

---

**Analysis of The Effect of The Implementation of The Behavior Based Safety (BBS) Program By Company Management on Labor Behavior at PT. HYZ**

**Ica Audia Putri, Yifrans Sastra Wiguna, Rosita Hanna Sri Yuliani Boru Purba, Achmad Fajar, Ilham Hidayat, Muhammad Rizky Ramadhan, Fitrah Hanan Zuhair, Anis Rohmana Malik**  
Institut Teknologi Kalimantan

Email: 18221032@student.itk.ac.id, 18221020@student.itk.ac.id, 18221068@student.itk.ac.id,  
18221041@student.itk.ac.id, 18221078@student.itk.ac.id, 18221022@student.itk.ac.id,  
18221060@student.itk.ac.id, anis.rohmana@lecturer.itk.ac.id

---

*Abstract*

HYZ Company is a goods shipping and logistics company in the maritime sector with a significant risk of work accidents, especially in the Occupational Health and Safety aspect. The company has implemented a Behavior Based Safety (BBS) program since 2011 to reduce the risk of accidents. This program is designed to increase safe behavior in the workplace and reduce accident incidents. Although BBS is known to reduce work accidents by up to 40-75%, HYZ Company has not conducted an in-depth analysis to determine the extent to which the implementation of this program affects the level of compliance with Occupational Health and Safety principles, including the use of personal protective equipment (PPE), safe work procedures and other safety practices. This study aims to evaluate the effectiveness of BBS at HYZ Company in the context of Occupational Health and Safety, focusing on changing workers' behavior and levels of compliance with safety standards. The results of this research can help companies strengthen their Occupational Health and Safety systems and reduce the risk of accidents while promoting a sustainable safety culture. With a better understanding of the impact of BBS on Occupational Health and Safety compliance, HYZ Company can take more effective measures to ensure worker safety and a safe working environment..

**Keywords:** Occupational Health and Safety, BBS (Based Behavior Safety), personal protective equipment (PPE)

---

*Corresponding Author: Ica Audia Putri*  
*E-mail: 18221032@student.itk.ac.id*



**Introduction**

Safety comes from English, namely safety, and is always associated with the release of someone from a work accident, accident, or near-miss. Safety theory and application study all factors that can cause work accidents by developing ways and approaches to minimize the risk of work accidents (Jensen, 2019). Safety culture is a concept that has a relationship with humans, which has internal aspects that cannot be seen (mind), external aspects that can be seen (behavior), and whose existence is present in a social context (Tarwaka, 2015). Work accidents can not only cause casualties and material losses to workers and companies but can disrupt all production processes, damage the surrounding environment, and impact the wider community (Dwyer, 2013). Losses caused by work accidents in the form of economic (such as damage to tools and machinery, building materials, medical and treatment costs, accident benefits; accident compensation, reduced production amount), non-economic losses (suffering of victims and families, loss of work time, and temporary cessation of work activities) (Anzar & Kes, 2009)

Behavior-based safety, or BBS, is a process that can create security for management and workers by focusing continuously on attention and action for everyone and others and making efforts to behave safely (Thurga Devi, 2022). Safe behavior can be seen in every behavior that workers engage in. Many studies that behavior experts in many countries have conducted show that the application of behavior-based safety techniques can reduce workplace accidents by 40-75% in a period between two months to sixteen months (Geller, 2001).

PT. HYZ is one of the companies engaged in the marine sector engaged in shipping goods and logistics, with a crude oil delivery capacity of around 4200 m<sup>3</sup> per day. This company certainly has a risk of work accidents, so it is necessary to implement an effort to reduce the risk of these accidents. One of the programs that PT has implemented. HYZ has been a Behavior Based Safety or BBS program since 2011. This Behavior Based Safety (BBS) program has been implemented for over 12 years, but there has not been an analysis of the relationship between the Behavior Based Safety (BBS) program and the level of compliance with safety behavior for each workforce.

Service is performing major maintenance on an oil or gas well to maintain production (Pribadi et al., 2014). This includes tube replacement, new cleaning or finishing, new perforations, and various other maintenance works such as installation of gas lifts, etc. problems in oil and gas fields often occur are problems in oil wells that can hamper oil well production so that fluid flow in the well will be reduced (low file) or no flow at all (no flow) and the good service field aims to relaunch production oil in these wells. The stages of oil well maintenance operations certainly risk accidents or potential hazards such as causing human injury, damage to equipment or structures, material losses, or decreased ability of a particular function. The potential hazards that often occur in oil well maintenance operations include hitting objects that are lifted or lowered, being hit by falling objects, pinched workpieces, and slipping due to oil stains. Efforts to reduce work accidents are to find the causes of the risk of work accidents, mitigate potential work accidents, conduct regular meetings for work coordination, update work guidance documents, and certify personnel involved in work.

## **Literature Review**

### **2.1 Occupational Safety And Health**

K3 stands for Occupational Health and Safety, a policy product used by the government and business actors to prevent accident hazards at work and reduce the risk of accidents arising from work (Setiawan, 2018). K3 applies not only to the industrial world but also to the community, MSMEs, laboratories, fires, electricity, and the scope of life. (Wiryawanti, V.E., 2020.)

### **2.2 Work Accidents**

A work accident is an undesirable event, which is an unwanted/unexpected, unexpected event that occurs in an employment relationship and results in losses in the form of injury to workers, product damage, or loss of time in the production process; it is an accidental event (Kawatu, 2022). The indirect impact of work accidents is manifested in the form of psychological and psychosocial impacts on workers, such as fear and anxiety (Gandhi et al., 2024). Fatigue is centrally controlled by the brain, including the sympathetic activation and parasympathetic inhibitory systems (Karthikeyan et al., 2024). According to the Decree of the Minister of Manpower and Immigration of the Republic of Indonesia KEP 150 / MEN / 1999 Year 1999 concerning Labor Social Security, industrial accidents are occupational accidents including diseases caused by labor-management relations such as: This includes accidents that occur on ordinary or natural roads on the way from home to work or on the way home.

### **2.3 Work Behavior**

Personal Protective Equipment is a worker's equipment used while working, in order to avoid work accidents (Gattuso, 2021). Worker compliance with the use of personal protective

equipment can prevent the risk of occupational accidents or diseases. Efforts are used in prevention and mitigation during work accidents at PT. The purpose of this study was to analyze the effectiveness of BBS programs in changing employee behavior related to PPE use and employee awareness in the workplace ( C.B.O.P.P., 2018)

**2.4 Behavior-Based Safety (Bbs)**

Behavioral-based approaches to managing occupational risks and preventing workplace injuries are reviewed. Unlike the usual top-down control approach to industrial safety, behavioral-based safety (BBS) provides tools and procedures that workers can use to take personal control of occupational risks. Strategies that the author and his colleagues have used for over a decade to teach BBS to safety leaders and line workers are presented. In addition, conceptual models are proposed to match individual awareness and behavior with specific BBS intervention techniques. (Geller, E. S. (2005). Behavior-Based Safety and Occupational Risk Management.

**Reserch Methode**

This study uses a quantitative approach to collect data on behavior-based occupational safety and health with PT's Behavior Based Safety (BBS) program. HYZ. The quantitative approach allows us to collect statistically measurable data and analyze the relationships between the variables studied.

**Results And Discussion**

From the results of questionnaires obtained from 30 respondents, respondents were taken from all employees from all departments in PT. HYZ. All employees at PT HYZ follow the Behavior Based Safety (BBS) program implemented in the company so that all employees in various departments can participate in this research. Data from respondents has a very large contribution in this study so that it can display certain characteristics of respondents and explain the study results. The characteristics taken are workers who have an age range from 25-55 years and work for 2 to 3 years.

**Tabel 1 Respondent's Gender**

<b>Gender</b>	<b>Sum</b>	<b>%</b>
Man	28 Person	93.3 %
Woman	2 Person	6.7 %
Total	30 Person	100 %

**Table 2 Age of Respondents**

<b>Range Age</b>	<b>Sum</b>	<b>%</b>
25-30 year	9 Person	30 %
31-35 year	9 Person	30 %
36-40 year	5 Person	17 %
41-45 year	5 Person	17 %
46-50 year	1 Person	3 %
51-55 year	1 Person	3 %
Sum	30 Person	100 %

**Table 3 Descriptive Variable Analysis X1**

NO	Question Item X1	agree		netral		disagree		Total	Mean
		1		2		3			
		f	%	f	%	f	%		
1	Safety in the workplace is taken seriously by management.	29	96%	1	4%	0	0%	30	1.03
2	Coworkers care about safety at work.	15	50%	15	50%	0	0%	30	1.50
3	Good safety measures in the workplace can reduce the risk of injury or accident.	24	80%	6	20%	0	0%	30	1.20
4	Workers use appropriate personal protective equipment (PPE).	18	60%	12	40%	0	0%	30	1.40

**Table 4 Descriptive Variable Analysis X2**

NO	Question Item X1	agree		netral		disagree		Total	Mean
		1		2		3			
		f	%	f	%	f	%		
1	Workers adhere to safety procedures when working with risky machinery or equipment.	29	96%	1	4%	0	0%	30	1.03
2	Workers report potential hazards or safety incidents to management	4	14%	16	54%	10	32%	30	2.20
3	Workers consider safety a priority on the job	27	90%	3	10%	0	0%	30	1.10
4	Workers have sufficient knowledge of safety procedures in the workplace	30	100%	0	0%	0	0%	30	1.00

**Table 5 Descriptive Variable Analysis Y**

Variable	Range	Sum	Total	Mean
Age	25-30 year	9 person	30 person	35.43 year
	31-35 year	9 person		
	36-40 year	5 person		
	41-45 year	5 person		
	46-50 year	1 person		
	51-55 year	1 person		

**Table 6 Reliability Test Results**

Variable	Reliability Test	Information
X1	89%	Reliabel
X2	81%	Reliabel
Y	73%	Reliabel

  

Variable	Reliability Test	Information
X1	89%	Reliabel
X2	81%	Reliabel
Y	73%	Reliabel

The reliability test results of the variable X1 obtained are declared reliable with the value of the Cronbach Alpha coefficient It can be concluded that the statements in the variable questionnaire used by researchers are reliable because the reliability test results were obtained at  $0.892 > 0.60$  or 89%

**Table 7 Data Normality Test**

Mean	1.78
Std. Deviation	0.516
Absolute	0.021
Positive	0.021

Negative	-0.012
Test Statistic	0.021
Sig	0.42

After conducting a reliability test of the existing data, calculations are then carried out to find out whether the data that has been obtained is distributed normally. From the data normality test, the mean is 1.78, and the standard deviation is 0.516. The value obtained on Asymp. Sig (2-tailed) is 0.42. Terms of Asymp. Sig is 0.05, and the value is greater than 0.05. Then it can be concluded that the data is distributed normally.

**Table 8 Results of the Direct Relationship Hypothesis Test**

	Relationship	P	Sig
Direct Effect	BBS Towards Age Program	p1= 0,311	sig= 0.0012<0.005 (Significant)
	The degree of compliance with occupational safety behavior	p2=0.473	sig=0.003<0.005 (Significant)

In the table above, the regression coefficient p1 is positive 0.311, the relationship between the BBS program (X1) is obtained positively related to age (Y). If the value is positive, then if the value of X1 increases in line with the variable Y which increases. With a significant value of 0.0012, which is less than 0.005, the relationship between X1 and Y is real or meaningful, and significant means (Ha is accepted). Then, the relationship between the level of compliance with occupational safety behavior is positive 0.473, which means it has a positive relationship. So the increasing level of compliance is in line with work safety behavior. with a significant value that can be obtained is 0.003, which means less than 0.005, which means the relationship between the two is real and (Ha is accepted).

**Table 9 Results of the Indirect Relationship Hypothesis Test**

	Relationship	P
Indirect Relationships (indirect Effect)	BBS Program on Work Safety through Compliance Level	p1*p2 = 0.311*0.473 =0.147

From the table above, the relationship P1 is 0.311 and P2 is 0.473, so the indirect relationship is  $P1 \times P2 = 0.147$ . From this, it is concluded that the relationship between the BBS program and age is in line with the level of worker compliance.

From this, it is concluded that the BBs program is in line with the age of workers, where older workers with more work experience have a higher level of understanding of the BBS program. The level of program compliance is also in line with the existence of this BBs program. because it can be seen from the existing BBS program that employees can understand the level of security around their workplace. The BBS program is able to increase the level of employee compliance. If the employee has a positive attitude towards compliance with work safety procedures to comply with such procedures, then most likely, he will have high intentions to comply with work safety procedures. Safety compliance includes safety operation regulations during work activities, carrying out safety instructions for personnel, and actively cooperating with daily safety inspections (Bal, 2023).

The company itself has provided training places with supplies on worker safety and how existing procedures do not have a high risk. Leaders in each division have also reported workplace accidents. So it can be concluded that at PT. HYZ has run the BBS program well.

### Conclusion

The results showed that there was a positive and significant relationship between BBS Program and age. This shows that the higher or increasing the BBS Program is in line with the increasing age of the existing workers. The results showed that there was a positive and significant relationship between the BBS Program and employee Safety Behavior. This shows that the higher or increasing this BBS Program, the more Employee Safety Behavior will increase. The results showed that the effect of the BBS Program on employee safety behavior is a direct influence (not through the Compliance Level). Therefore, the Compliance Level intervening does not mediate (does not mediate) the effect of the BBS Program on employee Safety Behavior.

### Bibliography

- Bal, O. (2023). Formation and management of safety culture in the railway industry: best practices and strategies. *Транспортні Системи і Технології*, 42, 69–80.
- Dwyer, T. (2013). *Life and death at work: industrial accidents as a case of socially produced error*. Springer Science & Business Media.
- Gandhi, K. P., Janani, K., Sivaraja, M., & Gomathi, P. (2024). Disaster and Its Impact on Cerebral Health: Methodology and Psychological Effects of Disaster. In *Utilizing AI and Machine Learning for Natural Disaster Management* (pp. 227–236). IGI Global.
- Gattuso, A. N. (2021). Common issues of compliance with personal protective equipment for construction workers.
- Jensen, R. C. (2019). *Risk-reduction methods for occupational safety and health*. John Wiley & Sons.
- Karthikeyan, R., Carrizales, J., Johnson, C., & Mehta, R. K. (2024). A window into the tired brain: neurophysiological dynamics of visuospatial working memory under fatigue. *Human Factors*, 66(2), 528–543.
- Pribadi, R., Amir, M. F., & Poerwanto, T. W. (2014). *Production Facilities Maintenance Information System: a Decision Support System for Maintaining National Oil and Gas Production Facilities*.
- Thurga Devi, U. S. (2022). Occupational accident prevention strategies based on Behaviour Based Safety (BBS) in a selected manufacturing industry/Thurga Devi Uthaya Sooriyan. *Universiti Malaya*.
- Saefudin, T.H., Rosihan, R.I. and Wiryawanti, V.E., 2020. K3 Socialization on Electrical and Fire Hazards in Kedung Pengapengawas Village, Babelan, Kab, Bekasi. *Journal of Science Technology in Community Empowerment*, 1(1), pp.45-50.
- EQUIPMENT, C.B.O.P.P., 2018. Behavioral factors of compliance with the use of PPE on PT X workers. *Journal of Promkes*, 6(1), pp.1-11.
- Irwansyah, M. (2024). ANALYSIS OF THE RELATIONSHIP BETWEEN THE BEHAVIOR BASED SAFETY (BBS) PROGRAM ANALYSIS OF THE RELATIONSHIP BETWEEN THE EMPLOYEE BEHAVIOR BASED SAFETY (BBS) PROGRAM AT PT. X.
- Rianto, M. R. (2023). The Effect of Activators, Consequences, and Base Safety Behavior on Safe Behavior at PT. Indonesian Ship Industry Makassar.
- Saputra, Y. (2021). *Analysis of Safety Performance Index with Behavior-Based Safety Approach in the Automotive Component Manufacturing Industry*.
- Kawatu, P. 2022. *Occupational Health and Safety Teaching Materials*. FKM Unsrat
- Suma'mur, P. K. 2019. *Corporate Hygiene and Occupational Health*. Jakarta: CV

Analysis of The Effect of The Implementation of The Behavior Based Safety (BBS) Program By Company Management on Labor Behavior At PT. HYZ

Ica Audia Putri, Yifrans Sastra Wiguna, Rosita Hanna Sri Yuliani Boru Purba, Achmad Fajar, Ilham Hidayat, Muhammad Rizky Ramadhan, Fitrah Hanan Zuhair, Anis Rohmana Malik

---

Geller, E. S. (2005). Behavior-Based Safety and Occupational Risk Management. *Behavior Modification*, 29(3), 539-561. <https://doi.org/10.1177/0145445504273287>

M Irwansyah, Baiduri Widanarko, ANALYSIS OF THE RELATIONSHIP BETWEEN THE BEHAVIOR BASED SAFETY (BBS) PROGRAM AND THE LEVEL OF COMPLIANCE WITH EMPLOYEE SAFETY BEHAVIOR AT PT. X