

Performance Improvement Analysis Of Design And Build Construction Project Managers Of State Buildings

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ABSTRACT

Project managers of planning and construction of government buildings are experts of the implementing contractor who determine the timeliness of the implementation of design and build construction. In order for timely implementation, project managers not only have higher education and long experience, but must have a good work culture and work behavior as well. Therefore, it is necessary to examine project performance based on the work performance of project managers..

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1. Introduction

In the Decree of the Minister of Public Works and Housing: 12/PRT/M/2017, the plan and development work of government buildings must be completed inside 1 (one) financial year which suggests a moderately brief time for the execution of the design and construction work of government buildings, considering the design and construction. Public building construction work involves simultaneous planning and execution, so the performance of the project manager is critical to ensure planning and construction are completed on time. The researcher's experience in the realization of 37 government building design and construction works revealed that 30 projects were delayed due to the inaction of the project manager in charge of the government building design and build project [1].

Project managers for the planning and construction of government buildings are experts from the implementing contractor. In the design and construction of government buildings, the contractor is an executor who works with a design consultant in operational cooperation (KSO). Based on the Work Plan and Requirements (RKS), it is a document that contains the name of the project and an explanation of the type, size and location, as well as procedures, skilled labor requirements, work requirements and work quality requirements. The contractor's project manager must have a minimum of a Bachelor's degree (S2), a minimum of 10 years' experience and an SKA Master Expert certificate of expertise with a subclassification of Civil Engineer /Architect / Project Management / Construction Management [1].

Therefore, the expert to be examined is the project manager, because the timeliness of the implementation of design and construction projects of government buildings depends on the performance of the project manager, including the work culture and work behavior of the project manager. And in order to be carried out on time, the appropriate Project Manager (PM) expert criteria are the criteria used in Project E, which is 1 month faster. The results of this study can provide input to PPK and Construction Management Consultants in providing Project Manager (PM) criteria in the tender for the next State Building design construction project [2].

Literature Review

Qualifications and Number of Design and Build Construction Experts based on Terms of Reference (KAK)

The qualifications of design and build construction experts submitted through the Terms of Reference (KAK), number based on the Regulations of the Minister of Public Works of the Republic of Indonesia: Regarding 45/PRT/M/2007, technical Guidelines for the Construction of State Buildings and, through auctions or tenders for design and build construction based on the Direction of the Government Merchandise/ Administrations Obtainment Approach Agency Number 6 of 2015 concerning the Preparation of Work Plans and Budget Based on the direction of government supplies/ administrative procurement approach, experience and certification, are very important because they determine whether the project will benefit or lose in terms of time and cost [3].

Standar Kompetensi Kerja Nasional Indonesia (SKKNI) for General Superintendent (Project Manager) of Buildings

Based on Presidential Control Number 8 of 2012 concerning Kerangka Kualifikasi Nasional Indonesia (KKNI), is a formal legal reference for structuring national qualifications for project managers. This can be achieved through education, training and experience in order to improve the competence of Project Managers which includes Knowledge Aspects (Cognitive domain or Knowledge), Ability Aspects (Psychomotor domain or Skill) and Work State of mind Perspectives (Emotional space or Attitude/Ability), or authoritatively the definition of competence is the authority of logical disciplines and information as well as the abilities to apply certain strategies and strategies upheld by suitable work behavior states of mind, in arrange to attain and or realize certain comes about independently and or in bunches within the execution of work assignments [4] [5].

The Role of Construction Management

The reason of Development Administration [6] is to oversee the administration work or organize the usage of development in such a way as to get ideal comes about in understanding with the prerequisites (details) for the reason of accomplishing this objective, it is additionally essential to pay consideration to the quality of the building, the costs utilized and the time of implementation in arrange to attain these comes about continuously endeavor for the execution of quality, cost and time control. Therefore, it is necessary to The synergy between the project owner's wishes and the performance of the construction management consultant facilitates the role of the construction management consultant in the supervision of the design project [7].

Work Culture

Culture greatly influences work behavior, which is a condition that comes from the environment. Work culture is a philosophy based on the view that values become characteristics, habits and motivations cultivated in a group and expressed through behavioral attitudes, ideals, and views points, opinions and actions expressed in work or working to improve performance [8].

Workforce Behavior

Work attitude refers to the behavior and attitude exhibited by workers. Work behavior refers to work abilities and behaviors that are very important in any job and in any work situation.

In construction projects, workforce behavior and education level have the potential to affect work performance [9].

Research Hypothesis

The hypothesis that can be defined in this ponder is that to make strides the execution of Extend Supervisors for plan and construct development of state build not only requires indicators of education, experience and certification, but also requires a good work culture and work behavior.

2. Methods

Researchers use multiple linear regression methods using the Spreadsheet Method, namely using the Excel computer program which is a software that displays data arranged in columns and rows. The variables tested are the independent variables (which affect) there are two, namely X1 (work

The Balanced R Square esteem = 0.838, which suggests it is more noteworthy than (>) 0.6 (green color), which suggests X has an impact on Y.

ANOVA					
	df	SS	MS	F	Significance F
Regression	7	37.13714	5.305306	27.64392	3.4E-11
Residual	29	5.56556	0.191916		
Total	36	42.7027			

Value of F = 27.64392 > Importance F = 3.4E-11. This means that X2 affects Y at the same time.

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.836749	0.294511	4.301882	0.000175	0.438029	1.234509	0.438029	1.234509
X1.1	0.777942	0.172901	2.074882	0.047024	0.010075	1.536209	0.010075	1.536209
X1.3	-0.439613	0.363482	-1.20956	0.236218	-1.18299	0.303794	-1.18299	0.303794
X1.4	0.317426	0.119068	2.674054	0.010526	0.011993	0.602558	0.011993	0.602558
X2.2	-0.413867	0.213421	-1.98526	0.06945	-0.862493	0.0351	-0.862493	0.0351
X2.4	0.079347	0.14571	0.477282	0.646784	-0.23868	0.357358	-0.23868	0.357358
X2.6	0.206251	0.298072	1.047127	0.303881	-0.1966	0.609137	-0.1966	0.609137
X2.12	0.299552	0.257887	1.163482	0.272829	-0.02897	0.626078	-0.02897	0.626078

There's a t stat esteem that's underneath 1 (which is colored yellow) at that point the relapse is repeated by evacuating the marker that features a t stat esteem underneath 1, to be specific: X2.4.

2nd regression

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.93216
R Square	0.868922
Adjusted R Square	0.842706 OK > 0.6
Standard Error	0.431949
Observations	37

The Adjusted R Square value = 0.842706, which means it is greater than (>) 0.6 (green color), which means that the value of X has an effect on Y.

ANOVA					
	df	SS	MS	F	Significance F
Regression	6	37.10531	6.184218	33.14515	6.06E-12
Residual	30	5.597396	0.18658		
Total	36	42.7027			

The value of F = 33.14515 > significance F = 6.06E-12, means that it simultaneously affects Y

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.839465	0.191675	4.37962	0.000139	0.448012	1.230919	0.448012	1.230919
X1.1	0.791036	0.365233	2.165841	0.0384	0.045131	1.536941	0.045131	1.536941
X1.3	-0.44445	0.358183	-1.24884	0.22428	-1.17596	0.287059	-1.17596	0.287059
X1.4	0.339071	0.127541	2.658524	0.012445	0.078597	0.599545	0.078597	0.599545
X2.2	-0.39357	0.21081	-1.86696	0.071708	-0.8241	0.036958	-0.8241	0.036958
X2.6	0.2068	0.19471	1.064825	0.295451	-0.18983	0.603429	-0.18983	0.603429
X2.12	0.29653	0.155322	1.909128	0.069852	-0.02068	0.613799	-0.02068	0.613799

There is no t stat value below 1, meaning that the X1 and X2 indicators that have a positive effect on Y are X1.1; X1.3; X1.4; X2.2; X2.6 and X2.1

RESIDUAL OUTPUT				PROBABILITY OUTPUT	
Observation	Predicted Y	Residuals	Standard Residuals	Percentile	Y
1	1.634879	0.365121	0.925965	1.351351	1
2	3.412481	-0.41248	-1.04607	4.054054	1
3	1.440792	-0.44079	-1.11787	6.756757	1
4	4.360193	-0.36019	-0.91347	9.409409	1
5	3.834348	0.165652	0.420102	12.16216	1
6	2.540049	0.459951	1.166459	14.86486	1
7	1.794693	0.205307	0.52067	17.56757	2
8	1.744635	-0.74464	-1.88843	20.27027	2
9	2.540049	0.459951	1.166459	22.97297	2
10	4.816536	0.183464	0.465275	25.67568	2
11	1.981466	0.018534	0.047002	28.37838	2
12	3.07341	-0.07341	-0.18617	31.08108	2
13	2.886636	0.113364	0.287496	33.78378	2
14	4.021122	-0.02112	-0.05357	36.48648	2
15	2.091222	-0.09122	-0.23134	39.18919	2
16	0.699814	0.300186	0.761288	41.89189	2
17	2.091222	-0.09122	-0.23134	44.59459	2
18	3.07341	-0.07341	-0.18617	47.2973	3
19	1.931409	0.068591	0.173951	50	3
20	2.24352	-1.24352	-3.15363	52.7027	3
21	1.634879	0.365121	0.925965	55.40541	3
22	2.180952	0.819048	2.077148	58.10811	3
23	2.430293	0.569707	1.444806	60.81081	3
24	4.021122	-0.02112	-0.05357	63.51351	3
25	4.367708	-0.36771	-0.93253	66.21622	3
26	2.582591	0.417409	1.058571	68.91892	3
27	1.981466	0.018534	0.047002	71.62162	3
28	1.300186	-0.30019	-0.76129	74.32432	3
29	2.769364	0.230636	0.584904	77.02703	3
30	4.816536	0.183464	0.465275	79.72973	3
31	1.794693	0.205307	0.52067	82.43243	4
32	2.886636	0.113364	0.287496	85.13514	4
33	2.769364	0.230636	0.584904	87.83784	4
34	2.277996	-0.278	-0.70501	90.54054	4
35	1.537836	-0.53784	-1.36398	93.24324	4
36	3.115951	-0.11595	-0.29406	95.94595	5
37	2.320517	-0.32054	-0.8129	98.64865	5

- The values in the output residual table are the values of the selected X variables based on the respondents.
- The value in the probability output table is the value of Y

What was analyzed was primary data which was the result of a survey to respondents, to be specific Development Administration Experts and Commitment Making Officers (PPK) of plan and construct ventures for state buildings in Jakarta, a total of 19 people, which were then regressed on X1 (work culture) and X2 (work behavior) on Y (project performance), with the results:

Regression Results With Excel		
No	Indikator X indicators	Adjusted R Square
1	X1 indicators that have a positive value	0.836
	X1.1 Leadership	
	X1.3 Initiative	
	X1 indicators with negative value	
	X1.4 Ectetic	
Equation		$Y = 0.839 + 0.791(X1.1) - 0.444(X1.3) + 0.339(X1.4)$
2	X2 indicators that have a positive value	0.783
	X2.4 Empathy	
	X2.6 Communication	
	X2.12 Technical	
	X2 indicators with negative value	
	X2.2 Empathy	
Equation		$Y = 0.839 + 0.791(X1.1) + 0.339(X1.4) + 0.839(X2.2) + 0.207(X2.6) + 0.297(X2.12)$
3	X1 and X2 indicators that have a positive value	0.842
	X1.1 Leadership	
	X1.3 Initiative	
	X2.6 Communication	
	X2.12 Technical	
	X1 and X2 indicators with negative value	
	X2.2 Empathy	
Equation		$Y = 0.839 + 0.791(X1.1) - 0.444(X1.3) + 0.339(X1.4) - 0.394(X2.2) + 0.207(X2.6) + 0.297(X2.12)$

The model equation obtained from multiple linear regression was taken to experts for validation. And the results are as follows:

$$Y = 0,839 + 0,791(X1.1) - 0,444(X1.3) + 0,339(X1.4) - 0,394(X2.2) + 0,207(X2.6) + 0,297(X2.12)$$

The t-value of the variable stat is all above 1, which means that the X1 and X2 indicators have an influence on the Y value, with the equation obtained as follows:

X1.1 = leadership, which is the ability to drive innovation, continuous improvement and productivity in meeting challenges

X1.3 = Initiative, which is the ability to decide or do something right without having to be told

X1.4 = eclectic, i.e. the ability to choose the best, both time, staff and implementation methods

X2.2 = empathy, which is the ability to understand the thoughts and feelings of others

X2.6 = communication, which is the ability to speak and listen to others

X2.12 = technical, which is the ability to do and complete office tasks properly, using technology and machines / tools.

The explanation of the regression equation is as follows:

- 1) The constant is 0.839, meaning that if the value of work culture (X1) and work behavior (X2) = 0, then the project performance (Y) is 0.839, which means it is very late because it is below 1 (1 = 3 months late).
- 2) The relapse coefficient of the authority variable (X1.1) is 0.791, which suggests that in case the other factors are constant and the leadership value (X1.1) = 1, then the project performance value accelerates the project by 0.791.
- 3) The relapse coefficient of the activity variable (X1.3) is - 0.444, meaning that on the off chance that the other factors are steady and the activity esteem (X1.3) = 1, the project performance value will experience a project slowdown of 0.444.
- 4) The relapse coefficient of the ekletik variable (X1.4) is 0.339, meaning that in the event that the other factors are settled and the esteem of ekletik (X1.4) = 1, then the project performance value experiences a project acceleration of 0.339.
- 5) The relapse coefficient of the empathy variable (X2.2) is - 0.394, meaning that in case the other factors are consistent and the esteem of compassion (X2.2) = 1, then the project performance value has a project slowdown of 0.394.
- 6) The relapse coefficient of the communication variable (X2.6) is 0.207, meaning that in case the other factors are settled and the esteem of communication (X2.6) = 1, then the project performance value accelerates the project by 0.207.
- 7) The regression coefficient for the technical variable (X2.12) is 0.297. This refers to the regression coefficient when other variables are fixed and the value of Communication (X2.12) is fixed = 1, then the value of project performance is accelerated by 0.297.

4. Conclusion

- 1) There are 2 indicators of work culture variables and 2 indicators of work behavior variables that have a positive effect on time performance, namely leadership (X1.1), eclectic (X1.4), communication (X2.6) and technical (X2.12).
- 2) There are 1 indicator of work culture variables and 1 indicator of work behavior variables that have a positive effect on time performance, namely initiative (X1.3) and empathy (X2.2).
- 3) Which means:
 - a) The better the Project Manager's leadership culture, the better the time performance of the state building design and build project.
 - b) The lower the initiative of the Project Manager, the better the time performance of the state building design and build project, because the more initiative the Project Manager will make many changes to the implementation method which causes a slowdown in project implementation.
 - c) The better the eclectic culture of the Project Manager, the better the time performance of the state building design and build project.
 - d) The lower the empathy of the Project Manager, the better the time performance of the state building design and build project, because if the better the Project Manager's empathy will be high tolerance and a lot of consideration for other experts, it will slow down project implementation.
 - e) The better the Project Manager's communication, the better the time performance of the state building design and build project.
 - f) The better the technical ability of the Project Manager, the better the time performance of the state building design and build project.

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