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Factors Affecting Stakeholder Performance on Skills of Construction Workers in Multi-storey Building Projects in Palu City

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***Abstract* - The purpose of this study is to determine the factors that have the most significant influence on improving the skills of construction workers based on the perspective of satisfaction, contribution, strategy, process, and capabilities of stakeholders so that they can provide recommendations for improvement recommendations for solutions in an effort to improve the skills of construction workers on the project multi-storey building in Palu City. The research method used is Analytical Hierarchy Process (AHP) which aims to select one of the most dominating alternatives from several factor criteria in the form of a process hierarchy.**

Keywords: Analytical Hierarchy Process (AHP), Capability, Contribution, Performance, Construction workface Process, Project, Satisfaction, Stakeholders, Strategy

I. INTRODUCTION

Palu City is currently focused on improving infrastructure development to support the welfare of the community. In carrying out infrastructure development, careful planning, appropriate supervision of SOPs, and implementation of construction that achieves project objectives, namely cost, quality and time, will certainly affect the quality of the project itself. This is greatly influenced by the quality of the skills of the construction workforce. Therefore, it is necessary to analyze the performance of stakeholders because they are parties involved in the project, in order to improve the skills of the construction workforce in order to achieve the goals of the company and improve quality so as to increase the competitiveness of companies in the construction industry.

II. LITERATURE REVIEW

A. *Definition of Performance*

According to Moeheriono (2009) quoted from Kasmawati, (2015) the definition of performance is a representation of the success rate of implementing an activity program or policy in achieving the goals, objectives, vision and mission of the organization that have been set in strategic planning. Based on the previous definition of performance, it can be concluded that performance is the level of success of a person and is fully responsible for achieving the goals or plans that have been previously set. The performance in this study is the success or success of the stakeholders in their efforts and responsibilities towards coaching and improving the skills of the construction workforce to achieve planned goals. In simple terms, stakeholders are stated as parties, across actors, or parties related to an issue or a plan.

B. *Definition of Stakeholders*

According to Zulfan & Hana, (2013) stakeholders can be defined as all parties related to the issues and problems that are being reviewed. Stakeholders in this case can also be called stakeholders. Public institutions have used the term stakeholder broadly in the processes of making and implementing a decision.

C. *Analitical Hiearchy Process (AHP)*

According to Yadrifil & Sarifudin, (2013) Analytical Hierarchy Process (AHP) is a method or method that is systematically arranged in sorting rankings and selecting one alternative choice from various criteria options in making a decision. By using the AHP method, decision makers can choose effective alternatives according to the criteria and considerations of their decisions, sorting into the rankings of each alternative needs according to the level of feasibility and needs.

The AHP method has advantages and disadvantages. The advantages of the AHP method mentioned by Suryadi (2000) and Tanyonimpuno (2006) in Wibowo, (2011) are explained, namely (1) it can solve complex problems, irregular structure arrangement, or unsystematic problems, (2) incomplete written data or Quantitative data on the problem does not affect the smoothness of the decision-making process because values are a combination of opinions from various respondents' perspectives, (3) synchronization with the basic human ability to interpret a value so as to provide easy assessment and measurement of elements.

Apart from having advantages, of course, a method also has drawbacks. The weaknesses of the AHP method are mentioned in (Arifin, 2017) namely (1) the scale used is the pairwise comparison scale of value intervals from 1-9, it can have a different point of view from the respondent so that the results are different (2) the data used in this method is primary data from the results of the questionnaire survey on the project.

III. RESEARCH METHODOLOGY

This research was conducted at the Project for Construction of the Theory Building and Microbiology

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Lab, Faculty of Medicine, University of Tadulako and parties related to the object of research related to the construction project, namely suppliers. This research is planned to be carried out in July 2020 until it is completed The sampling technique in this research is purposive sampling technique. Alfianika Ninit, (2018) states that purposive sampling technique is more suitable for qualitative research because the sampling must be based on scientific considerations.

The number of samples in this study were 8 people consisting of 3 PPK people, 2 service users, 2 Construction Management Consultants and 3 service providers (suppliers). The operational variables in this study are the independent variables and the dependent variable. The dependent variable is how effective the stakeholder is in improving the skills of construction workers in multi-storey building projects in Palu City. Independent variables are factors that can affect stakeholder performance. The indicators of the independent variables and the dependent variable are presented in full in Table 1.

Table. 1 Dependent Variable and independent variable

No	Variable	Indicator	Source factor
I	*(Dependent variable)* *Stakeholder performance in an effort to improve the skills of construction workforce*		
2	*(Independent variable)*		
	Stakeholder Satisfaction (X1)	Good performance of the supervisory consultant.	*) Nyangwara & Datche, (2015) *) Syarifudin Kamaludin, (2017) *) Andjani, (2018)
		Contractor's participation in project evaluation.'	*) Nyangwara & Datche, (2015) *) Viglioni et al., (2016) *) Aigbavboa, (2016) *) Andjani, (2018)
		The workforce owned by competent contractors	*) Raharja et al., (2019) *Hanafi & Ibrahim, (2018) *) Nyangwara & Datche, (2015) *) Viglioni et al., (2016) *) Andjani, (2018)
	Stakeholder Contribution (X2)	Regular training for the workforce	*) Raharja et al., (2019) *) Dardiri Ahmad , et al, (2017) *) Nyangwara & Datche, (2015) *) Viglioni et al., (2016) *) Orando & Isabirye, (2018) *) Dardiri Ahmad , et al, (2017) *) Aigbavboa, (2016) *) Febriarso, (2008) *) Andjani, (2018)
		Evaluate work items through work progress progress reports.	*) Raharja et al., (2019) *) Viglioni et al., (2016) *) Andjani, (2018)
		Employee Discipline Level	*) Raharja et al., (2019) *) Nugraheni et al., (2013) *) Kusuma et al., (2006) *) Andjani, (2018)
	Stakeholder Strategy (X3)	Control of supplier performance by means of good communication with suppliers and timeliness of completing needs	*) Raharja et al., (2019) *) Nugraheni et al., (2013) *) Andjani, (2018)
		Number of evaluation meetings.	*) Raharja et al., (2019) *) Purnomo & Hadi, (2017) *) Andjani, (2018)
		Checks in the field to ensure work is according to contracted specifications and standard procedures.	*) Nyangwara & Datche, (2015) *) Viglioni et al., (2016) *) Febriarso, (2008) *) Nugraheni et al., (2013) *) Andjani, (2018)
	Stakeholder Process (X.4)	Effective communication between project stakeholders.	*) Asim & Kazaz, (2016) *) Abdul Razak et al., (2009) *) Viglioni et al., (2016) *) Jabar et al., (2013) *) Zannah (et al., 2017) *) Febriarso, (2008) *) Prastawa Heru , et al, (2012)

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		*) Andjani, (2018)
	Number of changes to construction drawings from initial planning	*) (Asim & Kazaz, 2016) *) Viglioni et al., (2016) *) Zannah (et al., 2017) *) Andjani, (2018)
	Occupational health policy through Ease of use health insurance with insurance agencies and companies and free medical facilities for skilled workers	*) Raharja et al., (2019) *) Zannah (et al., 2017) *) Febriarso, (2008) *) Nugraheni et al., (2013) *) Prastawa Heru , et al (2012)
Stakeholder capabilities (X.5)	Adequate facilities for workers	*) Raharja et al., 2019) *) Dardiri Ahmad , et al, (2017) *) Zannah (et al., 2017) *) Febriarso, (2008) *) Prastawa Heru , et al (2012) *) Andjani, (2018)
	Use of appropriate equipment and minimize the number of malfunctioning tools in the field	*) Nyangwara & Datche, (2015) *) Zannah (et al., 2017) *) Febriarso, (2008) *) Andjani, (2018)
	Conflict resolution skills in HR Management and experienced complaint handling speed	*) Asim & Kazaz, (2016) *) Hanafi & Ibrahim, (2018) *) Nyangwara & Datche, (2015) *) Viglioni et al., (2016) José Adson O. G. Cunhaa, Hermano P. Mouraa *) Zannah (et al., 2017) *) Febriarso, (2008) *) Andjani, (2018)

IV. DISCUSSION

A. Project Criteria

This project is located at Tadulako University, Jl. Seokarno Hatta Km. 9. The work unit in this project is Tadulako University with Contract Number 4291 / UN.28 / LL / 2020 dated August 6, 2020. This project budget is IDR 9,994,997,000 (Nine Billion Nine Hundred Ninety-Four Million Nine Hundred Ninety Seven Thousands of Rupiah. The project implementation period is 148 calendar days or until December 31, 2020. The construction of this building is intended as a room for student learning and practicum. The implementation of this project is limited to structural work from the foundation to the roof plate.

B. Analythic Hierarchy Process

Based on the results of data analysis obtained using the Analythic Hierarchy Process (AHP) method, the most dominant factor affecting the performance of stakeholder satisfaction indicators in an effort to improve the skills of construction workers in the Theory Building Construction project and the Microbiology Lab, Faculty of Medicine, University of Tadulako can be seen in Fig 1.

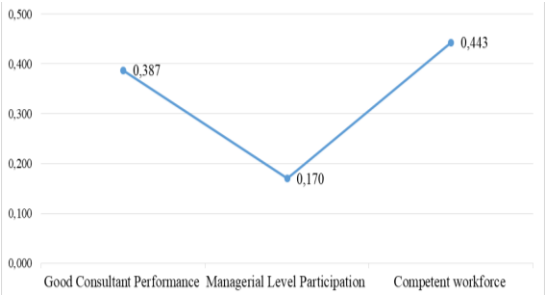

Fig. 1 Priority Value for Stakeholder Satisfaction Factors

Stakeholders have satisfaction with the skills of construction workers if the construction workforce working on a project already has good skills and competencies.

Fig 2. Casting pedestal column with competent labor.

For stakeholder contribution factors explains that regular training for the workforce is needed to improve the skills and expertise of the construction workforce, especially the Project on the Theory Building Construction Project and the Microbiology Lab, Faculty of Medicine, Tadulako University.

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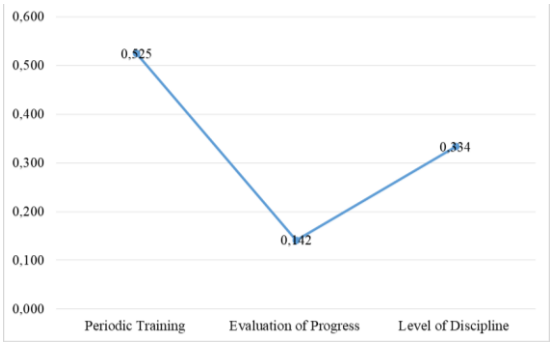

Fig. 3 Priority Value for Stakeholder Contribution Factors

Stakeholders should contribute to improving the skills of construction workers through regular training and certification for construction workers. When viewed from the indicators of stakeholder satisfaction, a competent workforce is a very influential factor with the highest percentage in improving the skills of construction workers. This can be increased through engaging the construction workforce in training and certification to upgrade individual skills.

Fig 4. Reinforcing footplat

In Fig. 5 explains that in implementing a project, the factors of material, material, and labor are the most important factors in the Project for the Construction of the Theory Building Project and the Microbiology Lab, Faculty of Medicine, Tadulako University.

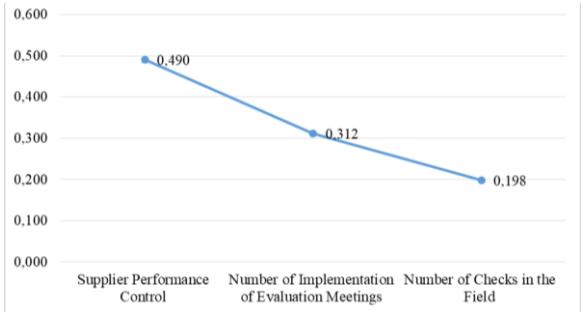

Fig. 5 Priority Value for Stakeholder Strategies Factors

Figure 6. Stock Iron material on site

Occupational health policy factors through the ease of use of health insurance with insurance agencies and companies and free medical facilities for construction workers are indicators of stakeholder processes to increase motivation of construction workers so as to improve the skills and competence of construction workers. Stakeholders must ensure that each construction workforce is included in the construction workforce health program or finance in cash if a construction worker is sick during the contract period.

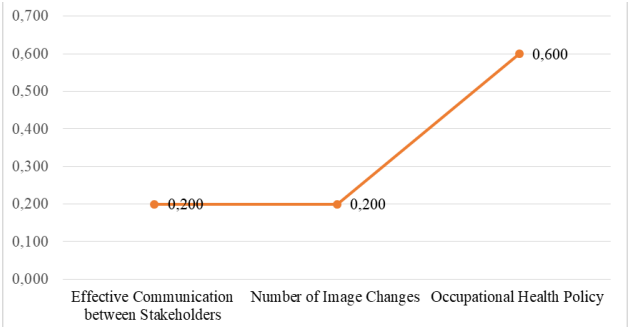

Fig. 7 Priority Value for Stakeholder Process Factors

Figure 8. Health insurance for construction labor

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Vol. 10 Issue 01, January-2021

Figure 9.. Warning signs for Covid-19

Stakeholder must be able to resolve conflict problems, or complaints from the project owner that occurred during the implementation of the Theory Building Construction Project and the Microbiology Lab, Faculty of Medicine, Tadulako University.

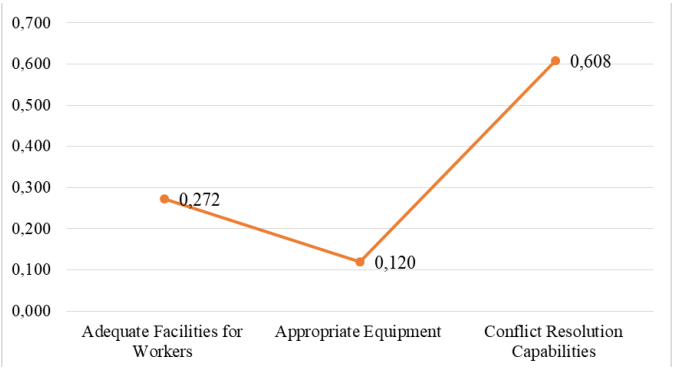

Fig. 10 Priority Value for Stakeholder Process Factors

One way to minimize the occurrence of conflict is the existence of joint measurements with stakeholders and documentation in order to obtain accurate data and according to specifications.

Figure 11. Re-Measurement of Land

Figure 12. Adjustment of distance measurement

Figure 13. Concrete slump testing

V. CONCLUSIONS

The conclusions of this study are:

1. Factors that influence stakeholder performance in terms of stakeholder satisfaction indicators indicate that the expertise and competence of construction workers are the most important factors in this project.
2. Factors that affect stakeholder performance in terms of stakeholder contribution indicators show that regular training for workers is needed to improve the skills and expertise of construction workers in this project.
3. Factors that affect stakeholder performance in terms of stakeholder strategy indicators show that stakeholders must be able to control and schedule mobilization and ensure the availability of materials, equipment and labor so that work delays do not occur due to material shortages.
4. Factors affecting stakeholder performance in terms of stakeholder process indicators indicate that occupational health policy factors through the ease of use of health insurance with insurance agencies and companies and free medical facilities for construction workers.
5. Factors that influence stakeholder performance in terms of stakeholder ability indicators show that stakeholders must have a good performance, especially how conflict resolution skills are in human resource management and experienced complaint handling speed.

International Journal of Engineering Research & Technology (IJERT)
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REFERENCES:

[1] Abdul Razak, A., Jaafar, M.,
[2] Abdullah, S., & Muhammad, S. (2009). Work environment factors and job performance: the construction project manager's perspective. 1–13.
[3] Aigbavboa, A. (2016). Implementation of Skill Development Act in the South African Construction Industry. Socioeconomica, 5(9), 53–64. https://doi.org/10.12803/sjseco.59006
[4] Alfianika Ninit. (2018). Metode Penelitian Pengajaran Bahasa Indonesia. In Metode Penelitian Pengajaran Bahasa Indonesia. Deepublish Publiser. https://books.google.co.id/books?id=oNOGDwAAQBAJ&printsec=frontcover&dq=ninit+alfianika&hl=id&sa=X&ved=0ahUKEwir_rD4xNvpAhV9yTgGHdzVDXwQ6AEILzAB#v=onepage&q=ninit alfianika&f=false
[5] Andjani, N. M. A. J. (2018). Evaluasi Kinerja Stakeholder terhadap Peningkatan Keterampilan Tenaga Kerja Konstruksi pada Gedung Bertingkat di Kota Palu dengan menggunakan Metode Performance Prism.
[6] Arifin Muhammad Affan. (2017). Analisis Faktor Produktivitas Tenaga Kerja Konstruksi di Sulawesi Tengah menggunakan Metode Analytical Hierarchy Process (AHP). Tadulako University.
[7] Asim, H., & Kazaz, A. (2016). The Impact of Managers' Leadership Skills on Construction Project Performance in Dubai. International Journal of Managerial Studies and Research, 4(6), 73–94. https://doi.org/10.20431/2349-0349.0406008
[8] Dardiri Ahmad , Sutrisno, Tri Kuncoro, Muhamad Aris Ichwanto, and S. (2017). Enhancing the competitiveness of skilled construction workers through collaborative education and training. Enhancing the Competitiveness of Skilled Construction Workers through Collaborative Education and Training.
[9] Febriarso, P. (2008). Perancangan Sistem Pengukuran Kinerja Dengan Metode Performance Prism. In Universitas Muhamadiyah Surakarta.
[10] Hanafi, H. M., & Ibrahim, S. B. (2018). The Impact of Employee Attitude on Service Performance. The International Journal of Humanities & Social Studies, 6(12). https://doi.org/10.24940/theijhss/2018/v6/i12/hs1812-013
[11] Jabar, I. laili, Ismail, F., Aziz, N. M., & Janipha, N. A. I. (2013). Construction Manager's Competency in Managing the Construction Process of IBS Projects. Procedia - Social and Behavioral Sciences, 105, 85–93. https://doi.org/10.1016/j.sbspro.2013.11.010
[12] Kasmawati. (2015). Evaluasi Kinerja Supplier Menggunakan Metode Ahp (Analytical Hierarchy Process) Pada Pt Xyz Skripsi Disusun untuk Memenuhi Syarat Kelulusan Program Diploma IV.
[13] Kusuma, W., Suwignjo, P., & Vanany, I. (2006). Perancangan Dan Pengukuran Kinerja Dengan Menggunakan Metode Performance Prism Di PT. Kangsen Kenko Indonesia Cab. Surabaya. Tugas Akhir.
[14] Neely, A., Adams, C., & Crowe, P. (2001). The performance prism in practice. Measuring Business Excellence, 5(2), 6–13. https://doi.org/10.1108/13683040110385142
[15] Ngatawi, & Setyaningsih, I. (2011). Analisis Pemilihan Supplier Menggunakan Metode Ahp. Jurnal Ilmiah Teknik Industri, 10(1), 7–13.
[16] Nugraheni, R. P., Choiri, M., & ... (2013). Perancangan sistem pengukuran kinerja perusahaan dengan metode performance prism (Studi Kasus PT. PLN (Persero) Area Malang). Jurnal Rekayasa …. http://jrmsi.studentjournal.ub.ac.id/index.php/jrmsi/article/view/20
[17] Nuryadin, R., Mughni, A., Purba, H. H., Afriyuddin, A., & Saparina Yuliani, E. N. (2019). Analysis of hospital performance measurement using performance prism method. IOP Conference Series: Materials Science and Engineering, 508(1). https://doi.org/10.1088/1757-899X/508/1/012103
[18] Nyangwara, P. O., & Datche, E. (2015). Factors Affecting the Performance of Construction Projects : A Survey of Construction Projects in the Coastal Region of Kenya. International Journal of Scientific and Research Publications, 5(10), 1–43. www.ijsrp.org
[19] Orando, M., & Isabirye, A. K. (2018). Construction workers' skill development: A strategy for improving capacity and productivity in South Africa. International Journal of Economics and Finance Studies, 10(1), 66–80.
[20] Prastawa Heru , Darminto Pujotomo, Ary Arvianto, F. K. (2012). Sistem Pengukuran Kinerja Dengan Metode Performance Prism (Studi Kasus Di Rumah Sakit Islam Sultan Agung Semarang). Teknik, 32(1), 25–33. https://doi.org/10.14710/teknik.v32i1.1684
[21] Purnomo, C. A., & Hadi, Y. (2017). Pengukuran Kinerja Umkm Menggunakan Performance Prism. Spektrum Industri, 15(2), 121. https://doi.org/10.12928/si.v15i2.7550
[22] Raharja, I., Irwati, D., & Hasibuan, S. (2019). Design of performance measurement in Indonesia plastics seeds coloring company by using stakeholder perspective PRISM. International Journal of Engineering and Advanced Technology, 8(5), 598–603. https://doi.org/10.35940/ijeat.E1085.0585C19
[23] Syarifudin Kamaludin. (2017). Analisis Faktor yang mempengaruhi Kinerja Pengawas Lapangan pada Pelaksanaan Proyek Peningkatan Jalan Di Kabupaten Morowali Utara. University of Tadulako.
[24] Viglioni, T. G. A., Cunha, J. A. O. G., & Moura, H. P. (2016). A Performance Evaluation Model for Project Management Office Based on a Multicriteria Approach. Procedia Computer Science, 100, 955–962. https://doi.org/10.1016/j.procs.2016.09.257
[25] Wibowo, M. A. H. S. S. M. (2011). Evaluasi Dokumen Aspek Teknis Pada Proses Pelelangan Kontraktor Dengan Apilkasi Metode Ahp (Analytical Hierarchy Process) M.Agung Wibowo *), Heri Suliantoro **), Shinta Marithyanti1 ***). 32(2), 113–120.
[26] Widodo, B. E., & Ciptomulyono, U. (2012). Selection of Contractors for Construction Services. 1–8.
[27] Yadrifil, & Sarifudin, A. T. (2013). Penentuan Kriteria dalam Pemilihan Supplier pada Kontraktor Migas Menggunakan Metode Analytic Hierarchy Process. 1–12.
[28] Zannah, A. A., Latiffi, A. A., Raji, A. U., Waziri, A. A., & Mohammed, U. (2017). Causes of Low-Skilled Workers' Performance in Construction Projects. Path of Science, 3(6), 4.1-4.15. https://doi.org/10.22178/pos.23-7
[29] Zulfan, J., & Hana, M. A. (2013). Berbasis Kebersamaan Antar Stakeholder Polder Banger Management Based on Togetherness Among Stakeholder. 39