	6%	3
X1.10	Accuracy of the construction work methods	11%	4%	4
X1.9	Quality Management System during construction	10%	4%	5
X1.1	Understanding of contracts and specifications	5%	2%	6
X1.6	Equipment management capability	5%	2%	7
X1.5	Resource management capability	4%	2%	8
X1.7	Site personnel management capability	4%	2%	9
X1.2	Capabilities of Project Manager and the adequacy of their authority	4%	2%	10
X1.11	Accuracy in selecting subcontractors and suppliers	4%	1%	11
X3	Time	25%		2
X3.1	Timeliness during the implementation period	77%	19%	1
X3.2	Realistic level of scheduling	23%	6%	2
X5	Safety (SMKK)	19%		3
X5.4	Preparation and Implementation of a Construction Work Quality Plan (RMPK)	23%	4%	1
X5.3	Preparation and Implementation of a Construction Safety Plan (RKK)	19%	3%	2
X5.5	Preparation and Implementation of Quality Programs	16%	3%	3
X5.1	Concern/awareness of environmental problems	13%	2%	4
X5.6	Preparation and Implementation of the Environmental Management and Monitoring Work Plan (RKPPL)	12%	2%	5
X5.2	Cleanliness and tidiness in the field during the construction	9%	2%	6
X5.7	Preparation and Implementation of a Work Traffic Management Plan (RMLLP)	8%	2%	7
X4	Service	10%		4
X4.5	Proactive in solving problems	28%	3%	1
X4.4	Collaborative/spirit of teamwork	22%	2%	2
X4.2	Quality of administrative document workmanship	21%	2%	3
X4.1	Speed of contractor response	18%	2%	4
X4.3	Handling communication and correspondence with PPK	11%	1%	5
X2	Cost	8%		5
X2.1	Amount of additional costs and accountability	78%	6%	1
X2.2	Ease/speed of billing completion	22%	2%	2

V. CONCLUSION

This study results in 2 conclusions. First from the stage of identification aspect and indicator, there were 5 validated aspect and 27 indicator related to contractor performance assessment. Second, according to the development classified aspect and indicator using AHP method, the ranking based on priorities of each aspect obtained; 1. (X1) Quality and Quantity – 38%, 2. (X3) Time – 25%, 3. (X5) Safety (SMKK) – 19%, 4. (X4) Service – 10%, 5. (X2) Cost – 8%.

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