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SAFETY LEADERSHIP IN THE INDONESIAN CONSTRUCTION INDUSTRY: CONSTRUCTION PROJECT OWNER SAFETY LEADERSHIP – A REVIEW

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ABSTRACT

With the increasing importance of safety performance in project-based construction implementation organizations, high safety performance is very important for the development of sustainable and zero-accident construction project implementation. One of the main drivers of improving safety performance is safety culture. And safety leadership has been identified as a major factor shaping safety culture itself. Effective leadership is essential in any company to achieve organizational goals and promote individual professional achievement. Project owner safety leadership is a key condition for implementing effective safety management. The leadership role of the project owner is very important for the smooth running of the organization and without strong leadership the organization can lose its way, especially when trying to achieve its targets. The project owner's safety leadership has a direct impact on the effective involvement of the entire workforce in the implementation of a construction safety management system (CSMS). The aim of this paper is to explore the important role of safety leadership by project owners in the implementation of construction projects. The safety leadership maturity level of each project owner must be identified and defined and adapted to the organization, situation, group and individual who will be involved in the construction project activities. In construction, in fact in the implementation of safety management, Project Owners are often passive and do not have clear leadership in the implementation of safety management. This is because the role and contribution of the project owner's leadership in implementing CSMS has received less attention, and there is no tool to determine the maturity level of the project owner's safety leadership in implementing CSMS. This review has found it necessary to develop a safety leadership maturity model for construction project owners in the construction industry.

KEYWORDS: Construction, leadership, project owner, safety

1. INTRODUCTION

The construction industry has a high work safety risk, especially having a high risk that can cause fatality or death (Oh T.K., et al., 2021) [1]. Globally, the construction industry has always been the most dangerous industry with more than 60,000 fatal accidents per year (Albert, et al., 2020) [2], as

well as in Indonesia 32% (Alfiansah et al., 2020) [3]. It is understood that the construction industry is very different from other industries because it has several unique characteristics, including the construction process, management practices, organizational structure, work environment, and characteristics of the behavior of its workers (Fang & Wu, 2013) [4]. Work accidents are events that occur during the work process that can result in damage or injury, this is very common in high-risk industries such as construction. Accidents can result in very tragic social and economic impacts for companies, individuals and their families (Elsebaei et al., 2020) [5].

It is generally recognized that safety performance is very different in each project activity, even for projects running the same or similar management systems. One of the main reasons is the difference in leadership between each project management team, which also explains the importance of leadership for workplace safety in the project (C. Wu et al., 2017) [6]. Managerial leadership is an important element in preventing the risk of workplace accidents and improving safety performance (Grill & Nielsen, 2019) [7]. Schwatka, et al. (2019) [8] states that safety leadership is a multi-dimensional process that is demonstrated through concrete actions that can directly affect safety in the workplace. Furthermore, Esterhuizen & Martins (2016) [9] have also explained that safety leadership is the main factor forming a good safety culture, while Filho & Waterson (2018) [10] also argue that safety culture is the main driver in determining project safety performance. In addition, from the study by Du and Sun [10] found that just a single approach to lessening.

Leadership by project owners during construction activities is the main and most important condition for generating new and effective safety management measures to improve project safety (C. Wu et al., 2015) [11]. The data show that the number of accidents on construction projects will be low or few in projects where the project owner considers the qualifications of the contractor's safety personnel and the qualifications of the project management team (Huang & Hinze, 2006) [12]. With the influence of the project owner on the construction manager, it can increase the positive influence on the supervisors, and by influencing the supervisor, the goal is achieved in improving the safety behavior of construction project workers (C. Wu et al., 2016) [13]. Although supervisors have the closest relationship and closest contact with workers, the fulfillment of project owner leadership cannot be ignored, because project owner management is not only a determinant of project safety culture, but is also a communicator of shared values for supervisors and workers. There is ample evidence that leadership affects workplace safety, but few know that the leadership maturity model can show the extent to which safety performance can be achieved and improved by project owners.

2. CONSTRUCTION INDUSTRY

There are several definitions related to industry, especially in the construction sector. The construction industry is a branch of manufacturing and trading in general building construction contractors and operational builders, heavy construction other than building construction contractors, and special construction trade contractors (Standard Industrial Classification, 2020) [14]. Industrial construction includes offshore construction (especially energy installations), mining and quarrying, refining,

chemical processing, power generation, milling and manufacturing plants (Chitkara, 2014) [15]. The construction industry is traditionally divided into three sub-sectors namely building construction, road construction, toll roads, and other "infrastructure" and specialty trades (Szymanski, 2006) [16]. From these definitions, the construction industry can be defined as a branch of manufacturing and trade covering the construction of buildings, roads, and other infrastructure as well as related trade.

The construction industry operates in a unique external environment, which is influenced by global commodity prices, natural resources, and product demand (Daniel, 2015) [17]. In a study (Boadu et al., 2020) [18] related to the characteristics of the construction industry in a developing country (Ghana), there are 9 things that characterize this industry that affect OSH management, namely, Influenced by the colonial system, Many procurement systems are still traditional, Participation in the informal sector in bulk, Small contractors in large numbers, Fragmented industry, Lack of a single regulatory authority, Reliance on labour-intensive methods, Lack of a skilled and educated workforce, Reliance on temporary labour. From the results obtained, the 3 things that have the most significant impact are the lack of a skilled and educated workforce, dependence on labor-intensive methods and the lack of a single regulatory authority.

There are differences in safety leadership in job positions, (Daniel, 2015) the survey results explain as follows:

- All general managers view safety leadership and leadership as synonymous with each other, with general comments made regarding the safety vision.
- Some project managers see a difference between safety leadership and general leadership. Examples include tailored safety transparency with compliance-based requirements outreach with safety management systems.
- Construction managers comment less on safety statistics and share more practical examples of engagement with the workforce
- The importance of building collaborative relationships was emphasized by HSE managers, as well as a focus on safety leadership behaviors that were more aligned with managerial tasks. HSE managers also noted more challenges associated with safety leadership compared to their research colleagues

An illustration of the relationship of safety leadership to the job position described by Daniel through the four points above is described in Figure 1 below.

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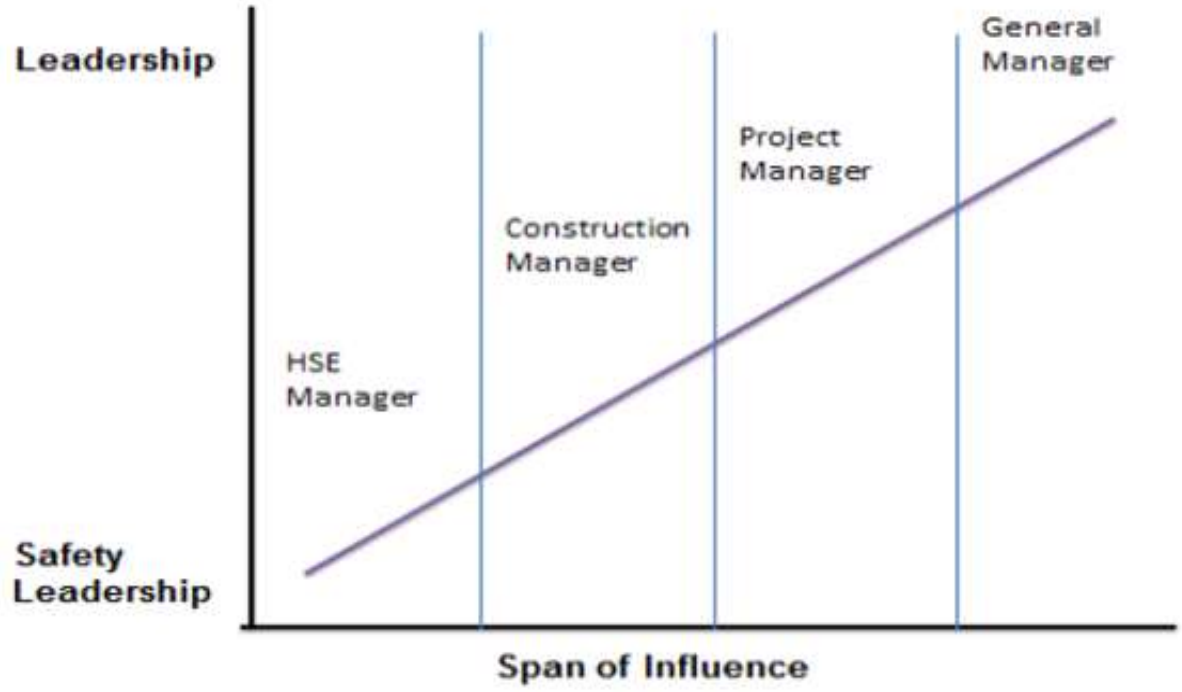

Figure 1. Relationship of Safety Leadership and Job Position in the Construction Industry (Source: Daniel (2015))

3. Construction Project Owner in Indonesia

The project owner is a construction service user who initiates a construction project. According to the Project Management Body of Knowledge 6th edition, the project owner or project owner is a business unit or representative who receives construction products and bears full responsibility for the successful implementation of the project. Based on the context of this research, the project owner is the Ministry of Public Works and Public Housing of the Republic of Indonesia and the Ministry of Transportation of the Republic of Indonesia.

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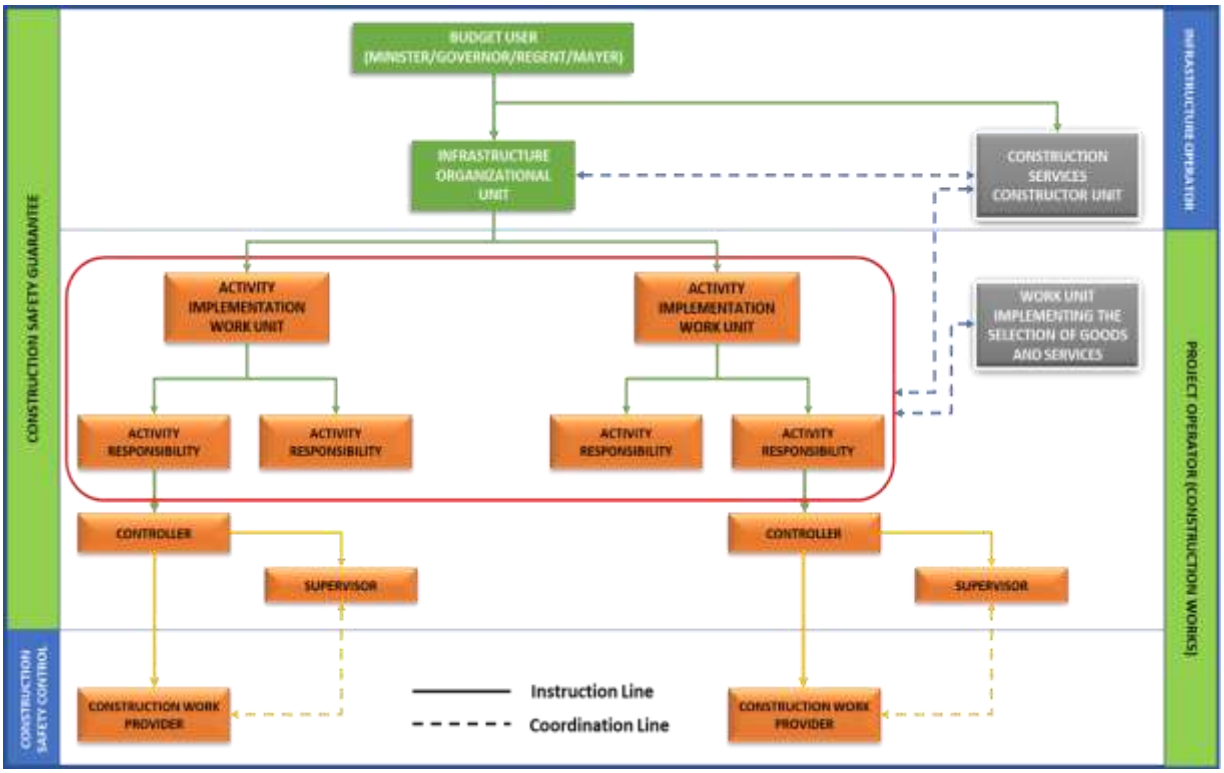

Figure 2. Organizational Structure of Construction Safety Assurance and Control - Ministry of Public Works and Public Housing of the Republic of Indonesia (Source: Regulation of the Minister of Public Works and Public Housing of the Republic of Indonesia Number 10 of 2021)

In Figure. 2 above explains the scope of the Ministry of Public Works and Public Housing of the Republic of Indonesia, related to the parties involved in the implementation of construction work, consisting of: 1. Infrastructure organizers include the Directorate General of Water Resources, Directorate General of Highways, Directorate General of Human Settlements, Directorate General of Housing Provision, Budget Users and Proxy of Budget Users. In the formulation of construction safety policies, the Directorate General of Construction Development and the election implementation center/unit. 2. Project organizers include Heads of Echelon III Units/Heads of Work Units, Commitment Making Officers (CMO), Work Controllers (Field Directors or Construction Management Consultants), Work Supervisors (Technical Directors or Supervisory Consultants), and Construction Works Service Providers.

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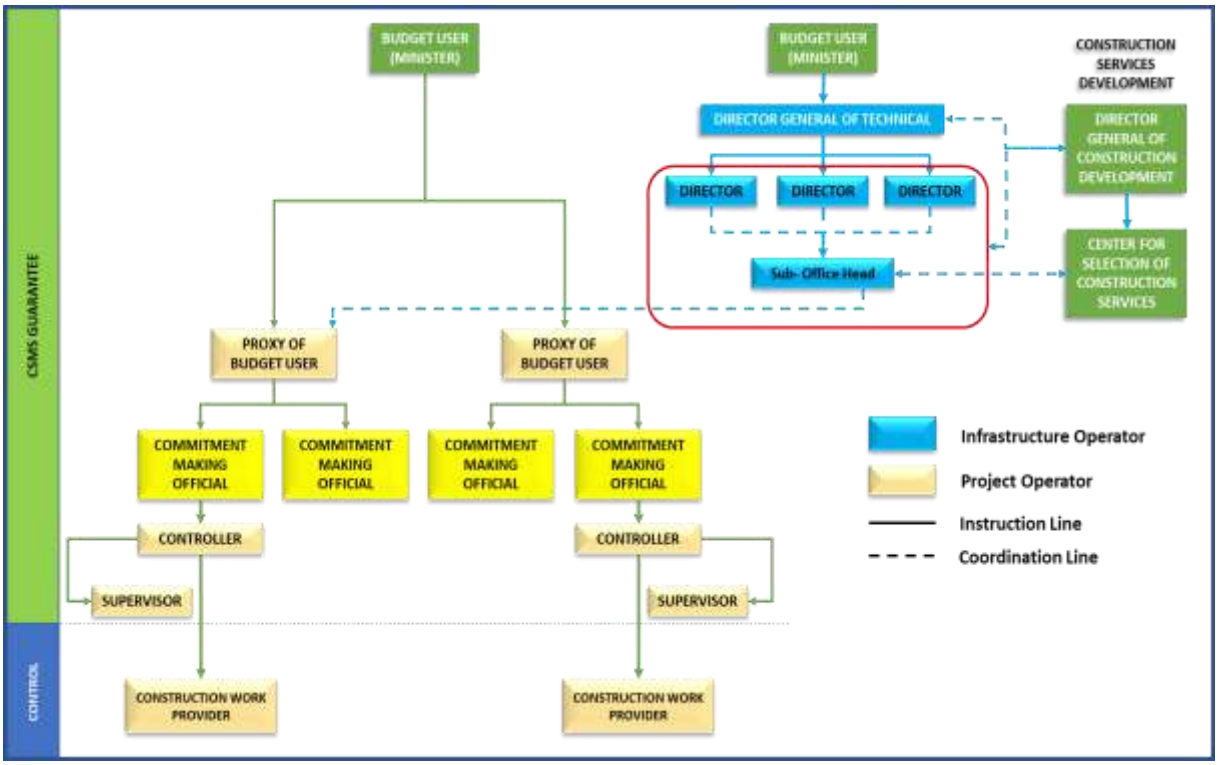

Figure 3. Construction safety guarantee and control organizational structure- Ministry of Public Works and Public Housing of the Republic of Indonesia (Source: Regulation of the Minister of Public Works and Public Housing of the Republic of Indonesia Number 10 of 2021)

In Figure 3 above, it can be clearly seen that CMO is the most strategic position as part of the project owner at the mid-level who is tasked as the main determinant of the implementation of CSMS in the Project. this is in line with the results of research by Oswald et al (2019) [19] which states that modern safety systems prioritize a sociological approach rather than a psychological one. The focus of leadership needs to be on Foreman or mid level management, not on top level management. In the context of construction project owners at the Minister of Public Works and Public Housing of the Republic of Indonesia and the Ministry of Transportation of the Republic of Indonesia, the mid-level management (project owner) position is CMO (CMO's task in maintaining construction safety is regulated in the Regulation of the Minister of Public Works and Public Housing of the Republic of Indonesia Number 10 of 2021 (Appendix. A-5), Regulation of the Minister of Transportation of the Republic of Indonesia Number 3 of 2019 (art. 13) and Regulation of the Government Goods/Services Procurement Policy Institute number 12 of 2021 (Appendix. I, II and III introductory parts).

Meanwhile, specific duties and responsibilities in maintaining construction safety, CMO can also be assisted by a number of teams. The CMO is responsible for carrying out control and supervision in accordance with Sub-annex A points for service users number 5 Regulation of the Minister of Public

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Works and Public Housing of the Republic of Indonesia Number 10 of 2021. In carrying out control, the CMO can be assisted by the Field Directors or Construction Management Consultants. While in carrying out supervision, the CMO can be assisted by the Technical Board of Directors or the Work Supervision Consultant. This regulation also regulates a team of safety experts / OH&S experts who can assist CMOs in supervising the implementation of CSMS performance evaluations. The CMO has a team he leads in carrying out general administrative tasks and CSMS maintenance in particular. The results of the work of the entire team under their control are then reported to the Proxy of Budget User (PBU) as the direct supervisor for further reporting to the Budget User (BU). In this way, the representation of the project owner in this study can be extended to the work team led by the CMO, both in terms of administration and construction safety. The project owner's workflow, governance and organizational structure are described in Figure 4 below.

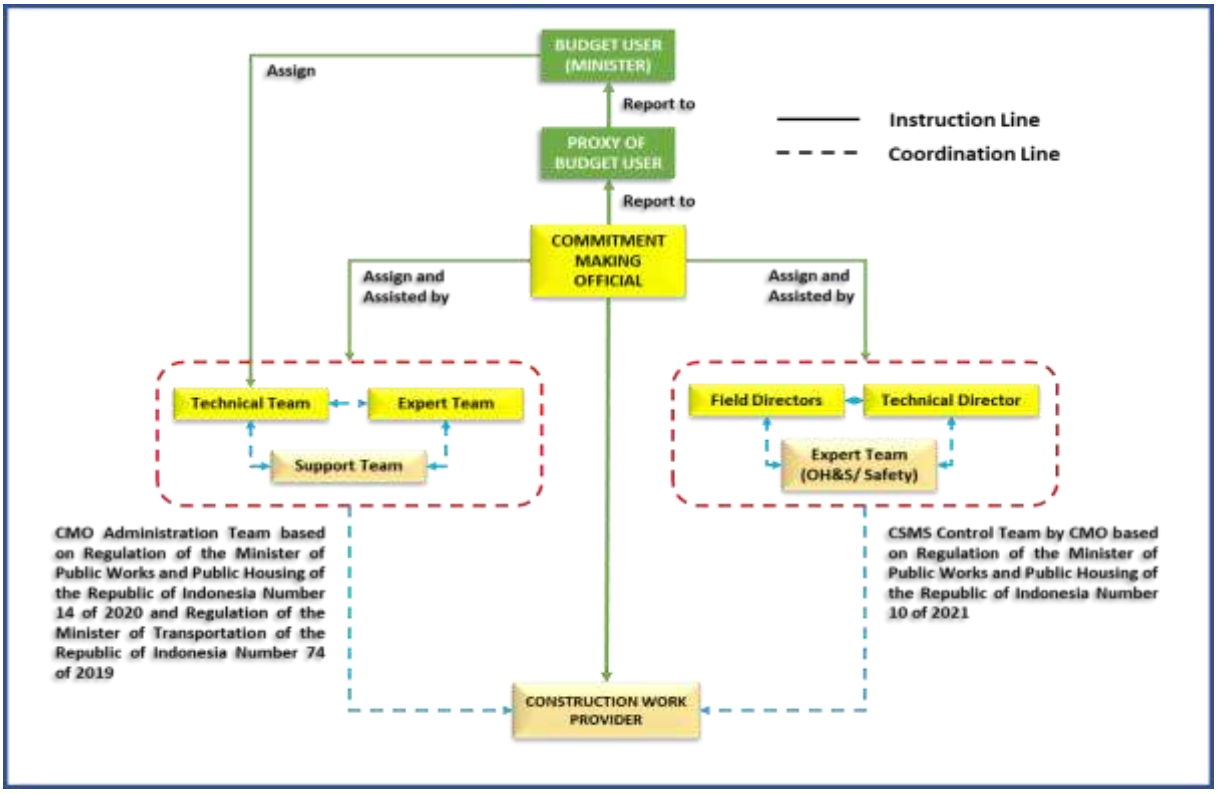

Figure 4. Workflow and Governance of the CMO as a representation of the Construction Project Owner (Source: Regulation of the Minister of Public Works and Public Housing of the Republic of Indonesia Number 14 of 2020, Number 10 of 2021 and Regulation of the Minister of Transportation of the Republic of Indonesia Number 74 of 2019)

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4. Construction Safety Leadership

In some literature, it is explained in more depth related to the meaning of safety leadership as follows:

Table. 1 Definition of Safety Leadership

Reference	Description
(Zhang et al., 2018)	Safety leadership is the process of interaction between leaders and followers to achieve organizational safety goals.
(Fernández-Muñiz et al., 2017)	Safety Leadership refers to the process by which a person guides and influences other individuals or groups to achieve safety goals while completing organizational tasks.
(Daniel, 2015)	Safety Leadership is defined as the demonstration of safety values through the creation of a vision and promotion of well-being with the arts of engagement, honesty, and discipline.
(Griffin & Hu, 2013)	Safety leadership is a specific leader behavior in motivating workers to achieve safety goals.
(T. C. Wu, 2005)	Safety leadership is a process of interaction between leaders and followers, in which leaders can use their influence on followers to achieve organizational safety goals under both organizational and individual factors.

From the point of view of the project owner, Olanipekun, et al. (2017) [20] conducted research on the impact of project owner motivation in improving project performance. The analysis used was Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM). The study shows that the commitment of the project owner (OC) has a positive relationship to Traditional Delivery Performance (TDP) (performance of quality, schedule, and cost). Project owner commitments include: 1) Project team education; 2) Facilitate the integration of other projects; 3) Introduction of project intentions; 4) Provide a vision and rationale for development; 5) Encouraging performance improvement; 6) Support project management organization. Another research that has an important contribution in looking at the project owner's point of view in safety is Huang & Hinze (2006) who developed two studies at once in the same year. The first study was made to develop a reference model in assessing the role of project owners in safety which was compiled using correlation analysis and multilinear regression. The second study was made to apply the model using the Kruskal-Wallis test method and the U-Mann-Whitney test. The results of both studies show that the project owner must have safety as the main value and pursue the goal without accidents through various efforts, including: communication to all participating parties, selecting the right party to carry out the project, and actively participating in safe project execution. Project safety performance can be affected by project owners through selection of contractors with a high level of safety, inclusion of safety requirements in contracts, and participation of project owners in safety management. In this way, the project owner can positively influence the safety performance of the project. Project owners who are active in construction safety management at every stage of project execution can reduce the number of worker accidents.

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5. Involvement of Project Owner Safety Leaders in Construction Activities

In research (C. Wu et al., 2016) [21] there are several actions by project owners in improving safety performance.

Table. 2 Project Owner Safety Leadership Actions in Construction Activities

Dimensions	Actions
Safety influence and role modeling	• Make subordinates feel proud of their work and confident of increased safety • Talk about their safety values with subordinates as often as possible • Never sacrifice security to meet other needs and requirements • Demonstrate a good model for complying with safety rules and regulations • Always take primary responsibility when safety issues arise.
Safety motivation and coaching	• Explain the safety vision clearly and enthusiastically • Seek different perspectives and perspectives on safety to avoid arbitrary decisions • Suggest innovative ways and procedures for safety management • Facilitate safety training and learning throughout the project • Encourage participation of subordinates in safety decision making
Safety caring and individual respect	• Actively cares about the daily life of workers and tries to meet their needs for safety and well-being • Ensure the safety competency needs of workers and provide adequate resources for them • Pay special attention to on-site safety • Be impartial and maintain harmony between different departments when dealing with the safety business.
Safety controlling and performance management	• Instruct workers to achieve safety goals and work with them to achieve goals firmly • Establish a system of safety responsibilities for all project personnel and review their implementation regularly • Change and update safety regulations regularly and in a timely manner • Proactively and comprehensively address near-miss accidents and safety discrepancies • Reward and punish moderately and lawfully to consolidate safety controls

6. RESULTS AND DISCUSSION

With various explanations in the literature from the results of previous studies, the results can be taken for further discussion related to the study of Safety Leadership in the Indonesian Construction Industry, Construction Project Owner Safety Leadership. and aspects of construction project owner safety leadership can ultimately be simplified through the groupings listed in the table below.

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Table 3 Aspects and Details of Safety Leadership for Construction Project Owners

Aspects	Details
Sociological Aspects of Project Owners in ensuring Occupational Safety and Health	Project owners can be stakeholders who have the greatest influence on construction safety (Olanipekun, et al., 2017). In addition to having leadership (psychological) maturity, project owners must also have a high intensity of interaction with providers, sub-providers, to the workforce as a parameter of sociological maturity (Orlando, et al. 2019) [23].
Project Owner's Participatory Aspect in ensuring Public Safety	The maturity of the sociological aspect has an impact on the magnitude of the leader's participation in the project (Oswald & Lingard, 2019). The greater the participation of project owners in the work of service providers (shared leadership), the creativity of the team can increase (Ali, et al., 2020) [24]. In this way, the implementation of construction work safety can also increase
Aspects of Dialogue Intensity for Environmental Safety	The high sociological and participatory aspects of project owners are oriented towards non-technical aspects of the internal project, which need to be continued with maturity in dialogue or communicating with externals (Simmons, et al., 2020) [25]. In terms of construction safety, continuous dialogue or communication (Zhang, et al., 2020) [26] from the project owner to the community around the project and the exposed community is very much needed.
Aspects of the Project Owner's Knowledge Level of Construction Work Safety in ensuring Construction Engineering Safety	The level of leadership maturity after ensuring the non-technical aspects internal to the project and external to the environment, is the maturity of the technical / engineering aspects, namely the knowledge of construction engineering safety (Olanipekun, et al., 2017 & Knode, 2020) and the maturity of the second technical aspect is the project owner to carry out controlling based on applicable regulations / provisions (Nabi, et al., 2020 [27] & Ma, et al., 2018 [28]).

7. CONCLUSION

Research on leadership has been very much done by previous researchers. However, the focus of previous research was only on project implementers (contractors) as parties who were considered to

have direct responsibility for maintaining safety (Oswald & Lingard, 2019). And furthermore, one of the researchers, Oswald, conducted a study to measure the safety leadership of mid-level management in relation to sub-contractors. However, there are not many in-depth studies that discuss the influence of project owners in relation to the implementation of a safety management system in the implementation of construction activities. Therefore, the project owner's point of view in maintaining project safety becomes an interesting and novel sub-topic for more in-depth research. In assessing the existing leadership position of the project owner, a model is needed that can provide findings on the leadership pattern of the project owner related to how well the leadership has been and will be implemented. Many previous researchers have developed models to measure or assess the ability of stakeholders to implement a safety management system. One of the best models to measure is the maturity model as presented by Roghabadi & Moselhi (2020) [22]. Roghabadi stated that the maturity model is a tool for construction companies in providing a clear view of the capabilities and weaknesses of management processes and helping companies understand areas that need improvement. In another definition, Filho & Waterson (2018) state that the maturity model is very effective in measuring construction safety. Referring to the substantial studies mentioned above, the maturity model of construction safety leadership is considered effective to be applied to the construction industry globally and in Indonesia in particular.

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