RESEARCH ARTICLE

OPEN ACCESS

Development of Safety Leadership System to Influence Safety Culture on State-Owned Construction Company in Indonesia

Yusuf Latief*, Rossy Armyn Machfudiyanto**, Gita Novianti*

*(Department of Civil Engineering, Faculty of Engineering, Universitas Indonesia, Kampus UI Depok, West Java, Indonesia, 16424)

Coresponding Author: Yusuf Latief

ABSTRACT

The number of construction projects shows the potential for increased safety issues for workers. Work accidents in the construction sector involving many workers have a higher risk of work injury. However, the protection of workers in the construction services sector is considered not maximal, marked by amount of workplace accidents and not yet fulfillment of safety standards. Increasing occupational safety culture is one of the keys to work accident control. Integration of work safety culture in company can be done by approach of management principles, one of them is the approach of leadership system. Strong, effective, and visible leadership is an important factor in creating a safety healthy environment. This study aims to analyze the dimensions of the safety leadership system required for safety culture, as well as to know the safety culture relationship and the safety leadership system through its indicators. This research was conducted by using research instruments in the form of questionnaires to collect data during the research process and processed using SPSS data univariate program, analyzed descriptively using factor analysis method. Through analysis of collected data obtained the relationship between the dimensions of safety leadership system and safety culture on the object of research on Construction Company.

Keywords: Safety Leadership, Safety Culture, State-Owned Company

------Date of Submission: 05-10-2017 Date of acceptance: 31-10-2017 ______

I. INTRODUCTION

The readiness of SOE companies is needed in all aspects to be able to face MEA competition in the future. One of them is the readiness to implement the provision of safety infrastructure. As indicated by the results of Arifudin's research (2014) in Situmorang's research (2017), it shows that stateowned and private construction companies are still under BUJKA in the implementation of providing a 100% higher safety infrastructure. This is in line with the fact that state-owned enterprises are still struggling to improve their competitiveness and build corporate image when compared to BUJKA because of one of the serious problems in the construction sector related to occupational safety, which is a collapsed safety culture.

The number of construction projects raises the potential for increased employee safety issues. However, the protection of workers' safety in the construction services sector is considered not maximal, marked by the number of occupational accidents and the non-fulfillment of safety standards. The facts in the field stated that the implementation of Occupational Safety and Health Management System (SMK3) in infrastructure development projects has not been implemented

properly. This indicates that the level of awareness of K3 is still very low. Various work accidents are still common in the production process, especially in the construction services sector. Ministry of Public Works and Public Housing (PUPR) said the data on the proportion of accidents in Indonesia for the construction sector became the largest contributor along with manufacturing industry by 32%. This is different from the transport sector (9%), forestry (4%), and mining (2%). Based on the report of the International Labor Organization (ILO), every day there is a work accident that resulted in fatal casualties about 6000 cases. While in Indonesia every 100,000 workers there are 20 people fatal due to work accidents. The number of work accidents in the Indonesian construction services sector can reach 1500 events per year.

High levels of occupational accidents in the construction sector require the implementation Occupational Safety and Management System (SMK3) to be an important right implemented in the construction services sector. Integration of the application of OSH culture in the company can be done through the approach of management principles to not only reduce work accidents, but also to reduce the severity and achievement of zero accident.

In Situmorang's (2017) study, it was explained by Blockley (1995) that the construction industry which has poor safety performance and tried to improve safety performance will not be achieved as long as the safety culture is not well developed. Based on the results of research conducted by Yogiswara (2016), there are nine dimensions of occupational safety culture in state-owned contractor companies in Indonesia. Also supported by Setiawan (2016) research results, that the safety culture in national private contracting companies in Indonesia has nine dimensions. The nine cultural dimensions of state-owned and private companies based on Yogiswara and Setiawan's research are Leadership, Policy, Strategy, Workers, Process, Behavior, Cost, Contract System, and Values.

Therefore, one of the important principle approaches in running SMK3 is the leadership system approach. In the aspect of K3, all parties in all areas of the company have the potential to become leaders, because leadership is related to the perspective and attitude of the leader against all aspects that are his responsibility. Strong, effective, and leadership is an important factor in realizing a healthy and safe working environment. Leadership in the safety aspect is one part of the leadership system (Peter, 2001) and can be defined as a process of interaction between the leader and his work, in which the leader can influence his work to achieve safety objectives within the organization and personal safety. The demand for leadership in the safety aspect is the formation of a leader who prioritizes and controls exemplary factors, strong work ethics, responsibility, character, openness, consistency, communication, and belief. Dimensions of leadership to safety include safety, safety inspiration, safety policy, safety concern, safety monitoring, safety learning, safety coaching, safety caring, and safety controlling (Wu, 2005; Wu et al., 2008; Lu and Yang, 2010; Griffin and Hu, 2013; Wu et al., 2015). These dimensions have the power and potential to influence workers to achieve the expected safety objectives, thus making leadership aspects one of the keys that can affect occupational safety and health in the field of construction.

Based on the United State Occupational Safety and Health Administration (OSHA, 1996), the power of power and the importance of leadership management have been recognized as an important element in safety issues. Safety leadership that can motivate team members to work harder, efficiently and responsibly is strongly supported by availability (O'Dea and Flin, 2001). The Federal Safety Commissioner (2006) also stressed the importance of leadership leadership attitudes of senior managers to achieve safety culture success. Based on the above supporting statements, it is essential to develop and maintain a safety leadership to reduce accident rates and develop safety and health between managers and general workers.

This research aims to:

- 1. Identify the dimensions of leadership system needed in establishing a safety culture in the State-Owned Enterprise Construction Company.
- 2. Identify safety culture factor in State-Owned Enterprise Construction Company.
- 3. Determine the relationship of dimension of safety leadership system to safety culture in State-Owned Enterprise Construction.

II. THEORITICAL REVIEW

Leadership is a major factor affecting the safety of construction (Wu et al., 2016). Leadership values tend to form the basis for developing a vision and encouraging the culture the organization wants to achieve (Skeepers and Mbohwa, 2015). Effective leadership plays an important role in ensuring the success of an organization to deal with high levels of uncertainty, which correspond to the characteristics of a construction project (Tyssen et al., 2014). Therefore, a project team will be directed to succeed or fail largely influenced by the quality of the project manager's leadership skills. Safety leadership is a sub-system of leadership (Peter, 2001), and can be defined as a process of interaction between leaders and followers, where leaders can influence followers to achieve organizational safety in terms of factors related to organizations and individuals (Wu et al., 2007). Occupational Safety and Health Administration (OSHA, 1996) has recognized leadership strength and designated leadership management as a key element in safety issues. Develop and maintain essential safety leadership to reduce accidents and improve safety among managers and general employees (Lu and Yang, 2009). Safety leadership is far more important than policy, through the actions or decisions of safety leaders a clear message to the organization, which policy is important and what is not (Petersen, 2001).

In the previous study, the majority of research on safety leadership focused on leadership behaviors divided into two. namely transformational and transactional leadership (Barling et al., 2002; Kelloway et al., 2006; Lu and Yang, 2010). The behavior of transactional leaders is concerned with oversight and respect, while transformational leader behavior is directed toward inspiration and motivation of labor (Reid et al., 2008).

The transformational / transactional leadership framework of previous research can be considered as the basis of factor structure or safety leadership dimension (Wu et al., 2015). Then of safety leadership with the aim to facilitate the measurement, such as safety motivation, safety inspiring, safety policy, Monitoring), safety learning, safety coaching, safety caring, and safety controlling (Wu et al., 2015; Griffin and Hu, 2013; Lu and Yang, 2010; Wu, 2005; Wu et al., 2008). According to Zhang and Gao (2012), there are safety culture factors and constructs a conceptual model of safety culture. Factors that include these six aspects are state action (policy), social effects, industrial environment, internal company, project conditions, and group influence. Government policy is a reference in safety culture research; social influence is an attitude to the salvation of the state through a universal view; extension of government policy; and reflects the ideology of state safety and efforts to anticipate the safety of the past; the industrial environment absorbs the state and community safety ideology; play the role of supervisory directive in the establishment of safety culture in construction companies; and regulate the production safety of construction companies by making industrial safety criteria in accordance with the state safety system; internal company is the executor of culture as well as project master and employees; and is obliged to place the center for the establishment of an appropriate safety, environmental, and facility culture in the workplace (where the accident occurred); project conditions should be guaranteed to reduce safety hazards; while group influence is a fundamental part of most safety culture and the best reflection of safety culture; and it is important to promote the process of establishing a safety culture in the construction company (Zhang and Gao, 2012).

began to appear various studies on the dimensions

III. RESEARCH METHOD

Stages conducted in this study is divided into several stages, following the flowchart of the stages of the research process undertaken by the author:

Based on the research objectives that have been determined, selected research methods that will be used so as to achieve research objectives. The research method used is survey research method by using research questionnaire and descriptive statistical research method using SPSS v.20 software. In this study the independent variable is the dimension of safety leadership system which is also called variable X. Meanwhile, the dependent variable is the safety culture which is also called the Y variable. The following components of each variable X and Y:

 Table 1. Research Variabel

	Leadership System	
Code	Dimension	
X1	Safety Motivation	
X2	Safety Inspiring	
X3	Safety Policy	
X4	Safety Concern	
X5	5 Safety Monitoring	
X6	Safety Learning	
X7	K7 Safety Coaching	
X8	X8 Safety Caring	
X9	Safety Controlling	
Code	Safety Culture	
Y1	Physical Culture	
Y2	2 Behavior Culture	
Y3	Management and Norm Culture	
Y4 Ideology Culture		

The object of this research is the State-Owned Enterprise of Construction, to represent the object of the research sample that will be addressed are the people who are serving as Project Manager, K3 Manager, OSH Coordinator or Supervisor K3 in State-Owned Construction Company. The required sample is not less than 30 samples as a condition to meet the size / size of the research sample.

Method of collecting data by using questioner is done in three stages, that is:

Phase 1, data collection through the distribution of questionnaire stage 1 to experts / experts for clarification, verification, and validation of research variables.

Experts / experts aim at least 5 people with the following criteria:

- a. Derived from academics, bureaucracy, consultant practitioners related to Occupational Safety and Health (K3) in the field of construction.
- b. Has a minimum of Master Degree with a professional experience of at least 15 years in the field of construction.

Phase 2, after conducting validation-validation to experts / experts and revision of questionnaire stage 2, then the next step is data collection through the spread of questionnaire stage 2 to the research respondents for pilot (pilot survey). The goal is to get feedback on the form of the questionnaire, before the actual data collection. The criteria of respondents research are:

- a. Serving as Project Manager, HSE Manager, K3 Coordinator or OSH Supervisor.
- b. Works under the auspices of the State-Owned Construction Company.
- c. Has educational background that supports / adequate, minimum S1.

Phase 3, collecting data through the distribution of questionnaire stage 3 (result of improvement from questionnaire stage 2) to the research respondents and the data obtained is the actual research data.

IV. RESULT AND DISCUSSIONS

Safety leadership system consists of nine dimensions, namely Safety Motivation, Safety Inspiring, Safety Policy, Safety Concern, Safety Monitoring, Safety Learning Safety Coaching, Safety Caring and Safety Controlling. As shown in the following figure.



Figure 1. Safety Leadership Dimensions

Dimension Safety culture in State-Owned Enterprise Construction is formed by four levels of safety culture, including physical culture, behavior culture, management culture and ideological culture. The four levels of culture can be influenced by the six aspects of environmental system factors, namely the Influence of Working Group, Project Conditions, Corporate Internal, Industrial Environment, Social Influence, and State Policy. Here is a description of each level of culture and aspects of environmental factors that influence it.

Then the linkage of leadership system dimensions to the safety culture of State-Owned Enterprise Construction is based on four levels of safety culture through the environmental system factors that influence it. The relationship is described as follows.

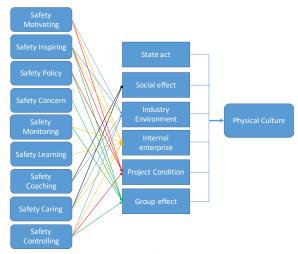


Figure 2. Result Physical Culture Model

Table 2. Interrelation Safety Leadership Dimension with Physical Culture

Safety	Safety Leadership	Improvement System Leadership
Culture	Dimensions	
Dimensions		
Social Effect	Sajety Coaching, Safety Caring	Leaders should be able to provide positive direction to the social environment around the project, regarding the procurement and use of heavy equipment. In the implementation in the field, to achieve a good Physical Culture is not enough only with Safety Coaching and Safety Caring, but also required Safety Concern.
Industrial Environment	Safety Motivation, Safety Inspiring, Safety Coaching, Safety Caring, Safety Controlling	Leaders must be able to act quickly and can ensure the state remains controlled with a wide range of industrial environmental influences that exist. Effect of Safety Controlling compared to other leadership dimension is very big in building Physical Culture through improvement of Industrial Environment. With Safety Controlling, a leader has many interactions in the Industrial Environment.
Internal Enterprise	Safety Motivation, Safety Inspiring, Safety Monitoring, Safety Learning, Safety Caring, Safety Controlling	Leaders are able to control and integrate well the company's internal influence on safety culture related to the use of work tools, especially heavy equipment. To build a Physical Culture through Internal Company, Safety Monitoring is very dominant influence. It can seen from the habits of leaders who always watch and respond quickly if there is a wrong or wrong Physical Culture conducted by workers or even management.
Project Conditions	Sajety Motivation, Safety Inspiring, Safety Policy, Safety Controlling	 The leader must be prepared to handle any project conditions, even under project conditions requiring the procurement and use of complex work tools. Safety Controlling is very dominant influence on the condition of the project to build Physical Culture in the field.
Group Effect	Safety Inspiring, Safety Policy, Safety Concern, Safety Monitoring, Safety Caring, Safety Controlling	Leaders direct workers to work by forming a solid working group, so that work can be completed properly and effectively, especially working groups involving work tools. Influence Working Group will be developed optimally if Safety Caring more dominant executed by leader to form Physical Culture.
Act	Not Influence	

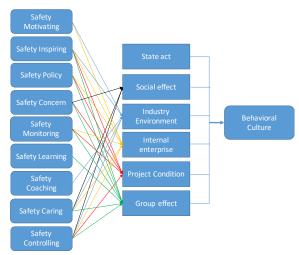


Figure 3 Result Behavioral Culture Model

Table 3. Interrelation Safety Leadership Dimension with Behavioral Culture

Safety	Safety	Improvement System Leadership
Culture	Leadership	
Dimensions	Dimensions	
Social Effect	Safety Concern, Safety Caring, Safety Controlling	Leaders must have strong control over the environment so that even if one day they have to engage or handle social influences to cope well. Safety Controlling dominant influence on Social Influence to establish a Behavioral Culture within the Company.
Industrial Environment	Safety Motivation, Safety Inspiring, Safety Coaching, Safety Caring, Safety Controlling	Everyone involved in an industrial environment should always be oriented towards efficiency and innovation, it is important for the leader to direct it so as to provide benefits to the implementation of the project. Safety Inspiring is very dominant for the establishment of Cultural Behavior through the improvement of Industrial Environment. Role models for workers.
Internal Enterprise	Safety Motivation, Safety Inspiring, Safety Policy, Safety Monitoring, . Safety Caring, Safety Controlling	Leaders should be able to provide inspiration and motivation to workers, inspiration and innovation to motivation and a differentiator with other companies. Similarly to the Industrial Environment, Safety Inspiring is very dominant in its effect on the application of the Company's Internal Behavioral Culture.
Project Conditions	Safety Inspiring, Safety Policy, Safety Concern, Safety Monitoring, Safety Caring	The reflection of the childhood behavior of everyone brought into the project environment should be utilized by the leadership for the success of the project. Safety Inspiring and Safety Policy dominant influence in establishing Behavioral Culture through improvement of Project Conditions.
Group Effect	Safety Inspiring, Safety Policy, Safety Concern, Safety Monitoring, Safety Monitoring, Safety Learning, Safety Caring, Safety Coring, Safety Controlling	With diverse behaviors in the working group should be a positive value for the project, the task of the leader directs each worker to learn the positive character of the other co-workers. Safety Monitoring and Safety Controlling play a very dominant role in the Influence Working Group to establish a Behavioral Culture. Through continuous monitoring and controlling, the Influence of Working Group on Behavioral Culture can be implemented well.
Act	Not Influence	Although in this study there is no dimension of the safety leadership system that is altogether linked to the State Policy for Behavioral Culture, but existing state regulations must continue to be implemented and adhered to. Cultural Behavior comes from the individual self or organization respectively.

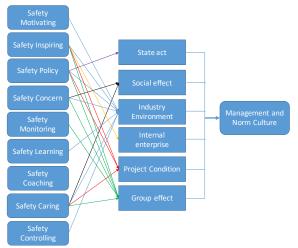


Figure 4. Result Management and Norm Culture Model

Table 4. Interrelation Safety Leadership Dimension with Management and Norm Culture

Safety	Safety	Improvement System Leadership
Culture	Leadership	
Dimensions	Dimensions	
Social Effect	Safety Concern, Safety Caring	1. Company norms created in the form of company regulations may affect the environment, eg CSR, the leader must be concerned with issues related to the regulation and responsible for directing the worker to comply with company regulations that have been made. 2. Safety Caring more dominant influence than the Safety Concern in establishing Management Culture and Norms through the increase of Social Influence.
Industrial Environment	Safety Motivation, Safety Inspiring, Safety Policy, Safety Concern, Safety Learning, Safety Caring, Safety Controlling	Leaders should be able to demonstrate to the industry environment the company's culture is possessed through perfect work on a product that is flawless and fast in its implementation. Safety Policy plays a very dominant role in the establishment of Management Culture and Norms through the improvement of Industrial Environment. Because the OSH policy run by leaders in the Industrial Environment is the benchmark for mission, responsibility and goals can be clearly defined or not as a standard of worker behavior.
Internal Enterprise	Safety Inspiring	Leaders should be able to automatically inspire the company internally, thereby increasing worker safety participation.
Project Conditions	Safety Inspiring, Safety Policy, Safety Caring	Leaders should be able to implement the management set by the company on all projects without exception. In the Project Activity Safety Policy dominant influence in the establishment of Management Culture and Norms.
Group Effect	Safety Inspiring, Safety Policy, Safety Concern, Safety Monitoring, Safety Caring	The leader must ensure that each individual within the working group is able to implement the basic concepts of management established by the company. To establish Management Culture and Norms, Safety Caring is dominant against the Influence of Working Group.
Act	Safety Policy	The company through the leader must establish an OSH system that is relevant to the company's and company's OHS standards to be applied during project implementation

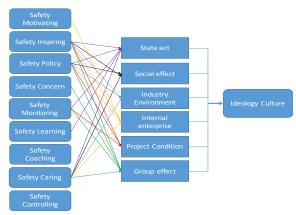


Figure 5. Result Ideology Culture Model

Table 5. Interrelation Safety Leadership Dimension with Ideology Culture

C-f-4-		Ideology Culture
Safety Culture	Safety Leadeship Dimensions	Improvement System Leadership
	Dimensions	
Dimensions	V-4-4- (
Social Effect	Safety Inspiring, Safety Policy, Safety Caring	Leaders should be able to convey the basic ideology of the company so as to inspire the K3 on the local social. Safety Caring dominantly associated with Social Influence in the formation of Ideological Culture in the Company.
Industrial Environment	Safety Inspiring, Safety Policy, Safety Caring	1. With the related leadership dimensions the industrial environment, the leader expected able to bring the company into an example for other companies by creating a working environment with a good K3 concept. 2. Safety Inspiring dominant role in the Environment Industry for the establishment of Ideological Culture.
Internal Enterprise	Safety Motivation, Safety Inspiring, Safety Policy, Safety Caring,	Leaders must be able to apply and maintaining the company's OSH ideology, therefore ideology is not easy to change. Safety Policy is very dominant effect on Internal Company in the formation of Culture Ideology.
Project Conditions	Safety Inspiring, Safety Policy, Safety Monitoring	Project conditions as the spearhead in application ideology of the company, so the leader must ensuring every worker on the project understands about the application of corporate ideology and can adjust on any project condition. Safety Inspiring has greater effect than Safety Policy and Safety Monitoring, related to the establishment of Ideological Culture through Project Conditions.
Group Effect	Safety Inspiring, Safety Policy, Safety Monitoring, Safety Caring	The leader must ensure that every worker in the working group both in the company and the project has run the OSH ideology that the company expects. Safety Inspiring is dominantly associated with the establishment of Ideological Culture through the Influence of Working Group.
Act	Safety Inspiring, Safety Policy, Safety Monitoring, Safety Learning, Safety Caring	Leaders are able to adjust the OSH ideology to the existing state policy, so as not to contradict Safety Policy significantly influence when run in conjunction with the State Policy for the establishment of Ideological Culture.

In the first result obtained nine dimensions of safety leadership system consisting of Safety Motivation, Safety Inspiring, Safety Policy, Safety Concern, Safety Monitoring, Safety Learning Safety Coaching, Safety Caring and Safety Controlling. As explained by Wu et al. (2016) that the dimensions of the safety leadership system based on existing literature include Safety Motivation, Safety Inspiring, Safety Policy, Safety Concern, Safety Monitoring, Safety Learning, Safety Coaching, Safety Caring, Safety Controlling and other dimensions. In this study, the dimensions of the leadership system identified are the nine dimensions mentioned above. Each dimension has an indicator that represents it. These indicators are activities or activities that reflect safety leadership, so as to represent each dimension. In the second result obtained four levels of safety culture in construction companies consisting of Physical Culture, Culture of Behavior, Culture of Management and Norm, and Culture of Ideology. The four levels of culture, each influenced by six aspects of environmental factors, including Social Industrial Environment, Influence. Corporate Internal, Project Conditions, Influence Working Group, and State Policy. This is in accordance with the proposed by Zhang & Gao (2012) on the research of the conceptual model of safety culture in construction companies in China which consists of four cultural levels and six aspects of environmental factors. In the research indicated that the conceptual

model also applies in Indonesia. In addition to the four cultural levels and six aspects of environmental factors formed as a conceptual model of safety culture, also known indicators of each aspect of environmental factors that affect the level of safety culture of construction companies.

Based on the above two results, each variant of the safety leadership system and safety culture has a sequence of factors that can influence it. So in the third result looks how the safety leadership system can be related to the safety culture of construction companies.

In the third result, it is known that the dimension of safety leadership system is related to each level of safety culture through the aspect of environmental factors that influence each level of culture. This shows one way how the leadership system can affect the safety culture, ie through aspects of environmental factors that affect the level of safety culture. Furthermore, the establishment of a safety culture level will reflect the successful establishment of a safety culture in the construction company, as described by Zhang & Gao (2012).

Each aspect of environmental factors is not related to the whole dimension of the leadership system. That is, only the dimensions of the leadership system are related to those aspects of environmental factors, which can affect the success of the safety culture level, so that the safety culture of the construction company can be established. However, that does not mean that leaders do not have to master the dimensions of other leadership systems that are not related to these aspects of environmental factors, but leaders must remain in control of all dimensions of the safety leadership system. So leaders can be quick and responsive in dealing with changing situations and conditions on any aspect of any environmental factor.

In addition to knowing the interrelationship between the dimensions of safety leadership system in each level of culture, also known dimensions of leadership system that has a dominant influence on safety culture. Of the nine dimensions of the leadership system identified, three of them have dominant influences including Safety Inspiring, Safety Caring and Safety Policy. Thus, the dimension of leadership system is considered important to always be implemented by the leader in the implementation of K3 to build a safety culture in the company.

The relationship of the safety and safety culture leadership system to the construction company can be seen more clearly through the conceptual model of the safety culture level shown in the third result. Each conceptual model

the cultural level indicates what leadership dimensions are required by the level of

occupational safety culture of the construction company through its environmental aspects.

However, based on the results of research shown in the conceptual model of behavioral culture, there is one thing that is not unusual compared to other conceptual models. In this conceptual model it is seen that the aspect of state policy factors has no relevance to any dimension of the safety leadership system. As has been disclosed in correlation analysis, this can occur due to the number of respondents who are lacking to interpret the relationship dimension of the leadership system with the aspect of state policy factors at the level of behavioral culture. Based on expert opinion, this could happen because the formation of Behavioral Culture is formed from individual habits of each (Expert Opinion 2, Expert End Validation Process). However, state policies should still be implemented, implemented and adhered to by individuals (Expert View 1, Expert End Validation Process). Just as corporate policy-making is customized according to existing state policies, it indirectly shapes the behavioral culture of the company as well as the behavioral culture of the individual worker in the company. So the dimensions of the safety leadership system have no direct relation to the aspect of state policy factors at the level of Behavioral Culture, but the establishment of Worker Behavioral Culture is driven by the firmness of the implementation of corporate policies based on state policy.

Based on the above discussion, it is clear that the safety leadership system has relevance to safety culture through the dimensions of safety leadership system and environmental factors aspect to level of safety culture. Thus, the leadership system can influence the safety culture through the basis of the implementation of the construction company. However, there is also a need for cooperation of many parties to improve the implementation of safety leadership system to build safety culture in state-owned construction company.

V. CONCLUSION

The dimensions of the safety leadership system required to build a safety culture in the State-Owned Enterprise Construction Company consists of nine dimensions, namely Safety Motivation, Safety Inspiring, Safety Policy, Safety Concern, Safety

REFERENCES

- [1]. Situmorang, L.A.I. (2017). Structural Equation Model Dimensi Budaya Keselamatan Kerja Konstruksi di Lingkungan Badan Usaha Jasa Konstruksi Asing di Indonesia. Universitas Indonesia, Indonesia.
- [2]. Yogiswaraa, Yoko. (2016). Structural Equation Model Dimensi Budaya

Monitoring, Safety Learning Safety Coaching, Safety Caring and Safety Controlling.

The safety culture of the State-owned Enterprise Construction Company consists of four cultural levels consisting of Physical Culture, Behavioral Culture, Management Culture and Norms, and Cultural Ideology. The four levels of culture, each influenced by six aspects of environmental factors, including Social Influence, Industrial Environment, Corporate Internal, Project Conditions, Influence Working Group, and State Policy. Physical Culture is influenced by five aspects of environmental factors, namely Social Influence, Industrial Environment, Internal Company, Project Conditions. and Influence Working Meanwhile, Culture of Behavior, Culture of Management and Norm, and Culture of Ideology is influenced by all aspects of environmental factors.

Implementation of nine dimensions of safety leadership system can build safety culture to construction company through its environmental factor aspect with the aim of increasing the four levels of safety culture to build safety culture in State-Owned Construction Company. So the smallest aspect in occupational safety culture can be touched through leadership attitudes appropriate to the circumstances and conditions of the environment. Success in increasing the four levels of culture will be directly proportional to the build-up of the State-Owned Construction Company's safety culture.

VI. SUGGESTIONS

This research is focused on finding the relationship between safety leadership system and safety culture formed, but not further examining the magnitude of the effect of safety leadership system on safety culture success in construction company. So the next research can focus on that goal.

Further research can be done with the research object of Private Construction Companies and / or Foreigners.

Further research can be continued on the identification of risks that can derail the role or function of the leadership system that has been identified so that the safety culture in the State-Owned Construction Company is not built.

- Keselamatan Kerja Konstruksi di Lingkungan BUMN. Universitas Indonesia, Indonesia.
- [3]. Setiawan, Raden Mahendra. (2016). Structural Equation Model Dimensi Budaya Keselamatan Kerja Konstruksi di Lingkungan Kontraktor Swasta Nasional di Indonesia. Universitas Indonesia, Indonesia.

- [4]. Northhouse, Peter G. (2001). Leadership Theory and Practise, 4th edition. Thousand Oaks, CA: Sage Publications, Inc.
- [5]. Wu, C., Fang, D., Li, N. (2015) Roles of Owners Leadership in Construction Safety: The Case of High-Speed Railway Construction Projects in China. Int. J. Proj. Manag. 107, 185-194.
- [6]. Wu, Chunlin et al. (2016). How Safety Leadership Works Among Owners, Contractors and Subcontractors in Construction Projects. International Journal of Project Management. Vol 34 Hal 789-805.
- [7]. Wu, T.C. (2005). The Validity and Reliability of Safety Leadership Scale in Universities of Taiwan. Int. J. Technol.Eng. Educ. 2 (1), 27–42.
- [8]. Wu, T.C., Chen, C.H., Li, C.C. (2008). A Correlation Among Safety Leadership, Safety Climate and Safety Performance. J. Loss Prev. Process Ind. 21 (3). 307–318.
- [9]. Lu, C.S., Yang, C.S. (2010). Safety Leadership and Safety Behavior in Container Terminal Operations. Saf. Sci.48 (2), 123–134.s
- [10]. Griffin, M.A., Hu, X. (2013). How Leaders Differentially Motivate Safety Compliance and Safety Participation:
- [11]. The Role of Monitoring, Inspiring, and Learning. Saf. Sci. 60, 196–202.
- [12]. O'Dea,A., & Flin, R. (2001) Site Managers and Safety Leadership in The Offshore Oil and Gas Industry. Safety Science. 37, 39-57.
- [13]. Health and Safety Executive (HSE). (2003). The Management of Health and

- Safety at Work and Fire Precautions (Worksplace) (Amendment) Regulations 2003. London: TSO.
- [14]. Skeepers, N.C. & Mbohwa, Charles. (2015). A Study on The Leadership Behaviour, Safety Leadership and Safety Performance on The Construction Industry in South Africa. Science Direct. Procedia Manufacturing 4 (2015) 10-16.
- [15]. Tyssen, A.K., Wald, A., Spieth, P. (2014) The Challenge of Transactional and Transformasional Leadership in projects. Int. J. Proj. Manag. 32 (3), 365-375.
- [16]. Barling, J., Loughlin, C., Kelloway, E.K. (2002) Development and Test of a Model Linking Safety-Specific Transformational Leadership and Occupational Safety. J. Appl. Psychol. 87 (3), 488-496.
- [17]. Kelloway, E.K., Mullen, J., Francis, L. (2006). Divergent Effects of Transformational and Passive Leadership on employee Safety. J. Occup. Health Psychol. 11 (1), 76-86.
- [18]. Reid, H., Flin, R., Mearns, K., (2008). Influence from The Top: Senior Managers and Safety Leadership. 2008 SPE International Conference on Health, Safety, and Environment in Oil and Gas Exploration and Production. SPE, Huston, USA, pp. 1-5.
- [19]. Zhang, Lianying & Gao, Yuan. (2012). Safety Culture Model and Influensing factors Analysis in Construction Enterprise of China. Journal of Applied Sciences, Engineering and Technology. 4(18): 3297-3312.

Yusuf Latief. "Development of Safety Leadership System to Influence Safety Culture on State-Owned Construction Company in Indonesia." International Journal of Engineering Research and Applications (IJERA), vol. 7, no. 10, 2017, pp. 85–92.