Copyright © The Author(s) 2026
Journal Social Society Vol 6 No 2, April - Juni 2026

The Influence of Occupational Health and Safety (OHS) on Employee Work Quality at PT Semen Tonasa, Pangkep Regency

Nurfadillah [1], Edi Jusriadi [2], M. Yusuf Rendra Anggoro [3]

[1, 2, 3] Muhammadiyah University of Makassar, Indonesia

* nurfadillah@email.com

Abstract

This study is urgent because improving Occupational Health and Safety (OHS) is crucial to enhancing employee work quality, productivity, and accident prevention in a high-risk industrial environment like PT Semen Tonasa. The study on the influence of occupational health and safety (OHS) on employee work quality at PT Semen Tonasa is important because employees are the organization's main assets, and their performance is strongly affected by workplace conditions. The cement industry is a high-risk sector, making OHS not only a legal obligation but also a strategic effort to safeguard employee safety and enhance productivity. This research aims to determine the influence of occupational safety and occupational health on the quality of employee work at PT Semen Tonasa, Pangkep Regency. The type of data used is quantitative data obtained through distributing questionnaires to 59 respondents. Data collection through questionnaires distributed to respondents. The data analysis technique used is multiple linear regression with the help of the Statistical Package for the Social Sciences (SPSS) version 15.0 application. The research results show that the work safety variable (X1) does not have a positive and significant effect on work quality (Y), with a significance value of 0.397 > 0.05 and a t value of 0.854 < t table 2.003. Meanwhile, the occupational health variable (X2) has a positive and significant effect on work quality, as indicated by a significance value of 0.000 < 0.05 and a t value of 4.017 > t table 2.003. Simultaneously, work safety (X1) and work health (X2) have a significant effect on employee work quality with a significance value of 0.001 < 0.05 and a calculated F value of 8.386 > F table 3.16. Based on these results, it can be concluded that together occupational safety and health have a significant effect on the quality of employee work at PT Semen Tonasa.

Keywords: *Work safety, Work Health, Work Quality*

Introduction

Human resources (HR) are universally acknowledged as one of the most vital assets within any organization, as they serve as the central driver for achieving strategic objectives and maintaining long-term competitiveness. The effectiveness of an organization in realizing its goals largely depends on how well it manages, develops, and sustains its human capital. The productivity of employees is not merely a function of their skills and knowledge but is also strongly shaped by the work environment in which they operate (Hadi et al., 2026). Ensuring a safe, supportive, and enabling environment is crucial because when employees feel secure, valued, and comfortable in the workplace, they are more likely to contribute beyond expectations, thereby enhancing organizational performance as a whole (Hanifah & Chaeruddin, 2024).

https://doi.org/10.30605/jss.6.2.2026.738

The importance of occupational health and safety (OHS), which is not only a compliance requirement but also a fundamental determinant of employee well-being and organizational success (Alamsyah et al., 2025; Edwar et al., 2025). Work quality, the extent to which an employee can accomplish tasks effectively and efficiently in accordance with established standards (Harfa et al., 2025). It is a multidimensional construct encompassing both tangible aspects, such as accuracy and productivity, and intangible aspects, such as commitment, initiative, and creativity (Nasution et al., 2021; Hsb & Ramadhany, 2023). In the modern industrial setting, OHS has emerged as one of the most influential factors shaping work quality (Farosa & Husain, 2025). A safe workplace environment not only mitigates the risk of accidents and illnesses but also instills a sense of trust among employees, allowing them to focus more effectively on their tasks. The presence of a robust OHS framework contributes to the psychological security of employees, enabling them to work confidently and productively (Bamba et al., 2023; Saputra et al., 2024).

OHS is more than a legal or technical requirement; it is a strategic enabler of employee performance and organizational sustainability. The importance of OHS is well established in international discourse. The International Labour Organization (ILO) consistently emphasizes that safe and healthy working conditions are a fundamental human right and an integral part of decent work. Globally, workplace accidents and occupational diseases remain a pressing concern, with millions of workers affected annually. The ILO estimates that approximately 2.3 million people die each year due to work-related accidents or diseases, while hundreds of millions more suffer non-fatal injuries (ILO, 2021). These figures not only highlight the human cost of inadequate safety measures but also the significant economic burden on organizations and societies at large. Lost productivity, medical costs, compensation, and reputational damage collectively underscore why investment in OHS is indispensable. Within this global context, organizations, especially those operating in high-risk industries such as manufacturing, mining, and construction, are increasingly compelled to prioritize OHS as a strategic imperative. In Indonesia, the issue of OHS has also gained prominence in both policy and practice.

The Ministry of Manpower has introduced various regulations and standards designed to safeguard workers and promote occupational health, such as Law No. 1 of 1970 on Work Safety and subsequent ministerial regulations. Despite these legal frameworks, however, the implementation of OHS remains uneven across sectors and regions. Many companies, particularly in the industrial and manufacturing sectors, continue to face challenges in enforcing compliance and cultivating a safety-oriented culture (Sari et al., 2023). The translation of policies into effective practice often lags due to limited resources, lack of awareness, and insufficient training (Sitorus et al., 2023). Consequently, workers in high-risk industries frequently remain exposed to unsafe conditions and practices. Organizations are ethically and legally obligated to ensure the safety of their employees and stakeholders at all times (Sianturi & Siregar, 2023). This obligation goes beyond preventing accidents to include the creation of a sustainable and health-conscious work culture. OHS should be viewed as a basic human right and an essential part of corporate responsibility (Harahap et al., 2024).

When employees perceive that their organization is committed to their safety and well-being, it enhances trust and strengthens the employer–employee relationship (Palanga et al., 2026). Several empirical studies reinforce this perspective (Putri et al., 2023). A significant positive relationship between OHS implementation and employee performance, that OHS initiatives improve not only productivity but also employee satisfaction and retention (Harmayanto et al., 2023). These findings align with broader evidence indicating that OHS is

positively correlated with performance outcomes across industries and national contexts. The relevance of OHS is particularly evident in industries characterized by heavy machinery, complex processes, and hazardous working conditions, such as the cement industry. Cement manufacturing is inherently associated with multiple occupational hazards, ranging from exposure to dust and chemicals to risks of injury from machinery and physical strain. PT Semen Tonasa, located in Pangkep Regency, is one of Indonesia's leading cement producers and a state-owned enterprise tasked with fulfilling national development needs.

As a critical player in the country's construction supply chain, PT Semen Tonasa faces immense pressures to maintain high production volumes while simultaneously ensuring the safety and well-being of its workforce. The dual challenge of maintaining efficiency and safeguarding employees makes OHS a matter of strategic importance for the company. Field observations and interviews with the head of the OHS section at PT Semen Tonasa reveal significant challenges in the implementation of safety measures. Several unsafe conditions were documented, including detached dome doors, collapsed zinc roofs, corroded flooring, inadequate lighting, leaking hydrant pipes, scattered metal sheets obstructing roads, and excessive dust in production areas (Mutiara et al., 2024).

Additional concerns included unsecured scaffolding, improperly fastened oxygen cylinders, malfunctioning lifts, and stagnant water from air conditioning systems, all of which pose risks to worker safety. These conditions reflect systemic gaps in facility maintenance and hazard control. Moreover, unsafe worker behaviors were also observed, such as neglecting to wear helmets, gloves, or safety shoes; failing to use full-body harnesses when working at heights; smoking in restricted areas; and improperly handling personal protective equipment (PPE). Such unsafe actions compound the risks posed by unsafe conditions, creating a hazardous workplace environment. The persistence of unsafe conditions and behaviors suggests the need for a comprehensive and integrated approach to OHS management at PT Semen Tonasa. Approximately 78% of workplace accidents are attributable to human error, 20% to unsafe conditions, and 2% to other factors.

This indicates that human behavior plays a disproportionately large role in workplace accidents, underscoring the importance of training, awareness, and culture in addition to physical safety measures. Addressing OHS challenges therefore requires interventions on multiple fronts, including facility improvements, hazard controls, behavioral training, and stricter enforcement of safety protocols (Batubara et al., 2023). Without such improvements, the company risks not only endangering its employees but also incurring significant economic losses through production disruptions, compensation claims, and reputational damage. Beyond compliance and risk management, however, OHS carries broader strategic implications. A strong safety culture can serve as a source of competitive advantage by enhancing employee morale, reducing turnover, and improving productivity. When employees feel safe and valued, they are more motivated to contribute positively to organizational goals.

Firms with strong OHS and CSR initiatives tend to experience better financial performance, as these efforts enhance stakeholder trust and brand reputation. For PT Semen Tonasa, strengthening OHS is therefore not only a moral and legal obligation but also a strategic investment in long-term competitiveness. The current study is motivated by the recognition of these issues and the need to empirically examine the relationship between OHS and employee work quality within the context of PT Semen Tonasa. The cement industry represents a high-risk sector where OHS practices can have profound implications for employee safety, performance, and organizational outcomes. While previous research has

demonstrated the general benefits of OHS, there remains a need for context-specific studies that capture the unique challenges and dynamics of individual industries and organizations. By focusing on PT Semen Tonasa, this research aims to contribute to the understanding of how OHS practices influence employee work quality in the Indonesian industrial context, thereby providing insights that are relevant to both academia and practice.

This study seeks to address several interrelated questions: How does the implementation of OHS policies and practices at PT Semen Tonasa affect employee perceptions of safety and well-being? To what extent do these perceptions translate into improvements in work quality? What are the barriers and enablers of effective OHS implementation in the company's production environment? And finally, how can lessons from PT Semen Tonasa inform broader strategies for enhancing OHS in Indonesia's industrial sector? By exploring these questions, the research seeks to build a comprehensive understanding of the interplay between OHS and employee performance in a high-risk organizational setting. The significance of this study lies not only in its potential contribution to academic literature but also in its practical relevance for managers, policymakers, and other stakeholders.

The novelty of this research lies in its specific focus on examining the influence of occupational health and safety (OHS) implementation on employee work quality within the high-risk cement industry at PT Semen Tonasa a topic that has been rarely explored empirically in Indonesia. For managers at PT Semen Tonasa, the findings can inform strategies to strengthen safety culture, improve compliance, and enhance work quality. For policymakers, the study provides empirical evidence that can support the design of more effective OHS regulations and enforcement mechanisms. For the broader academic community, the study contributes to the growing body of literature on the relationship between workplace safety, employee performance, and organizational outcomes, particularly within the context of emerging markets such as Indonesia.

OHS is not merely a technical or regulatory requirement but a multidimensional construct that encompasses legal, ethical, social, and strategic dimensions. Its significance extends beyond accident prevention to include the promotion of employee well-being, the enhancement of organizational performance, and the creation of sustainable competitive advantage. The challenges observed at PT Semen Tonasa illustrate the complex interplay between unsafe conditions, unsafe actions, and organizational culture, highlighting the need for comprehensive solutions that address both human and systemic factors. This study, titled "The Influence of Occupational Health and Safety on Employee Work Quality at PT Semen Tonasa, Pangkep Regency," is therefore timely and necessary. It seeks to advance understanding of how OHS practices shape employee performance in the Indonesian cement industry, offering insights that are both academically rigorous and practically relevant.

Method

This study employs a quantitative research approach aimed at analyzing the causal relationship among occupational safety, occupational health, and work quality at PT Semen Tonasa. The quantitative approach was selected because it enables the generation of empirically tested findings through measurable indicators, statistical analyses, and hypothesis validation. This approach is also grounded in established theories of occupational safety and health as formulated by the International Labour Organization (ILO), as well as performance theories that identify safety and health factors as critical determinants of employee productivity.

The research was conducted at PT Semen Tonasa, one of Indonesia's leading cement manufacturing companies located in South Sulawesi. Data collection took place from January to February 2025, ensuring that the research activities were carried out within a controlled timeframe while reflecting the company's actual operational conditions. The study population comprised 144 employees working in production and operational units, selected because of their high exposure to occupational hazards. This group represents the most relevant population for assessing how safety and health conditions impact work quality. The sample size was determined using the Slovin formula with a 10% margin of error, resulting in a total of 59 respondents.

The research utilized both primary and secondary data sources. Primary data were collected through questionnaires distributed to respondents. The instrument employed a five-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree," enabling subjective perceptions to be quantified into measurable data. Secondary data were obtained from internal company records, including safety reports, accident logs, employee health service documentation, and performance evaluation reports. The integration of secondary data served to verify and reinforce the primary data, thereby reducing bias and enhancing the reliability of the findings. Three data collection techniques were applied.

Structured observation was conducted to obtain direct insight into workplace conditions, safety practices, and potential operational risks. This method enabled the researcher to evaluate the consistency between survey responses and actual field conditions. Questionnaires served as the primary tool for capturing employee perceptions of occupational safety, occupational health, and work quality. Document review complemented both observations and questionnaires, providing additional verification through the examination of recorded workplace incidents, safety training programs, and health monitoring activities. The combination of these techniques strengthened the accuracy and comprehensiveness of the data obtained.

The study involved three principal variables: occupational safety (X1), occupational health (X2), and work quality (Y). Occupational safety was operationalized through indicators such as compliance with safety procedures, use of personal protective equipment, and accident-prevention mechanisms. Occupational health was measured through indicators including health check-ups, ergonomic practices, and mental well-being support. Work quality was assessed using indicators related to task completion, error rates, and consistency of work outputs. The research instrument was developed through a rigorous process to ensure alignment with theoretical constructs. A pilot test was conducted prior to full distribution to assess clarity, readability, and respondent comprehension. Validity testing was carried out using Pearson's correlation coefficient, where items with correlation values above 0.30 were retained. Reliability testing used Cronbach's Alpha, with coefficients of 0.70 or higher considered acceptable. Instruments that met both validity and reliability criteria were deemed suitable for the main data collection.

Data analysis was conducted in several stages. Classical assumption testing included normality testing to ensure that the residuals followed a normal distribution, multicollinearity testing to verify that the independent variables were not highly correlated, heteroscedasticity testing to assess the constancy of variance among residuals, and autocorrelation testing using the Durbin–Watson statistic to confirm the absence of serial correlation. Multiple linear regression analysis was employed to examine the influence of occupational safety and occupational health on work quality. The t-test determined the partial effects of each

independent variable, while the F-test assessed their simultaneous influence on the dependent variable. All respondents were informed about the purpose and procedures of the study and provided voluntary consent prior to participation.

Results

Respondent Characteristics

The respondents in this study were employees of PT Semen Tonasa who met the criteria as respondents consisting of the production department, slag production department, maintenance department, department mine and governance material standard, generation department and planning and control department as many as 144 people. The number of questionnaires returned and usable is 59 questionnaires. Description of the characteristics of respondents is presented in the table following:

Table 1. *1Characteristics*

Category	Sub-category	Frequency	Percentage
Total Sample	-	59	100%
Gender	Male	59	100%
	Female	0	0%
Work Duration	Less than 1 year	0	0%
	5–10 years	24	40.68%
	More than 10 years	35	59.32%

Based on Table 4. egarding the gender of respondents, it can be seen that known that all over Respondent in study This is 59 men (100%). This shows that the average employee PT Semen Tonasa who worked and were the samples of this research were male. In addition, the length of service of employees who had worked for <1 year was 0%, 5-10 year as big as 40.68% And employee Which has working >10 Year as big as 59.32%.

Frequency Distribution of Research Variables

The analysis of the description of respondents' answers regarding work safety variables is based on respondents' answers to statements such as those contained in the questionnaire distributed to respondents. Variations in respondents' answers for work safety variables can be seen in the following table:

Table 2. *2Responses to Occupational Safety (X1)*

Item	STS	%	TS	%	KS	%	S	%	SS	%	Total Respondents	Mean
X1	24	41.4%	-	-	-	-	34	58.6%	-	-	59	4.41
X2	13	22.4%	-	-	3	5.2%	42	72.4%	-	-	59	4.17
X3	14	24.1%	-	-	-	-	44	75.9%	-	-	59	4.24
X4	29	50.0%	-	-	-	-	29	50.0%	-	-	59	4.50
X5	23	39.7%	-	-	-	-	35	60.3%	-	-	59	4.40
X6	24	41.4%	-	-	-	-	34	58.6%	-	-	59	4.41

The occupational safety variable (X1) consists of two indicators physical work environment and psychological work environment represented by six questionnaire items covering facilities, work equipment, PPE availability and use, equipment operation, training, established procedures, employee compliance, and alignment between procedures and facilities. Responses from 59 employees show that the highest mean score is found in the psychological work environment indicator (4.50), indicating strong coworker relationships and shared awareness of occupational safety and health at PT Semen Tonasa. The lowest mean score appears in the physical work environment indicator (4.17), suggesting lingering

concerns about the safety and condition of work equipment. These results highlight the need for improved maintenance and assurance of equipment safety. The higher psychological score reflects strong social support, effective communication, and positive supervisory relationships, which employees experience more directly through daily interactions. In contrast, issues in the physical work environment require greater operational and financial investment, which may contribute to their lower assessment.

The descriptive analysis of respondents' answers regarding the Occupational Health variable is based on respondents' answers to statements such as those contained in the questionnaire distributed to respondents. Variations in respondents' answers for the Occupational Health variable can be seen in the following table:

Table 3. *3Responses to Occupational Health (X2)*

Item	SS (F)	SS (%)	S (F)	S (%)	KS (F)	KS (%)	TS (F)	TS (%)	STS (F)	STS (%)	Jumlah Responden	Mean
X.1	22	37.3%	35	59.3%	2	3.4%	0	0.0%	0	0.0%	59	4.54
X.2	21	35.6%	36	61.0%	2	3.4%	0	0.0%	0	0.0%	59	4.41
X.3	19	32.2%	36	61.0%	4	6.8%	0	0.0%	0	0.0%	59	4.31
X.4	22	37.3%	34	57.6%	3	5.1%	0	0.0%	0	0.0%	59	4.44
X.5	15	25.4%	41	69.5%	3	5.1%	0	0.0%	0	0.0%	59	4.42
X.6	23	39.0%	34	57.6%	2	3.4%	0	0.0%	0	0.0%	59	4.36
X.7	18	30.5%	38	64.4%	3	5.1%	0	0.0%	0	0.0%	59	4.42
X.8	19	32.2%	35	59.3%	5	8.5%	0	0.0%	0	0.0%		

The research findings indicate that the occupational health variable (X2) consists of three indicators, namely the medical work environment, employee health facilities, and employee health maintenance. These indicators are elaborated into nine statement items covering the availability of first aid (P3K), health insurance, treatment procedures, health facilities, routine physical check-ups, availability of medical equipment and personnel, health maintenance efforts, the company's prioritization of employee health, and employee comfort with workplace conditions.

The instrument was used to measure employees' perceptions of occupational health and was completed by 59 respondents as presented in Table 4.2. The analysis shows that the employee health facilities indicator obtained the highest average score of 4.50. This score reflects strong employee appreciation for the health facilities provided by the company and indicates that these services meet their needs in maintaining physical well-being.

The employee health maintenance indicator received the lowest average score of 4.19, indicating the need for improved health education and information to help employees gain a better understanding of how to maintain their health in the workplace. The high score for health facilities is associated with the availability of adequate services such as clinics, medication, and routine check-ups, which contribute to a sense of security and comfort. The low score for health maintenance may be attributed to the lack of continuous health programs, such as regular check-ups, exercise activities, or intensive health education, leading employees to perceive that the company's commitment to long-term health maintenance is not yet optimal.

The descriptive analysis of respondents' answers regarding the variable of work quality is based on respondents' answers to statements such as those contained in the questionnaire distributed to respondents. Variations in respondents' answers for the Performance variable can be seen in the following table:

Table 4. 4Responses to Work Quality (Y)

12	Alternative Answer	SS	%	S	%	KS	%	TS	%	STS	%	Amount	Mean
X.1		32	54.2%	27	45.8%	-	-	-	-	-	-	59	4.54
X.2		24	40.7%	35	59.3%	-	-	-	-	-	-	59	4.41
X.3		20	33.9%	37	62.7%	2	3.4%	-	-	-	-	59	4.31
X.4		27	45.8%	31	52.5%	1	1.7%	-	-	-	-	59	4.44
X.5		25	42.4%	34	57.6%	-	-	-	-	-	-	59	4.42
X.6		23	39.0%	34	57.6%	2	3.4%	-	-	-	-	59	4.36
X.7		26	44.1%	32	54.2%	1	1.7%	-	-	-	-	59	4.42
X.8		20	33.9%	36	61.0%	3	5.1%	-	-	-	-	59	4.29
X.9		29	49.2%	29	49.2%	1	1.7%	-	-	-	-	59	4.47
X.10		29	49.2%	30	50.8%	-	-	-	-	-	-	59	4.49
X.11		26	44.1%	33	55.9%	-	-	-	-	-	-	59	4.44
X.12		23	39.0%	36	61.0%	-	-	-	-	-	-	59	4.39

Based on the results of this study, the work quality variable (Y) consists of four indicators: self-potential, optimal work results, work processes, and enthusiasm. These four indicators are further elaborated into twelve (12) statement items, which are compiled into a questionnaire to measure the quality of work as perceived by employees. The responses from 59 participants are presented in Table 4. It can be concluded that the highest score for the work quality variable is found in the self-potential indicator, with a mean value of 4.54. This finding indicates that employees feel appreciated and motivated to contribute creatively, supported by a conducive and empowering work environment provided by the company. Conversely, the lowest score is found in the work process indicator, particularly in the statement regarding whether the quality of work aligns with the standards set by PT Semen Tonasa.

Although employees report that their work meets the required standards, this may suggest a lack of stimulation for innovation or continuous improvement in daily work practices. In other words, employees may feel their current performance is adequate, but they lack opportunities or encouragement to enhance the quality of their output beyond the baseline. The high score in the self-potential indicator reflects how employees perceive their competence and confidence in completing tasks, which tends to be internally driven and personally recognized. Employees generally feel more satisfied when they believe they have the ability and opportunity to grow professionally. On the other hand, the low score in the work process indicator may be influenced by external factors, such as inefficient systems, inconsistent procedures, or suboptimal team collaboration. Dissatisfaction in this area often arises when these factors hinder productivity and the ability to deliver high-quality results.

Test Instrument

Test Validity

Validity testing is a test used to determine and test the accuracy and precision of a measuring instrument to be used as a measure of something that should be measured. (Sugiyono, 2021). The validity test of the questionnaire can be declared valid if each question item contained in the questionnaire can be used as an intermediary to express and find out something that will be measured by the questionnaire. Then, the questionnaire can be declared valid if the results of the calculated r value greater than r table. What if the results of the validity value of each response that has been received after submitting or distributing the list of questions worth more big than 0.5 so the statement item can be stated as valid (Suryono, 2021). The test results obtained are as follows:

Table 5. *5Test Results*

Variables	Indicator	r table	r count	Sig	α (0.05	Caption
	X1.1	0.252	0.720	0,000	0.05	Valid
	X1.2	0.252	0.731	0,000	0.05	Valid
Safety	X1.3	0.252	0.725	0,000	0.05	Valid
Work (X1)	X1.4	0.252	0.736	0,000	0.05	Valid
	X1.5	0.252	0.695	0,000	0.05	Valid
	X1.6	0.252	0.703	0,000	0.05	Valid
	X2.1	0.252	0.656	0,000	0.05	Valid
	X2.2	0.252	0.774	0,000	0.05	Valid
	X2.3	0.252	0.817	0,000	0.05	Valid
Occupational	X2.4	0.252	0.547	0,000	0.05	Valid
Health (X2)	X2.5	0.252	0.809	0,000	0.05	Valid
	X2.6	0252	0.690	0,000	0.05	Valid
	X2.7.	0.252	0.0704	0,000	0.05	Valid
	X2.8	0.252	0.734	0,000	0.05	Valid
	X2.9	0.252	0.729	0,000	0.05	Valid
	Yno.1	0.252	0.358	0,000	0.05	Valid
	Yno.2	0.252	0.581	0,000	0.05	Valid
	Yno.3	0.252	0.644	0,000	0.05	Valid
	Yno.4	0.252	0.636	0,000	0.05	Valid
	Yno.5	0.252	0.708	0,000	0.05	Valid
	Yno.6	0.252	0.562	0,000	0.05	Valid
Quality of Work	Yno.7	0.252	0.785	0,000	0.05	Valid
(Y)	Yno.8	0.252	0.576	0,000	0.05	Valid
	Yno.9	0.252	0.787	0,000	0.05	Valid
	Yno.10	0.252	0.528	0,000	0.05	Valid
	Yno.11	0.252	0.722	0,000	0.05	Valid
	Yno.12	0.252	0.770	0,000	0.05	Valid

Based on table 5 above, it shows that all question items used to measure the variables – The variables used in this study have Sig < 0.05 and ilia r count > r table so it can be said that all indicators are valid for use as instruments in research or the questions asked in the research can be used to measure the variables being studied.

Reliability Test

The reliability test on a research instrument is a test used to determine whether the questionnaire used in collecting research data can be said to be reliable or not (Sugiyono, 2021). In this research, the reliability test was carried out using Alpha Cronbach. Where if a variable shows an Alpha Cronbach value > 0.60, it can be concluded that variable the can it is said reliable or consistent in measuring. Test results reliability For The following data was obtained from each variable:

Table 6. *Reliability Test Results*

Variable	Cronbach's Alpha	Information
Work Safety (X1)	0.811	Reliable
Work Health (X2)	0.881	Reliable
Work Quality (Y)	0.867	Reliable

Test Assumptions Classic

The classical assumption test is a series of statistical tests used in regression analysis to ensure that the model used meets certain requirements, so that the model estimation results are valid and unbiased. The types of classical assumption tests in this study are as follows:

Test Normality

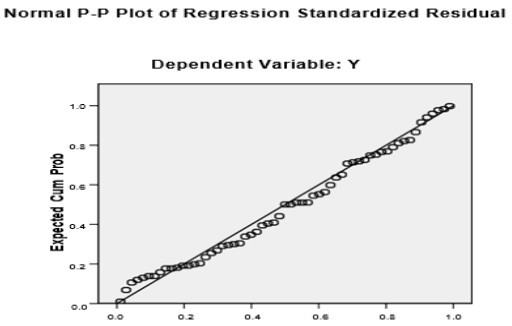

Figure 2. *1Test Results*

Based on the curve analysis in Figure 2, it can be seen that the data is spread around the diagram (line distribution along the diagonal line) and follows the regression so that it can be concluded that the processed data is normally distributed data so that the normality test is met.

Test Multicollinearity

Table 7. *6Test*

Independent Variable	Tolerance	VIF	Information
Work Safety (X1)	1.000	1.000	Free from multicollinearity
Occupational Health (X2)	1.000	1.000	Free from multicollinearity

Based on table 7 can known that all mark VIF < 10 and the tolerance value > 0.1. This indicates that the existence of multicollinearity in the equations used was not proven, so it can be concluded that the multicollinearity test was met.

Test Heteroscedasticity

Scatterplot Dependent Variables: Y

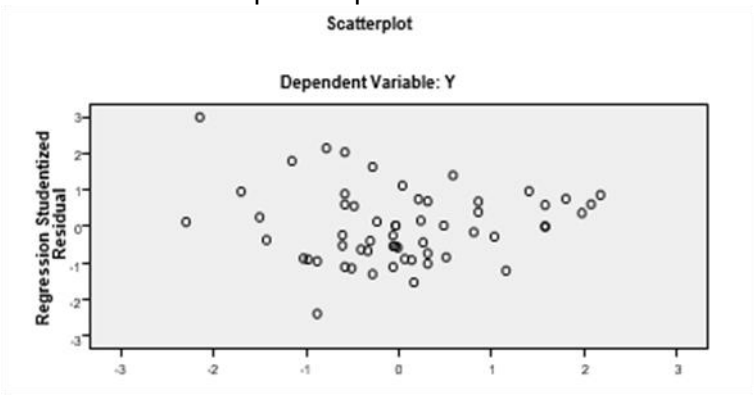

Figure 3. *2Test Results*

Based on picture 3 above can known that No Heteroscedasticity occurs because there is no clear pattern and the points are spread above and below the number 0 on the y-axis, so it can be said that the heteroscedasticity test is met.

Test Regression Linear Multiple

The multiple linear regression test aims to analyze the influence of occupational safety and health on work quality. employees at PT Semen Tonasa. Multiple linear regression analysis was conducted using the SPSS (Statistical Package for Social Science) 15.0 for

windows, whereas level trust Which used in calculation regression linear multiple is 95% or with significance level 0.05 (α= 0.05).

Table 8. *7of Multiple Linear Regression Calculations*

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.329	0.644		3.614	0.001
Work Safety (X1)	0.095	0.111	0.100	0.854	0.397
Work Health (X2)	0.391	0.097	0.471	4.017	0.000

Based on table 8 (Results of Multiple Linear Regression Calculations) above, the multiple linear regression equation can be seen as follows:

$$Y = a + b_1 X_1 + b_2 X_2 + e$$

$$Y= 2.329 + 0.095x_1 + 0.391x_2$$

The regression results show that the constant value (b_0) is 2.329, indicating that when all independent variables are equal to zero, the dependent variable, Work Quality (Y), remains at a constant value of 2.329, meaning work quality exists at that level in the absence of influence from occupational safety (X1) and occupational health (X2). The Occupational Safety variable (X1) has a positive coefficient of 0.095, demonstrating that a one-unit increase in occupational safety leads to an increase of 0.095 in work quality, while a decrease in occupational safety results in a corresponding decrease in work quality under the assumption that X2 remains constant at zero. The Occupational Health variable (X2) has a positive coefficient of 0.391, indicating that a one-unit increase in occupational health raises work quality by 0.391; similarly, a decrease in occupational health lowers work quality, assuming the other independent variable (X1) remains constant at zero.

Test Hypothesis

Test Partial (t-test)

The t-test is a type of research hypothesis test. linear regression analysis aims to determine whether the independent variable (X) partially (individually) influences the dependent variable (Y).

Table 9. *Test Results*

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	27.946	7.733		3.614	0.001
Job Safety (X1)	0.190	0.223	0.100	0.854	0.397
Occupational Health (X2)	0.522	0.130	0.471	4.017	0.000

H1: The effect of work safety on work quality shows insignificant results. This is proven by the t-value of the work safety variable (X1) of 0.854 which is smaller from the t table, which is 2.003 or t count 0.854 < 2.003 t table. Meanwhile, the value of the regression coefficient can be stated as significant at 0.397 which is greater than α = 0.05 (0.397 < 0.05). Where 0.05 is the maximum significant level so that These results indicate that Occupational Safety does not have a significant effect on Work Quality, and based on the t-test in table 4.8 the hypothesis is rejected.

H2: The influence of Occupational Health on Work Quality shows significant results. This is proven by the t-value of the occupational health variable (X2) of 4.017 which is greater than the t table of 2.003 or t-value of 4.017. > 2.003 t table. Meanwhile, the value of the regression

coefficient can be stated as significant at 0.000 which is smaller than α = 0.05 (0.000 > 0.05). Where 0.05 is the maximum level of significance so that this result shows that Occupational Health own influence Which significant on employee quality.

Statistical Test (f Test)

Table 8*F Test Results ANOVA* [a]

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	211.806	2	105.903	8.386	0.001[b]
Residual	707.177	56	12.628		
Total	918.983	58			

Predictors: (Constant), Safety Work, Health Work
Dependent Variables: Quality Work

Based on the SPSS output in table 10, the Sig. value is 0.001. Because the Sig. value is 0.000 < 0.05, then it is in accordance Based on decision making in the F test, it can be concluded that the hypothesis is accepted, or in other words, work safety (X1) and work health (X2) simultaneously influence work quality (Y). If we refer to the comparison of the calculated F value with the F table, the calculated F is 8.386 > 3.16 F table, so according to the basis for decision making in the F Test, it can be concluded that the hypothesis is accepted, or in other words, work safety (X1) and work health (X2) simultaneously influence the quality of employee work (Y).

Discussion

After conducting data analysis, the next step is to discuss the results of the data obtained regarding the influence of the independent variables, namely occupational safety and occupational health, on the dependent variable, namely employee work quality. The discussion is structured into three main parts: (1) the influence of occupational safety on employee work quality, (2) the influence of occupational health on employee work quality, and (3) the simultaneous influence of occupational safety and health on employee work quality.

The Influence of Occupational Safety on Employee Work Quality

The statistical results show that the occupational safety variable does not have a significant effect on employee work quality. The value of t-count (0.854) is lower than the t-table (2.003), and the significance level (0.397) is higher than the standard alpha of 0.05. These findings imply that, partially, work safety does not directly contribute to enhancing the quality of employee output at PT Semen Tonasa. From a theoretical perspective, occupational safety is often viewed as one of the essential foundations for sustainable performance in industries with high levels of physical and operational risk, such as the cement industry. According to the Occupational Safety and Health Administration, safety regulations and compliance aim to reduce accidents, prevent injuries, and create a secure working environment (Budiarti & Rahman, 2025). However, this study's results suggest that safety measures, while important for reducing risks, do not automatically translate into higher quality of work outputs.

One possible interpretation is that employees may perceive safety procedures as standard operational requirements rather than as motivational or performance-enhancing factors. Herzberg's Two-Factor Theory distinguishes between hygiene factors (such as safety, salary, and company policy) and motivators (such as achievement, recognition, and growth opportunities). Safety, in this context, is categorized as a hygiene factor: its presence prevents

dissatisfaction but does not necessarily create satisfaction or directly increase work quality. Therefore, even though PT Semen Tonasa provides safety measures, employees may not associate them with improving the quality of their work outcomes. This interpretation is consistent that work safety had no significant impact on employee performance. They argue that other variables such as work motivation, job satisfaction, and leadership styles may play a more critical role in influencing performance outcomes. In environments where safety is already institutionalized as a baseline requirement, employees might take it for granted and therefore not perceive it as a factor that enhances quality.

The cement industry has a structured safety management system that emphasizes compliance with regulations and industry standards (Farhani et al., 2025). However, if safety practices are implemented only as compliance requirements without strong engagement from employees, the impact on performance quality remains limited. For example, the existence of safety gear, warning systems, or safety signage may reduce the likelihood of accidents but does not necessarily improve the accuracy, speed, or innovativeness of the employee's work. In practical terms, PT Semen Tonasa needs to go beyond compliance and foster a safety culture where employees feel personally responsible for and engaged in safety practices.

Safety culture as "the product of individual and group values, attitudes, perceptions, competencies, and patterns of behavior that determine the commitment to safety management." A strong safety culture can indirectly influence work quality by reducing stress, fostering trust, and increasing focus. If employees feel secure, they can dedicate more energy to the precision and creativity required in their tasks. Thus, while the results show no direct effect of safety on work quality, this does not diminish the strategic importance of safety. Instead, it highlights the need to integrate safety policies with motivational and engagement strategies to maximize their impact.

The Influence of Occupational Health on Employee Work Quality

The second finding demonstrates a different pattern: occupational health has a significant positive effect on employee work quality. The t-count (4.017) is higher than the t-table (2.003), with a significance value of 0.000, which is lower than 0.05. This indicates that the better the health conditions experienced by employees, the higher the quality of work they produce. Theoretically, occupational health refers to maintaining and improving employees' physical, mental, and social well-being in the workplace. According to the International Labour Organization, occupational health is not only about preventing occupational diseases but also about creating work environments that sustain workers' health and support productivity.

The cement industry exposes employees to risks such as dust inhalation, noise pollution, repetitive physical movements, and heavy lifting. If these health risks are not managed properly, they can lead to chronic illness, fatigue, or frequent absenteeism, which directly affects work quality. Therefore, the significant relationship between occupational health and work quality in this study is reasonable and aligns with empirical expectations. These findings are supported by the research who found that occupational health positively and significantly influences employee performance, with a regression coefficient of 0.457. The study emphasizes that occupational health initiatives such as regular medical check-ups, access to healthcare facilities, ergonomic workstations, and a clean environment reduce absenteeism, enhance concentration, and improve overall performance quality.

From the perspective of organizational behavior, this finding also resonates with the Job Demands-Resources (JD-R) Model. According to this model, job resources such as health facilities and supportive work conditions help employees cope with job demands, thereby

reducing burnout and enabling them to perform better. Occupational health programs act as job resources that provide physical and psychological support, which in turn leads to higher-quality work outputs.

Occupational health is strongly linked to employee motivation and loyalty (Zen, 2024). Employees who feel that their employer cares about their well-being are more likely to reciprocate with higher commitment and discretionary effort. This aligns with the Social Exchange, which explains that positive treatment from employers creates a sense of obligation among employees to deliver better performance. In this case, health programs symbolize organizational care, which employees repay by ensuring better quality in their work. Practically, PT Semen Tonasa should continue to invest in occupational health initiatives. For example, providing personal protective equipment (PPE) is not sufficient unless it is complemented by initiatives such as air quality control, noise reduction systems, and stress management programs. Moreover, preventive measures such as regular health screenings can detect health problems early, ensuring that employees remain productive and capable of delivering high-quality work.

The Simultaneous Influence of Occupational Safety and Health

The F-test results reveal that occupational safety and occupational health, when considered simultaneously, have a significant impact on employee work quality. The F-count (8.386) exceeds the F-table (3.16), with a significance value of 0.001 (<0.05). This means that the combination of both safety and health initiatives plays a vital role in shaping the quality of employee outputs. This finding highlights the importance of an integrated Occupational Safety and Health (OSH) management system. While occupational safety alone does not significantly influence quality, and occupational health does, their combined effect demonstrates synergy. This can be explained by systems theory, which posits that the performance of an organization is greater than the sum of its parts when its subsystems are integrated effectively (Katz & Kahn, 1978). In this case, safety and health act as complementary subsystems that together create a secure, healthy, and productive environment.

Ensuring safety without addressing health may prevent accidents but still allow employees to suffer from fatigue or illness, leading to reduced quality. Conversely, focusing on health without safety may lead to accidents that disrupt work processes. When both are managed together, employees benefit from a comprehensive environment that minimizes risks and maximizes well-being, thereby producing higher work quality. These results are also consistent with empirical studies in occupational health and safety management. That integrated OSH management systems significantly enhance productivity, reduce absenteeism, and improve organizational performance. That strong OSH systems positively influence job satisfaction, motivation, and work quality in manufacturing industries.

The results at PT Semen Tonasa reflect the reality that the cement industry is highly labor-intensive and involves both physical safety hazards (such as machine operations, high temperatures, and heavy lifting) and health hazards (such as dust and noise exposure). Therefore, addressing both dimensions simultaneously is not only logical but also necessary to sustain high levels of work quality.

Comparative Insights and Implications

The findings of this study offer several insights when compared with previous research. The results related to occupational safety align with studies which reported no significant relationship between safety and employee performance, yet differ from research by another

argued effective safety programs enhance focus and reduce errors, ultimately improving work quality (Candra et al., 2025). The contrast indicates that the influence of occupational safety on performance may be context-dependent and shaped by the implementation and employee perception of safety initiatives. The findings concerning occupational health correspond with previous studies, which confirmed the positive contribution of health programs to employee outcomes, reinforcing the principle that employee health serves as a fundamental driver of productivity across industries. The significant simultaneous effect of occupational safety and health is consistent with the integrated approach promoted by the ILO and WHO, whose joint report (2010) emphasized the interdependent nature of safety and health as factors that collectively shape employee performance and organizational achievement.

Managerial Implications

The findings from this study offer several practical recommendations for PT Semen Tonasa. Occupational health programs require stronger prioritization through regular medical check-ups, improved workplace hygiene, ergonomic equipment, and stress management initiatives, as these elements contribute directly to enhanced work quality and should be embedded in human resource policies. Occupational safety needs to be reframed beyond regulatory compliance by positioning safety practices as part of employee engagement, with training designed to build awareness, responsibility, and proactive behavior rather than simple adherence to rules. Safety and health policies should be integrated into a unified OSH management system aligned with ISO 45001 to ensure that accident prevention and health promotion are addressed in a structured and comprehensive manner. A culture of well-being also needs to be strengthened so employees feel valued for both their contributions and their safety and health, which can be achieved through recognition programs, communication campaigns, and participatory safety committees.

Conclusion

This study was conducted to determine the effect of occupational safety and occupational health, both individually and jointly, on work quality at PT Semen Tonasa. Based on the analysis and discussion, several conclusions can be drawn. First, occupational safety (X1) was found to have no positive and significant partial effect on work quality (Y). This indicates that the implementation of safety programs and the condition of the physical work environment at PT Semen Tonasa are not yet optimal. Insufficient attention to safety measures reduces their impact on improving work quality. Second, occupational health (X2) shows a positive and significant partial effect on work quality (Y).

This finding suggests that the implementation of effective health programs contributes directly to better work performance. Employees who experience good physical and mental health are able to work more productively and with higher quality standards. Third, when occupational safety (X1) and occupational health (X2) are tested simultaneously, both variables have a positive and significant effect on work quality (Y). This means that, collectively, safety and health factors provide a strong contribution to improving employee performance, efficiency, and the overall quality of production processes. Based on these conclusions, several recommendations can be formulated for improving organizational outcomes.

The company needs to strengthen its occupational safety programs by addressing gaps in safety policies, procedures, and work environment conditions, as better safety measures will reduce risks and indirectly enhance work quality. Future research should be supported

through broader access to company data and operational procedures to produce more accurate and comprehensive findings, and an expanded research scope that includes compliance with government standards and employee involvement in program planning will provide deeper and more holistic insights. This study is limited to one company and region, relies on self-reported data, uses a cross-sectional design, and excludes external factors influencing employee work quality.

Acknowledgement

-

References

Alamsyah, N., Kuswandi, K., & Rahayu, S. (2025). The influence of occupational safety, occupational health, and work discipline on employee performance. *Jurnal Ilmiah Manajemen Kesatuan*, 13(1), 583–592. https://doi.org/10.37641/jimkes.v13i1.3121

Bamba, I. L., Pasulu, M., Jumaidah, J., & Program Studi Manajemen STIE Makassar. (2023). Pengaruh kesehatan dan keselamatan kerja (K3) terhadap kinerja pegawai pada Rumah Sakit Umum Daerah Kondosapata' Kabupaten Mamasa. *Jurnal Nuansa: Publikasi Ilmu Manajemen dan Ekonomi Syariah*, 1(3), 308–317. https://doi.org/10.61132/nuansa.v1i3%20September.263

Batubara, R. W., Purba, R., & Purba, R. (2023). Pengaruh keselamatan, kesehatan kerja (K3) terhadap produktivitas kerja karyawan PTPN IV Balimbingan. *Jurnal Muhammadiyah Manajemen Bisnis*, 4(1), 1–10. https://doi.org/10.24853/jmmb.4.1.1-6

Budiarta, K., Asi, L. L., & Rahman, E. (2025). The influence of occupational health and safety (OHS) programs, work environment, and workload on employee performance at PT. PLN (Persero) UIW Sulutenggo UP3 Gorontalo ULP Telaga. *Majapahit Journal of Islamic Finance and Management*, 5(4), 3700–3718. https://doi.org/10.31538/mjifm.v5i4.632

Candra, A., Ahadis, H., & Bella, C. (2025). Pengaruh keselamatan kerja dan kesehatan kerja (K3) terhadap kinerja karyawan PT Tanggamus Electric Power. *Technobiz: International Journal of Business*, 8(1), 1–10. https://doi.org/10.33365/technobiz.v8i1.600

Edwar, R. C., Damanik, L. G. S., Harju, L. M., Toii, I. E. W., & Mangopo, Y. R. (2025). Enhancing employee productivity through effective occupational health and safety practices. *Jurnal Manajemen dan Akuntansi Medan*, 7(2). https://doi.org/10.47709/jumansi.v7i2.5845

Farhani, H., Sekarini, R. A., & Riyadi. (2025). How occupational health and safety (OHS) practices and the work environment affect employee performance, with job satisfaction acting as an intermediary. *International Journal of Integrative Sciences*, 4(1). https://doi.org/10.55927/ijis.v4i1.13282

Farosa, A. A. F., & Husain, M. (2025). The influence of occupational health and safety (OHS) on employee performance through work discipline among technical employees. *Prosiding dan Call Paper Widya Wiwaha,* 4(1), 195–207. https://doi.org/10.32477/9c3ft410

Hadi, M. L., Zaman, K., & Arifin, S. (2026). Pengaruh Kompensasi dan Motivasi Kerja terhadap Kinerja Karyawan Outsourcing pada PT Catur Mulia Mandiri. *Journal Social Society*, 6(1), 414–423. https://doi.org/10.54065/jss.6.1.2026.993

Hanifah, A., & Chaerudin, C. (2024). Pengaruh Lingkungan Kerja terhadap Produktivitas Pegawai Dinas Kesehatan Kabupaten Karawang. *Jurnal Ilmiah Wahana Pendidikan*, 10(3), 1-7. https://doi.org/10.5281/zenodo.10633192

Harahap, J. B., Pinem, M. N., Rizaldy, M., & Lubis, A. H. (2024). Pengaruh keselamatan dan kesehatan kerja dan kualitas kehidupan kerja terhadap kinerja karyawan PDAM Tirtanadi Provinsi Sumatera Utara. *Manajemen dan Bisnis*, 6(2), 34–38. https://doi.org/10.30743/jmb.v6i2.9406

Harfa, M. F., Nurbaya, S., & Soraya, Z. . (2025). The Influence of Motivation and Work Discipline on Employee Performance at the Regional Development Planning, Research and Innovation Agency (Bapperida) of Bulukumba Regency. *Journal Social Society*, 5(1), 171–187. https://doi.org/10.54065/jss.5.1.2025.660

Harmayanto, H., Nuriyah, N., & Faisal, A. (2023). Pengaruh komunikasi, kerjasama tim, kreativitas terhadap kinerja pegawai negeri sipil pada Badan Pendapatan Daerah (Bapenda) Kabupaten Paser. *Lokawati: Jurnal Penelitian Manajemen dan Inovasi Riset*, 1(5), 412–423. https://doi.org/10.61132/lokawati.v1i5.517

Hsb, K., & Ramadhany, S. (2023). Pengaruh briefing dan pengawasan terhadap kualitas kerja karyawan pada PT Telkom Indonesia Datel Ciputat. *Dynamic Management Journal*, 7(1), 15–22. http://dx.doi.org/10.31000/dmj.v7i1.7201

Mutiara, S. T., Perkasa, D. H., Abdullah, M. A. F., Febrian, W. D., & Purwanto, S. (2024). Kinerja karyawan: Peran keadilan distributif, keselamatan kesehatan kerja (K3) dan burnout (studi kasus pada karyawan depo Jakarta). *Jurnal Bina Bangsa Ekonomika*, 17(2), 1125–1138. https://doi.org/10.46306/jbbe.v17i2

Nasution, M. D. M., Mada, A. A., Asnawi, A., Rudiansyah, M., & Wahab, A. (2021). Pengaruh Keselamatan dan Kesehatan Kerja dan Motivasi Kerja Terhadap Produktivitas Kerja Karyawan PT Maritim Barito Perkasa Banjarmasin. *Indonesian Journal of Intellectual Publication*, 1(3), 150-156. https://doi.org/10.51577/ijipublication.v1i3.95

Palangan, M., Jaya , A., & Pasae , Y. (2026). Efektivitas Program Pelatihan Operator Alat Berat terhadap Peningkatan Kualitas Kerja pada Dinas Pekerjaan Umum dan Tata Ruang Kabupaten Toraja Utara. *Journal Social Society*, 6(1), 60–69. https://doi.org/10.54065/jss.6.1.2026.924

Putri, A. A., Munang, A., & Nurisusilawati, I. (2023). Pengaruh K3, lingkungan kerja, dan shift kerja terhadap kinerja karyawan PT XYZ. *Factory: Jurnal Industri, Manajemen dan Rekayasa Sistem Industri*, 1(3), 74–85. https://doi.org/10.56211/factory.v1i3.218

Saputra, M. T., Siregar, L. D., & Farlawita (2024). The influence of occupational health and safety (OHS) on the work productivity of employees at PT Aquila Sanjaya Purnama. *KnE Social Sciences*, 9(14), 578–587. https://doi.org/10.18502/kss.v9i14.16129

Sari, E. J., Rasyid, M. Z. F., & Khosasih, R. (2023). Pengaruh lingkungan kerja dan kualitas kerja terhadap pengembangan karir pada karyawan PT BRI (Persero) Cabang Kotabaru. *Jurnal Economina*, 2(3), 869–877. https://doi.org/10.55681/economina.v2i3.408

Sianturi, H. F., & Siregar, O. M. (2023). Pengaruh K3 (keselamatan dan kesehatan kerja) dan pelatihan terhadap kinerja karyawan. *Jurnal Administrasi Bisnis*, 13(2), 91–98. https://doi.org/10.35797/jab.13.2.91-98

Sitorus, M., Nizar, K., & Dewi, S. (2023). Pengaruh pelatihan dan penerapan sistem keselamatan dan kesehatan kerja (K3) terhadap produktivitas kerja karyawan PT Dwitunggal Jayalestari Medan. *Jurnal Ekonomi, Akuntansi dan Manajemen Nusantara*, 2(1), 29–35. https://doi.org/10.55338/jeama.v2i1.59

Zen, A. (2024). Pengaruh keselamatan dan kesehatan kerja (K3), motivasi kerja dan kepuasan kerja terhadap kinerja karyawan. *Jurnal Ekonomi Manajemen Sistem Informasi*, 5(6), 598–606. https://doi.org/10.38035/jemsi.v5i6.2576