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STRENGTHENING PROJECT PERFORMANCE WITH ORGANIZATIONAL CULTURE AND PROJECT MANAGEMENT OFFICE (PMO) ON THE CONSTRUCTION OF HIGH-RISE BUILDING

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ABSTRACT

A high-rise rental apartment construction project is a high-rise building that has the characteristics, high complexity of work. The importance of competence, leadership and organizational culture on construction projects. Research through 88 questionnaires with respondents from construction management consultant field personnel and contractor field personnel on high-rise rental apartment construction projects using the Likert scale and statistical analysis of the SPSS program. Organizational culture has a positive and significant influence on project performance. Simultaneously the PMO function, competence, leadership and organizational culture have a significant influence on project performance. To optimize project performance by continuing to supporting and developing project organization so that it has 7 (seven) characteristics of organizational culture as follows: innovation and risk taking, attention to detail, results orientation, people orientation, team orientation, aggressiveness and stability. For this reason, the implementation of organizational culture in the field needs to be in charge and responsible. This role can be delegated to the project management office (PMO) or similar division, this certainly depends on company policy.

Key words: High-rise building, Organizational culture, PMO, Project performance.

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1. INTRODUCTION

The object of this study is the construction of high-rise rental apartments in Jakarta Indonesia. The function of this building is for markets and occupancy, market functions on the 1st and

2nd floor, while the occupancy function on floors 4 - 25 in towers 1, 2 and 3. The project's employer is the Ministry of Public Works and Public Housing.

This study takes indicators that provide a comprehensive picture of the functions of PMO, competence, leadership, organizational culture and project performance. Research indicators The PMO function is taken from the book "The Complete Project Management Office Handbook, Third Edition" author Gerard M. Hill (2013). Competency indicators are taken from the book "A guide to the project management body of knowledge (PMBOK guide). Fifth edition by the Project Management Institute (PMI) (2013). Leadership indicators are taken from "Leadership in The Digital Economy (Industry 4.0) by Professor Marcus Bowles (2016). Indicators of organizational culture are taken from the book "Organizational Behavior" by Stephen P. Robbins and Timothy A. (2017). And project performance indicators are taken from the journal "Empirical Study of Project Managers Leadership Competence and Project Performance" by Riaz Ahmed & Vittal S. Anantatmula (2017).

When the project will be implemented, meaning the implementation time, the cost of work, the quality specifications of the work have been mutually agreed between the contractor and the work owner. This is the time for competency, leadership and organizational culture at stake in the field. The project manager has a heavy burden in the field, so there needs to be encouragement and monitoring from the company's management. This is where the function of the project management office (PMO) is played to achieve the expected goals. The main function of the PMO is to support the project manager. (PMI, 2013). [1].

2. THEORETICAL BACKGROUND

2.1. Characteristics of High-Rise Buildings

Characteristics of Construction of High-rise Buildings, 1). The construction of high-rise buildings takes a long time, the number of building floors, high-rise jobs above, high construction difficulties, large workloads and complicated technology. Therefore, vertical transportation, high security, fire prevention, communication, water, and processing of the problem of construction waste is one of the characteristics of the construction of high-rise buildings. 2). To ensure the stability of the overall construction of high-rise buildings, it needs to be planted underground 5 meters one floor or two-story building construction, in improving reliability can be used as an additional equipment room, garage and others. 3). The period of construction of high-rise buildings is generally long, a large number of workers, large material requirements, weather cannot be avoided, staff and engineers have higher requirements. 4). High tension, complex surrounding environment, reasonable on-demand technical equipment, appropriate use of materials, the need to regulate and engineer temporary facilities on site, avoid storing materials, equipment, make full use of prefabricated goods and components and semi-finished materials (Cheng, Chen, & Wu, 2014) [2].

2.2. Project Management Office (PMO)

Project Management Office (PMO) is a management structure to standardize the processes of governance-related projects and facilitate the sharing of resources, methodologies, tools, and techniques (PMI, 2013) [1]. PMO is a division or department within an organization that determines and maintains standards in project management within the organization. (Shift Indonesia, 2014) [3]. PMO is organizational innovation in the sense that it is a new and important phenomenon. But if it is an innovation, it is unstable and is still developing both in the individual organization and in the overall population of the organization. If the institutionalization process is working, the results are not yet visible. Given the ever-changing nature of the organization, it may take a long time before a clear pattern emerges if it appears all (Hobbs, Aubry, & Thuillier, 2008) [4].

"The Complete Project Management Office Handbook" presents 20 functions for practical application of supervision, control, and support solutions in the project management environment. The 20 functions of PMO are grouped into five categories (Hill, 2014) [5]:

1. Practice Management
2. Infrastructure Management
3. Resource Integration
4. Technical Support
5. Business Alignment

2.3. Competency

Competence is a characteristic that is owned and used by individuals in an appropriate and consistent way to achieve the desired performance. These characteristics include knowledge, skills, aspects of self-image, social motives, traits, thoughts, thought patterns, and ways of thinking, feeling, and acting. Spencer and Spencer (1993) define competency as a fundamental characteristic of an individual who is causally related to effective criteria and superior performance in a job. And competency characteristics include five types, namely: motives, traits, self-concepts, knowledge, and skills. (Dubois et.al, 2004) [6].

In the book "A Guide to Project Management Body of Knowledge, 2013" as a guidebook for project management experts. The 10 (ten) scope of project management knowledge, among others. (PMI, 2013) [1] :

1. Project Integration Management
2. Project Scope Management
3. Project Time Management
4. Project Cost Management
5. Project Quality Management
6. Project Human Resource Management
7. Project Communication Management
8. Project Risk Management
9. Project Procurement Management
10. Project Stakeholder Management

2.4. Leadership

According to Northouse (2010) leadership is: A process in which an individual influences a group of individuals to achieve a common goal. Leadership is defined as the process of influencing a group of individuals to achieve a common goal and not necessarily an executive position. (Opoku, Cruickshank, & Ahmed, 2015) [7]. Important leadership skills in digital economics analyze leadership abilities developed over 5 years. The following leadership abilities have been found to be the 12 most common indicators of a leader's potential and organizational agility in a digital economy (Bowles, 2016) [8]:

1. Future Orientation and Vision
2. Develop Others
3. Inspire and (Emotionally) Engage People
4. Change
5. Innovation

6. Results Orientation
7. Self-awareness and Courage
8. Critical Thinking
9. Collaboration and Influence
10.Cultural awareness
11. Communication
12. Technical Mastery

2.5. Organizational Culture

Organizational culture is a pattern of basic assumptions found by a group, found or developed in learning to overcome the problem of external adaptation and internal integration, which has worked well enough to be considered valid, and, therefore, must be taught to new members as the right way to understand, think, and feel in relation to those problems. (Adler & Jelinek, 2018) [9]. Organizational culture influences the way people behave and must be counted as a contingency factor in any program to develop organizations and policies and practices of human resources. This is why it is important for human resource specialists to understand the concept of organizational culture, how it affects the organization and how it can be managed. (Armstrong, 2009) [10]. Organizational culture has become one of the construction strategies plans to improve the performance and productivity of organizational management (Al-hashemi, 2016) [11]. Cultural influences have recently received significant attention from academics because of their vital role in the success or failure of a project. Harmony and dependence on goals, contracts or commitments, and worker orientation contribute to better overall performance and satisfaction of the parties. (Nguyen & Watanabe, 2017) [12]. Organizational culture plays the most important role and needs to be a focus of policy in the future to prevent corruption.(Tjiptogoro et.al, 2018) [13]. When elements of organizational culture are present and similar in partner companies, partnership efforts have greater opportunities to succeed and produce improvements such as innovation in the construction industry. (Nifa & Ahmed, 2010) [14].

The following table illustrates the differences between strong culture and weak culture.

Table 2.5. Strong and Weak Cultural Differences (Bakhri et.al., 2018) [15].

Strong Culture	Weak Culture
Value widely accepted	Values are embraced by only a handful of people within the organization, usually top management
Culture provides consistent messages of what is important	Culture provides conflicting messages about what matters
Employees can tell the history and heroes of the organization	Employees have little knowledge of the history and heroes of the organization
Employees are strongly identify with the culture	Employees have little concern for their organizational cultural identity
A strong relationship between shared values and behavior among members of an organization	A Weak relationships between shared values and behavior among members of an organization

Build (2008) organizational culture can have considerable influence, especially when the culture is strong. Strong organizational culture can produce companies that can increase competitiveness so that they can take action and coordinate with competitors and customers. Robbins (2006) states that strong culture is a culture in which organizational values are held intensively and widely understood by members of the organization. Robbins (2006) further said that a strong organizational culture provides stability to an organization. A strong culture

can also be called a positive culture. Positive organizational culture will be a motivation for achieving employee performance and company effectiveness. (Bakhri et.al., 2018) [15].

In the book "Organizational Behavior" Stephen P. Robbins and Timothy A. said there are seven main characteristics of organizational culture (Stephen P. Robbins, 2017) [16]:

1. Innovation and Risk Taking

The extent to which employees are encouraged to be innovative and take risks.

2.Attention to Detail

The extent to which employees are expected to show accuracy, analysis, and attention to detail.

3.Outcome Orientation

The extent to which management focuses on results or results rather than the techniques and processes used to achieve them.

4.People Orientation

The extent to which management decisions consider the impact of results on people in the organization.

5.Team Orientation

The extent to which work activities are organized around teams rather than individuals.

6.Aggressiveness

The extent to which people are aggressive and competitive rather than being relaxed.

7.Stability

The extent to which an organization's activities can maintain a company's existence or existence is different from growth.

2.6. Project Performance

Indicators are used to measure project performance and the most important indicators are seen as key project performance indicators (KPI). (Nguyen & Watanabe, 2017) [12]. Project performance obtained from a review of previous journals was formulated that there are 4 (four) indicators of project performance benchmarks namely: cost performance, scheduling performance, quality performance, and stakeholder satisfaction. (Ahmed & Anantatmula, 2017) [17].

According to Ahadzie et.al. (2014) scheduling performance can significantly contribute to overall project performance. Meng (2012) argues that scheduling is a key factor that influences project performance because it requires collaboration among stakeholders throughout the project and this collaboration is also time-consuming.

Cost Performance, according to Razmdoost & Mills (2016), costs can only reflect project efficiency but have a significant impact on project stakeholders. According to Sunindijo (2015), cost performance can be affected due to poor project planning, poor cost estimates, and inefficient cost control mechanisms that lead to revisions to the project budget.

Quality performance, according to Mir and Pinnington (2014), quality of performance is a critical dimension of project performance. Quality performance is about fulfilling the aesthetic, functional, and legal requirements of the project and project results. Project requirements are simple or complex. To improve project performance, project managers must focus on the quality parameters needed by project activities and processes.

Stakeholder Satisfaction, the performance of a project depends on effective communication and coordination among all stakeholder projects. Project performance cannot

be measured until project results are delivered and used by customers or clients, Razmdoost & Mills (2016).

2.7. Research hypothesis

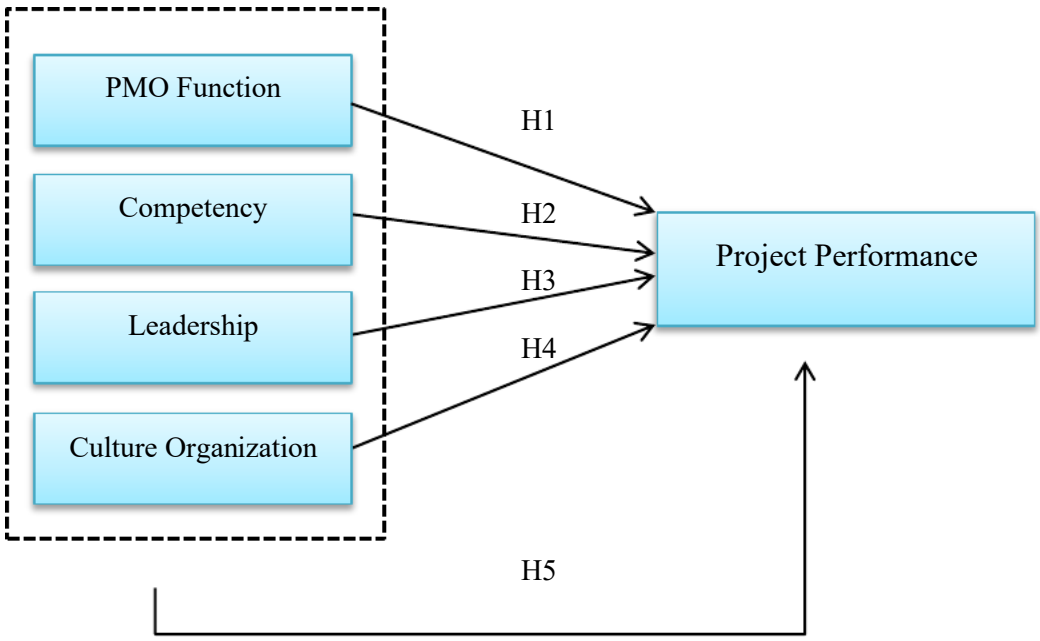

Figure 2.7. Relations Between Variables

The hypotheses in this study are as follows:

1). Allegedly there is an influence of the function project management office (PMO) on project performance (H1).

2). Allegedly there is an influence of competence on project performance (H2).

3). Allegedly there is an influence of leadership on project performance (H3).

4). Allegedly there is an influence of organizational culture on project performance (H4).

5). Allegedly there is an influence jointly on the functions of the project management office (PMO), competence, leadership, organizational culture on project performance (H5).

3. RESEARCH METHODOLOGY

This type of research is quantitative correlational, namely a type of research that looks at the relationship between one or several variables with one or several other variables. By carrying out questionnaires on construction management consultant field personnel and implementing contractor field personnel as many as 88 respondents using a Likert Scale and carried out data analysis with the SPSS.

3.1. Population, Samples and Data Sources

The population calculated in this study were field personnel who were employees of construction management consultants as many as 38 personnel and employees of implementing contractors as many as 657 personnel in high-rise apartment construction projects in Jakarta Indonesia. For sampling and sample size using the Slovin formula, Yusuf (2013) [18] as follows:

$$s = N / (1 + N (e)^2)$$

Description: s = number of samples, N = number of population (695 people), e = specified accuracy/ precision (10%). So, the number of samples (s) that must be taken is 88 respondents.

3.2. Data Collection Techniques

Collecting data with questionnaires directly (offline) to the team leader of construction management consultants and project manager of contracting contractors, then distributed to field personnel and questionnaire data collection also through team leaders and project manager.

4. RESULTS AND DISCUSSION

4.1. Validity and Reliability Test

From known validity and reliability tests, the value of "Croncach's Alpha" for the PMO function variable (X1) 0.784; competence variable (X2) 0.792; leadership variable (X3) 0.884; organizational culture variable (X4) 0.795; and project performance variable (Y) 0.907. All Croncach's Alpha values are > 0.6. So, it was concluded that all variables in the study were valid and reliable.

4.2. Normality Test, Auto Correlation Test and Multicollinearity Test

Based on the "Kolmogorov-Smirnov Test" the value of "Asymp. Sig (2-tailed)" 0.178 > 0.05. Then it can be concluded that in this regression model the data is normally distributed and the regression model is feasible to use to predict the dependent variable namely project performance (Y). With independent variables, namely the variable PMO function (X1), competency (X2), leadership (X3) and organizational culture (X4), the research data is worthy of being used as research.

Based on the test "Auto Correlation with Runs Test" above is obtained the value "Asymp. Sig (2-tailed) "of 0.284 > 0.05, which means that the data used is quite random and there is no problem of autocorrelation in the data being tested. Based on the "Collinearity Statistics" test, it is known that the tolerance value of the variable PMO function (X1) 0.662, competence (X2) 0.455, leadership (X3) 0.454, organizational culture (X4) 0.545. VIF value of variable PMO function (X1) 1,511; competence (X2) 2,198; leadership (X3) 2,203; organizational culture (X4) 1,836. All variables have a tolerance value < 0.10 and VIF value > 10.00, so it can be concluded that there is no multicollinearity.

4.3. Regression Analysis

From the regression analysis obtained constant values, variable coefficients, t count values and Sig. as follows :

Table 4.3. Regression Analysis Results

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.096	.749		2.798	.006
	PMO Function	- .008	.147	-.007	- .057	.955
	Competency	- .132	.197	-.096	- .668	.506
	Leadership	- .213	.198	-.154	- 1.073	.287
	Organization Culture	.853	.179	.623	4.764	.000

a. Dependent Variable : Project Performance

Source : SPSS Data Processing (2019)

From the regression analysis the regression equation model is obtained as follows:

Y = 2.096 - 0.008 X1 - 0.132 X2 - 0.213 X3 + 0.853 X4

It is known that the constant coefficient value is (2.096) with the Sig. (0.006) > 0.05 means that it has a positive and significant effect on project performance. "PMO function" coefficient value is (-0.008) with Sig. 0.955 > 0.05 means that it has a negative and not significant effect on project performance. The competency coefficient value is (-0,132) with the Sig. 0.506 > 0.05 means that it has a negative and not significant effect on project performance. Leadership coefficient value is (-0.213) with Sig. 0.287 > 0.05 means that it has a negative and not significant effect on project performance. The organizational culture coefficient is equal to (0.853) with the Sig. 0.000 < 0.05 means that it has a positive and significant effect on project performance.

4.4. Analisis Regresi Uji F

From the F test regression analysis (simultaneous test) the calculated F value and the Sig value are obtained. as follows :

Table 4.4. F Test Regression Analysis Results (Simultaneous Test)

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.124	4	1.031	6.796	0.000[b]
	Residual	12.138	80	.152		
	Total	16.262	84			

a. Dependent variable : project performance

b. Independent variable : PMO function, competence, leadership, organizational culture

Source : SPSS Data Processing (2019)

It is known that the value of F count (6.796) > from F table (2.48) and the value of Sig. (0,000) < 0.05. It was concluded that PMO function, competency, leadership and organizational culture simultaneously or jointly had a significant effect on project performance.

4.5. Determination Test (R Square)

Table 4.5. Determination Test (R Square)

Modal Summary [b]

Model	R	R Square	Adjusted R Square	Std Error of The Estimate	Dubin-Waston
1	.504[a]	.254	.216	.38951	1.385

a. Predictors: (Constant), Organizational Culture, PMO Function, Competence, Leadership

b. Dependent Variable: Project Performance

Source : SPSS Data Processing (2019)

The independent variables together affect the dependent variable by 25.40% and the remainder equal (100% - 25.40% = 74.60%) influenced by other variables not included in this study.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1. Conclusion

Analysis and discussion with experts have been carried out, the results of the research can be summarized as follows:

- That, PMO function, competence and leadership have a negative and not significant effect on project performance. Whereas organizational culture has a positive and significant influence on project performance. Simultaneously the PMO function, competence, leadership and organizational culture have a significant effect on project performance.
- Based on the results of the determinant coefficient (R Square) shows that PMO function variables, competency variables, leadership variables and organizational culture variables simultaneously affect the project performance dependent variable by 25.40% and the remainder equal (100% - 25,40% = 74,60%) are influenced by other variables not included in this study.
- To optimize project performance can be done by continuously encouraging the application of organizational culture to project organizations that have 7 (seven) characteristics as follows: innovation and risk taking, attention to detail, results orientation, people orientation, team orientation, aggressiveness and stability. For this reason, the implementation of organizational culture in the field needs to carry out these tasks and responsibilities. This role can be delegated to the project management office (PMO) or similar divisions.

5.2. Recommendations

This research is only a small part of the breadth of science, therefore further research is needed:

- Research with other variables to find out 74.60% indicators that influence project performance.
- For all stakeholders in the field of construction, to pay more attention to organizational culture and consider it in every policy taken. So that in the life cycle of the project or the implementation of a construction project reflects the expected organizational culture characteristics.
- Research needs to be carried out on the project management office (PMO), to encourage and develop its application in Indonesia.

REFERENCES

[1] PMI, *A guide to the project management body of knowledge (PMBOK® guide)*, Fifth edit. Project Management Institute, Inc., 2013.

[2] P. Cheng, X. Chen, and L. Wu, “Construction Technology of High-rise Building Structure,” 2014.

[3] Shift Indonesia, “Apa itu PMO shift indonesia,” 2014. [Online]. Available: http://shiftindonesia.com/meninjau-peran-dan-tanggung-jawab-pmo-di-organisasi/. [Accessed: 06-Mar-2019].

[4] B. Hobbs, M. Aubry, and D. Thuillier, “The Project Management Office As An Organisational Innovation,” 2008.

[5] G. M. Hill, *The Complete Project Management Office Handbook, Third Edition*. Taylor & Francis Group, LLC, 2014.

[6] D. D. Dubois, *Competency-Based Human Resource Management*. Davies-Black Publishing, 2004.

[7] A. Opoku, H. Cruickshank, and V. Ahmed, "Organizational leadership role in the delivery of sustainable construction projects in UK Article information :," *Emerald Gr. Publ. Ltd.*, no. May, 2015.

[8] M. Bowles, "Leadership in the digital economy," no. September, 2016.

[9] N. J. Adler and M. Jelinek, "Is 'Organizational Culture' culture bound?," *Hum. Resour. Manage.*, no. November 2006, 2018.

[10] Michael Armstrong, *Armstrong's Handbook of Human Resource Management Practice*, 11Th Edition, 2009.

[11] M. A. Al-hashemi, "Role of Organization Culture o n Kuwait' s Construction Industry Management : An Employee Perspective," *J. Eng. Res. Appl.*, 2016.

[12] L. H. Nguyen and T. Watanabe, "The Impact of Project Organizational Culture on the Performance of Construction Projects," *Sustainability*, 2017.

[13] Tjiptogoro and Djumarno, "The Strategic Role of Management of Human Resources to Prevent Corruption," *GATR Journals*, vol. 3, no. 3, pp. 42–50, 2018.

[14] F. A. A. Nifa and V. Ahmed, "The Role Of Organizational Culture In Construction Partnering To Produce Innovation," no. September, pp. 725–734, 2010.

[15] S. Bakhri, Udin, Daryono, and Suharnomo, "Diversity Management and Organizational Culture: Literature Review, Theoretical Perspectives, and Future Directions," *Int. J. Civ. Eng. Technol.*, vol. 9, no. 1, pp. 172–178, 2018.

[16] Stephen P. Robbins and Timothy A. Judge, *Organization Behaviour*. 2017.

[17] R. Ahmed and V. S. Anantatmula, "Empirical Study of Project Managers Leadership Competence and Project Performance," *Eng. Manag. J.*, pp. 1–17, 2017.

[18] A. M. Yusuf, *Metode Penelitan Kuantitatif, Kualitatif dan Penelitian Gabungan*. Jakarta: Prenadamedia Group, 2014.