

Antecedent Safety Factor and Their Impact on Operation Performance at Construction Services Company, Serang Regency

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DOI: <https://doi.org/10.52403/ijrr.20230317>

ABSTRACT

The purpose of this research is to analyze antecedent safety factor and their impact on operation performance at Construction Services Company, Serang Regency. This type of research in this research is quantitative research. The research is conducted at 5 Construction Services Companies, Serang Regency with a total population of 516 employees by using the simple random sampling approach. The number of questionnaires filled in are 306 respondents. The data analysis method is analyzed using the structural equation modeling partial least square (SEM-PLS) model with the help of SmartPLS 3.0 software. The results show that factor design has no significant effect on safety behavior. Factor design has significant effect on safety culture. Factor design has significant effect on operational performance. Factor management has significant effect on safety behavior. Factor management has significant effect on safety culture. Factor management has significant effect on operational performance. Safety behavior has significant effect on safety culture. Safety behavior has significant effect on operational performance. Safety culture has significant effect on operational performance. Safety behavior is not able to mediate effect of factor design on operational performance. Safety behavior is able to mediate effect of factor management on operational performance. Safety culture is able to mediate effect of factor design on operational performance. Safety culture is able to mediate effect of factor management on operational performance. Safety culture is able to mediate effect of safety behavior on operational performance.

Keywords: Factor Design, Factor Management, Operational Performance, Safety Behavior, Safety Culture

INTRODUCTION

Construction Services Company is a business entity engaged in the field of construction, infrastructure, facilities, and physical infrastructure for the benefit of the community in accordance with applicable laws and regulations. The construction service industry is an industry that includes all parties involved in the construction process, both professionals, construction workers and suppliers, who work together to meet the needs of industry players. Industrial construction includes construction of oil refineries, gas industry, mining, etc. As an industrial sector, Construction Services Company has several very specific characteristics, which are very different from other service industries. Companies in this industrial sector are companies with very high risks and full of uncertainties. Occupational safety and health is important for companies because the impact of work-related accidents and diseases can not only harm employees directly or indirectly, but also companies (Ariani and Peli, 2020). The previous findings remain with previously unexplained safety behavior antecedents and safety factors learn. Previous studies have shown not optimal results in improving the operational performance of the Construction Services

Company through increased discipline in the implementation of occupational safety and health, and the company's outreach program is still lacking in providing an understanding of the hazards and risks of occupational safety and health in the construction sector for the last five years (2014 to 2018). It can be seen that in 2014 there were 105,383 accidents with 2,375 fatalities. In 2015, there were 110,285 accidents with 2,308 fatalities. In 2016, there were 101,367 accidents with 2,382 fatalities. In 2017, there were 123,000 accidents with 3,000 fatalities. In 2018 from January to March there were 5,318 accidents with 87 fatalities. Research results Soebroto and Suwitho (2022) demonstrate that safety leadership behavior has a direct and significant positive effect on safety culture.

From 2019 to 2022, a total of 604 construction accidents occurred in Banten Province, especially minor accidents. The role of safety behavior and safety culture in moderating the impact of factor design and factor management on the operational performance of the construction industry in Serang District is still unclear. Basically controlling the emergence of unresolved risks is very difficult and its management starts with identifying risks and looking for ways to reduce their impact on achieving project objectives (Sukmana and Wijayanti, 2022).

Since the government issued occupational safety and health regulations, the construction industry has a high rate of work accidents and a high demand for labor protection, so efforts are needed to achieve zero accidents in the construction industry (Maddeppungeng et al., 2021). Safety culture includes the application of safety values, the creation of an effective, helpful and safe attitude, the creation of a healthy and safe work environment, and the application of a legal system and management methods (Djunaidi, 2022). Safety behavior is the systematic application of psychology to study human behavior

towards safety issues at work (Wijaya and Paing, 2018).

The purpose of this research is to analyze antecedent safety factor and their impact on operation performance at Construction Services Company, Serang Regency.

RESEARCH METHODS

This type of research in this research is quantitative research. Quantitative research aims to analyze the influence between hypotheses made based on empirical anchors and existing literature and theory (Ansori, 2020).

Population is the number of inhabitants, both humans and other living things in a certain place or environment. Often we interpret the population as a group of people who occupy an area (Emzir, 2011). The research is conducted at 5 Construction Services Companies, Serang Regency with a total population of 516 employees by using the simple random sampling approach, the minimum number of samples taken in inferential statistical research using the structural analysis method of equation modeling is 5 x the number of indicators used (Sugiyono, 2013). The variables in this study are 2 exogenous variables and 2 intervening variables plus 1 endogenous variable, which has 56 indicators, so a sample of 5 X 56 or equal to 280 is needed, so based on the calculation above the number of samples to be taken are 280 respondents. However, in its development the number of questionnaires filled in are 306 respondents.

The data analysis method is analyzed using the structural equation modeling partial least square (SEM-PLS) model with the help of SmartPLS 3.0 software. SEM-PLS is a method for structural equation modeling that allows estimation of complex cause-effect relationships in path models with latent variables (Surachman, 2016).

RESULTS

R Square

Table 1. R Square

Variable	R Square
Operational Performance	0.903
Safety Behavior	0.780
Safety Culture	0.840

Source: Data Processing Results of SmartPLS 3.0 (2023)

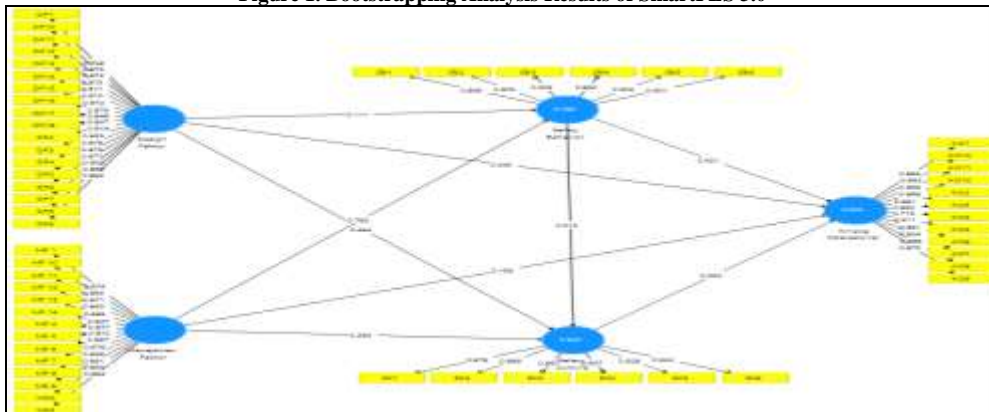
Based on the R square table above, the R square value is 0.780 for safety behavior which illustrates the influence of factor design and factor management of 78.0%. As for the safety culture, the R square value was 0.840 which illustrates the influence of factor design, factor management, and

safety behavior of 84.0%. For operational performance, an R square value of 0.903 was obtained which illustrates the influence of factor design, factor management, safety behavior, and safety culture on operational performance of 90.3%. Based on the three R square values above, it can be concluded that each endogenous variable has a strong influence on its endogenous variables, considering that the R square value is >0.67.

Hypothesis Testing

From the results of the bootstrapping analysis, the statistical T values for the direct and indirect effects of each hypothesis tested are as follows:

Figure 1. Bootstrapping Analysis Results of SmartPLS 3.0



Source: Data Processing Results of SmartPLS 3.0 (2023)

Table 2. Standard Deviation Results, T Statistics & P-Values

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ((O/STDEV))	P Values
$X_1 \rightarrow Z$	0.254	0.247	0.068	3.759	0.000
$X_1 \rightarrow Y_1$	0.111	0.124	0.102	1.086	0.278
$X_1 \rightarrow Y_2$	0.487	0.481	0.096	5.103	0.000
$X_2 \rightarrow Z$	0.677	0.683	0.061	11.142	0.000
$X_2 \rightarrow Y_1$	0.783	0.770	0.096	8.197	0.000
$X_2 \rightarrow Y_2$	0.449	0.454	0.095	4.713	0.000
$Y_1 \rightarrow Z$	0.492	0.487	0.129	3.805	0.000
$Y_1 \rightarrow Y_2$	0.212	0.218	0.080	2.663	0.000
$Y_2 \rightarrow Z$	0.334	0.331	0.077	4.327	0.000
$X_1 \rightarrow Y_1 \rightarrow Z$	0.047	0.049	0.043	1.071	0.285
$X_1 \rightarrow Y_2 \rightarrow Z$	0.155	0.150	0.051	3.025	0.003
$X_2 \rightarrow Y_1 \rightarrow Z$	0.330	0.321	0.102	3.234	0.001
$X_2 \rightarrow Y_2 \rightarrow Z$	0.095	0.096	0.043	2.213	0.027
$Y_1 \rightarrow Y_2 \rightarrow Z$	0.071	0.072	0.030	2.385	0.017

Source: Data Processing Results of SmartPLS 3.0 (2023)

Information:

X_1 = Factor Design

X_2 = Factor Management

Z=Operational Performance

Y_1 =Safety Behavior

Y_2 =Safety Culture

The results show that factor design has no significant effect on safety behavior. Factor design has significant effect on safety culture. Factor design has significant effect on operational performance. Factor management has significant effect on safety behavior. Factor management has significant effect on safety culture. Factor management has significant effect on operational performance. Safety behavior has significant effect on safety culture. Safety behavior has significant effect on operational performance. Safety culture has significant effect on operational performance. Safety behavior is not able to mediate effect of factor design on operational performance. Safety behavior is able to mediate effect of factor management on operational performance. Safety culture is able to mediate effect of factor design on operational performance. Safety culture is able to mediate effect of factor management on operational performance. Safety culture is able to mediate effect of safety behavior on operational performance.

CONCLUSION AND SUGGESTION

The results show that factor design has no significant effect on safety behavior. Factor design has significant effect on safety culture. Factor design has significant effect on operational performance. Factor management has significant effect on safety behavior. Factor management has significant effect on safety culture. Factor management has significant effect on operational performance. Safety behavior has significant effect on safety culture. Safety behavior has significant effect on operational performance. Safety culture has significant effect on operational performance. Safety behavior is not able to mediate effect of factor design on operational performance. Safety behavior is able to mediate effect of factor management on operational performance. Safety culture is able to mediate effect of factor design on operational performance. Safety culture is able to mediate effect of factor management on operational performance. Safety culture

is able to mediate effect of safety behavior on operational performance.

Based on the results of this study, the researchers provide the following suggestions:

1.For the Company

Researchers suggest for Construction Services Companies that the application of occupational safety and health in the construction sector is prioritized because the most frequent work accidents occur in the construction service industry and the large number of Construction Services Companies, Serang Regency, especially with the small industry classification category has the potential for work accidents considering the implementation of safety culture in this type of industry is still not maximized.

2.For Further Research

- a. This research was conducted at the Construction Services Company, Serang Regency, for this reason so that the scope of this research is more comprehensive and so that conclusions about safety behavior and safety culture as mediators of design factors and factor management on operational performance can be broader, so for further research the survey conducted can include Construction Services Company with a larger area scale.
- b. The construction service sector with the small scale category has a high risk because of the lack of implementation of occupational safety and health. Besides that, it is also very risky for work accidents to occur due to the lack of supervision of occupational safety and health due to budget constraints, so it is hoped that future researchers will emphasize and include budget variables or occupational safety and health costs to minimize the risk of work accidents in the construction service sector.

Declaration by Authors

Acknowledgement: None

Source of Funding: None

Conflict of Interest: The authors declare no conflict of interest.

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How to cite this article: Samsidik, Uli Wildan Nuryanto, Tata Rustandi. Antecedent safety factor and their impact on operation performance at construction services company, Serang Regency. *International Journal of Research and Review*. 2023; 10(3): 153-157. DOI: <https://doi.org/10.52403/ijrr.20230317>
