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The Implementation of Occupational Health and Safety Using Zerosicks in Indonesia Vocational Education

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Abstract

This study aims to determine (1) the implementation of occupational health and safety (OHS) using the Zerosicks method in vocational education and (2) the significant relationship between each aspect of the countenance stake evaluation model. The model consists of 3 stages: input (Antecedent), process (Transaction), and output. Then, the population in this study involved 727 students with a sample size of 258.03, and this research was conducted in April-June 2021 at the Prambanan Muhammadiyah Vocational High School. Furthermore, the data analysis techniques used were quantitative descriptive and SEM (Structural Equation Modeling). The study findings reveal that (1) the antecedent stage, encompassing environment, hazard, risk, knowledge, and standardization indicators, is evaluated as excellent by teachers and predominantly good by students. In the Transaction stage, focusing on risk management control, solution, implementation, and culture indicators, teachers rate it as good to perfect, while students generally rate it as very good to good. Moreover, the output stage, comprising control and OHS behavior awareness indicators, is deemed outstanding by both teachers and students. (2) The indicators of the model are valid and achievable following the results of the confirmatory factor analysis, and the structure of the theoretical model fulfils the Goodness of Fit criteria for empirical data because it has six criteria. Furthermore, an antecedent has a significant effect on Transaction and OHS Output, while a Transaction has a significant effect on OHS Output.

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INTRODUCTION

Vocational training students are equipped for immediate industry entry post-graduation. Understanding and implementing occupational health and safety (OHS), including zerosick principles, is crucial [1]. Zerosick aims for zero accidents or harm, emphasizing workplace safety. Integrating zerosick into vocational training prioritizes safety and health[2]. Vocational schools should instill OHS and zerosick, fostering safety awareness. Assessment processes should ensure graduates are prepared for safe and competent professional careers.

The occupational health and safety management system, including zerosick principles, can be socialized to school members [3]. This is because the OHS implementation of students during practicum

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cannot be separated from the responsibilities of the management, such as the role of the teacher when teaching. Furthermore, young workers are reluctant to consider risks because they feel inexperienced and perceive themselves as new employees [4]. They often ignore work risks due to a lack of guidance on OHS, including zerosick practices.

Student attitudes to work based on observations during hands-on learning do not agree with the estimates. This is shown through several incidents, such as some students that still ignore OHS, the potential dangers in the work environment (workshops/laboratories), and the nonoptimal use of Personal Protective Equipment because students assume that PPE only disturbs the convenience of practicum when learning, the unimplemented steps to deal with possible hazards in the work environment, the lack of warnings about hazards that result in decreased levels of vigilance, lack of supervision from subject teachers when practicum can cause potential hazards at work, and minimal knowledge and awareness of students which can cause harm to themselves [5].

The OHS implementation in the workshops and laboratories of the Muhammadiyah Prambanan Vocational High School is considered less effective [6]. This is seen through the socialization about the implementation of OHS in the form of slogans and posters, some workplaces that do not have light fire extinguishers (APAR), and first aid kits for accidents (P3K). The absence of an OHS team or organization in the organizational structure results in the occupational health and safety handling being charged to each department and the workshop rules fully implemented, considering some students still ignore the use of PPE during practicum. Intentional or unintentional carelessness when conducting practicum will result in losses for several parties, such as the work environment, organization, and themselves. When this is not taken seriously, it will become a bad work culture [7].

OHS problems are pretty interesting to be studied because the implementation is expected to make students have a good work culture when working in industry or making decisions to become entrepreneurs independently, and work risks can certainly be minimized [8]. A comprehensive study is essential to assess the Occupational Health and Safety (OHS) practices at Prambanan Muhammadiyah Vocational High School. This study will employ the ZEROSICKS method, which addresses critical elements including hazard identification (Z), environmental assessment (E), risk evaluation (R), current practice observation (O), solution proposal (S), effective implementation (I), fostering safety culture (C), knowledge dissemination (K), and standardization (S). By utilizing this method, the study aims to identify strengths and weaknesses in OHS practices, propose solutions, and establish standardized protocols, ultimately enhancing safety measures and promoting a culture of safety within the school community to ensure the well-being and productivity of all stakeholders [9].

The first question is about the level of occupational health and safety implementation at Prambanan Muhammadiyah Vocational High School. This is divided into three aspects according to the countenance stake evaluation model: input (Antecedent), process (Transaction), and output. Furthermore, a significant relationship between each aspect of the countenance stake evaluation model should be considered. This obtains the relationship between Antecedent and output, Transaction, and output, and Antecedent and Transaction.

METHODS

This study uses a Countenance Stake evaluation model, which has several aspects, such as input (Antecedent), process (Transaction), and output [10]. The Counting Stake evaluation model was chosen for this research due to its holistic and comprehensive nature in evaluating various aspects of the Occupational Health and Safety (OHS) practices at Prambanan Muhammadiyah Vocational High School. The model is integrated with the zerosicks method, which includes the indicators in each

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evaluation stage. The study was conducted from April to June 2021 at the Prambanan Muhammadiyah Vocational High School.

The study preparation stage includes several activities, such as making a design, understanding sources of information or literature relevant to the study, setting an agenda or schedule of activities, and compiling data collection instruments. Furthermore, the implementation phase includes several activities, such as collecting, analyzing, and studying data acquisition. The completion stage includes several activities, such as describing the data by reducing, presenting, and drawing conclusions from the case study. Meanwhile, the reporting stage only has one activity: completing case study reports.

The number of students in the Prambanan Muhammadiyah Vocational High School was 727 people, and the sample was 258.03 students. However, the number of students taken randomly from each class was 259. The solving formula used to determine the number of samples required (an error rate of 5%).

The sample for teachers was determined by applying a purposive sampling technique which ignored the representativeness of the population. In purposive sampling, the consideration is more emphasized on the ability of the informant to supply complete information until no new data is obtained. The sample for this study was the head of the expertise program and the head of the department, the head of the workshop, and the practice teachers totaling 14 people. The questionnaire was used to obtain the assumptions or opinions of respondents regarding the OHS implementation at Prambanan Muhammadiyah Vocational High School during practicum in the workshop or laboratory in each department.

Quantitative descriptive statistics are applied, and the analysis is intended to describe the characteristics of the data obtained in each indicator. An assessment with a score range of 1 to 4 (Likert scale) was used to determine the lowest (SR) and the highest (ST). Score 1 as the lowest and four as the highest is multiplied by the number of questions [11]. The description of the criteria in Tables 1 – 6 is written using abbreviations, such as Very Good (SB) for the highest, Good (B), Bad (TB), and Very Bad (STB) for the lowest. The following is a description of the assessment criteria:

Table 1. Criteria Assessment

No.	Criteria	Percentage (%)
1	Very Good (SB)	76 - 100
2	Good (B)	51 – 75
3	Bad (TB)	26 – 50
4	Very Bad (STB)	0 - 25

The relationship of specific variables with others can be explained by various data analysis techniques, such as SEM. As an example, in the field of Occupational Health and Safety (OHS), we can envision a study aiming to explore the relationships between factors such as job type, tenure, occurrence of workplace accidents, and adherence to safety procedures. This research employs the SEM (Structural Equation Modeling) data analysis technique to elucidate the complex relationships among these variables. SEM is a multivariate analysis technique involving aspects such as factor analysis, path analysis, and regression analysis. The characteristic of SEM is its analytical technique, which is used to confirm the relationships between variables within the context of OHS. Additionally, in this study, researchers based the sufficient sample size for conducting SEM analysis on the reference [12], which suggests that a sample size of more than 200 respondents is adequate to yield valid results.

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RESULT AND DISCUSSION

Description of Input (Antecedent) Data

The input or antecedent stage has five indicators based on zerosicks. First, the environment has sub-indicators of work environment design, air/light/water conditions, OHS slogans and posters, fire extinguishers, and first aid kits. Second, hazard includes potential physical, chemical, biological, ergonomics, mechanical, electrical, and psychological hazard identification sub-indicators. Third, risk has sub-indicators of work activity context determination, identification, and risk analysis. Fourth, knowledge includes sub-indicators of OHS management development, study, training, implementation guideline making, and knowledge provision. Fifth, standardization has sub-indicators of several regulations regarding OHS, and the data obtained are shown in Table 2.

Table 2. Frequency Distribution of All Antecedent Stage Indicators

No	Indicator	Criteria	Teacher		Student	
			Frequency (people)	Percentage (%)	Frequency (people)	Percentage (%)
1	Environment	SB	10	71.43	104	40.15
		B	4	28.57	151	58.3
		TB	0	0	4	1.54
		STB	0	0	0	0
2	Hazard	SB	8	57.14	114	44.02
		B	6	42.86	136	52.51
		TB	0	0	9	3.47
		STB	0	0	0	0
3	Risk	SB	6	42.86	117	45.17
		B	7	50	127	49.03
		TB	1	7.14	12	4.63
		STB	0	0	3	1.16
4	Knowledge	SB	7	50	85	32.82
		B	5	35.71	168	64.86
		TB	2	14.29	6	2.32
		STB	0	0	0	0
5	Standardization	SB	6	42.86	106	40.93
		B	4	28.57	146	5637
		TB	4	28.57	7	2.7
		STB	0	0	0	0

Description of Process (Transaction) Data

The process or transaction stage has four indicators based on zerosicks. First, control (risk management control) has sub-indicators of risk evaluation, risk control, review, and communication and coordination. Second, the solution consists of sub-indicators of elimination, substitution, engineering, SOP, and PPE. Third, implementation includes sub-indicators of coordination between elements, integration between teachers and students, synchronization for occupational health and safety

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implementation, synergy in solving OHS problems, and simplifying OHS implementation. Fourth, culture has concise, neat, clean, caring, and diligent sub-indicators, as seen in Table 3.

Table 3. Frequency Distribution of All Transaction Stage Indicators

No.	Indicator	Criteria	Teacher		Student	
			Frequency (people)	Percentage (%)	Frequency (people)	Percentage (%)
1	Control (risk management control)	SB	7	50.00	150	57.92
		B	6	42.86	106	40.93
		TB	1	7.14	3	1.16
		STB	0	0.00	0	0.00
2	Solution	SB	8	57.14	114	44.02
		B	6	42.86	136	52.51
		TB	0	0	9	3.47
		STB	0	0	0	0
3	Implementation	SB	6	42.86	117	45.17
		B	7	50	127	49.03
		TB	1	7.14	12	4.63
		STB	0	0	3	1.16
4	Culture	SB	7	50	85	32.82
		B	5	35.71	168	64.86
		TB	2	14.29	6	2.32
		STB	0	0	0	0

Description of Output Data

The output stage has two indicators based on zerosicks. First, control (management control evaluation) has sub-indicators of facility repair and maintenance, Occupational Accidents (KAK) recording and reporting OHS policy evaluation, and practitioner health monitoring. Second, OHS behavior awareness includes sub-indicators of first aid kit use, OHS implementation observation, awareness of risk control, straightforward attitude, neat attitude, clean attitude, diligent attitude, and caring attitude, as shown in Table 4.

Table 4. Frequency Distribution of All Output Stage Indicators

No.	Indicator	Criteria	Teacher		Student	
			Frequency (people)	Percentage (%)	Frequency (people)	Percentage (%)
1	Control (management control evaluation)	SB	13	92.86	144	55.60
		B	1	7.14	106	40.93
		TB	0	0.00	9	3.47
		STB	0	0.00	0	0.00
2	OSH behavior awareness	SB	10	71.43	147	56.76
		B	4	28.57	112	43.24
		TB	0	0.00	0	0.00
		STB	0	0.00	0	0.00

Statistical Data Analysis

The data have been organized into four distinct sections in accordance with the assessment criteria as outlined in Table 1. Furthermore, the criteria for all indicators in the Antecedent, Transaction, and Output stages are shown in Tables 5, 6, and 7, respectively.

Table 5. Calculation of Antecedent Stage Based on Teacher and Student Responses

No.	Indicator	Score Interval			Criteria	ST	SR	Mean (X)	Mo	Me	Sdi	Final Criteria	Desc.
1	Environment	22.75	< X ≤	28	SB	28	7	23.57	24	23.5	3.5	SB	T
		17.5	< X ≤	22.75	B								
		12.25	< X ≤	17.5	TB	28	7	22.31	21	22	3.5	B	S
		7	< X ≤	12.25	STB								
2	Hazard	22.75	< X ≤	28	SB	28	7	24.14	21	25	3.5	SB	T
		17.5	< X ≤	22.75	B								
		12.25	< X ≤	17.5	TB	28	7	22.59	21	22	3.5	B	S
		7	< X ≤	12.25	STB								
3	Risk	9.75	< X ≤	12	SB	12	3	9.64	9	9	1.5	B	T
		7.5	< X ≤	9.75	B								
		5.25	< X ≤	7.5	TB	12	3	9.49	9	9	1.5	B	S
		3	< X ≤	5.25	STB								
4	Knowledge	16.25	< X ≤	20	SB	20	5	16.21	19	16.5	2.5	B	T
		12.5	< X ≤	16.25	B								
		8.75	< X ≤	12.5	TB	20	5	15.81	15	15	2.5	B	S
		5	< X ≤	8.75	STB								
5	Standardization	16.25	< X ≤	20	SB	20	5	15.57	12	15.5	2.5	B	T
		12.5	< X ≤	16.25	B								
		8.75	< X ≤	12.5	TB	20	5	16.22	15	16	2.5	B	S
		5	< X ≤	8.75	STB								

Table 6. Calculation of Transaction Stage Based on Teacher and Student Responses

No.	Indicator	Score Interval			Criteria	ST	SR	Mean (X)	Mo	Me	Sdi	Final Criteria	Desc.
1	Control (risk management control)	13	< X ≤	16	SB	16	4	12.43	10	12.5	2	B	T
		10	< X ≤	13	B								
		7	< X ≤	10	TB	16	4	13	12	13	2	B	S
		4	< X ≤	7	STB								
2	Solution	19.5	< X ≤	24	SB	24	6	19.57	21	20	3	SB	T
		15	< X ≤	19.5	B								
		10.5	< X ≤	15	TB	24	6	19.25	18	19	3	B	S
		6	< X ≤	10.5	STB								
3	Implementation	16.25	< X ≤	20	SB	20	5	16.79	17	17	2.5	SB	T
		12.5	< X ≤	16.25	B								
		8.75	< X ≤	12.5	TB	20	5	15.99	15	16	2.5	B	S
		5	< X ≤	8.75	STB								
4	Culture	16.25	< X ≤	20	SB	20	5	17.29	20	17	2.5	SB	T
		12.5	< X ≤	16.25	B								
		8.75	< X ≤	12.5	TB	20	5	16.22	15	16	2.5	B	S
		5	< X ≤	8.75	STB								

Table 7. Calculation of Output Stage Based on Teacher and Student Responses

No.	Indicator	Score Interval			Criteria	ST	SR	Mean (X)	Mo	Me	Sdi	Final Criteria	Desc.
1	Control (management control evaluation)	16.25	< X ≤	20	SB	20	5	15.5	15	15	2.5	B	T
		12.5	< X ≤	16.25	B								
		8.75	< X ≤	12.5	TB	20	5	16.1	15	16	2.5	B	S
		5	< X ≤	8.75	STB								
2	OSH Behavior Awareness	26	< X ≤	32	SB	32	8	26.86	28	28	4	SB	T
		20	< X ≤	26	B								
		14	< X ≤	20	TB	32	8	26.09	27	26	4	SB	S
		8	< X ≤	14	STB								

Description:
SB: Very Good B: Good TB: Bad STB: Very Bad T: Teacher S: Student

Confirmatory Factor Analysis

Confirmatory factor analysis is a multivariate technique that ensures the dimensions of conceptually defining concepts and indicating indicators are considered suitable for each dimension. CFA is conducted to verify the factorial validity of goal attainment, and it is a unique form of factor analysis commonly used in social study [13]. According to [14], CFA is a theory-driven technique that determines the fit between the model and the sample data. More specifically, it is a technique that attempts to confirm when the observed number of factors (constructions) and variable load (indicators) are as expected for the existing theory [15].

This type of analysis is preferred when some knowledge of the latent structure is obtained [16]. CFA can provide further evidence regarding the suitability of the suggested model related to the structure of the identified factors [17]. Therefore, this analysis identifies the factor structure of the phenomena believed or explained, and some variables may not measure what is expected [18]. Convergent validity is based on the study of the expected and plausible relationship with other measures related to two types of variables, including i) the relationship established with the measured variable between different instruments which intentionally measure the same construct and ii) the relationship with instruments that measure other aspects expected to have a positive or negative relationship [19].

Table 8. Confirmatory Factor Analysis Results

Variable	Indicator	Factor Loading
Antecedents	Environment	0.645
	Hazard	0.785
	Risk	0.751
	Knowledge	0.766
Transaction	Standardization	0.714
	Control Risk Management	0.705
	Solution	0.636
	Implementation	0.771
	Culture	0.76
Output	Control Evaluation Management	0.689
	OSH Behavior Awareness	0.810

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Table 8. Confirmatory Factor Analysis Results Joseph [18] stated that the achievement of confirmation and understanding of representations should be evaluated for the reliability and validity of the scale. The Confirmatory Factor Analysis results showed that all the variables forming indicators have a factor loading of more than 0.50 to confirm the significance of the questionnaire [20]. Therefore, it can be stated that the indicators forming the model are valid and feasible. The CFA approach confirms the suitability of the questionnaire to measure goal attainment [21].

SEM Model Analysis

Second-order CFA and SEM Model analysis is continued after the CFA is obtained in the early stages. Several variables have been observed that fulfill the requirements for reliability and validity. The Lisrel processing showed the results of the path diagram and printed output. Furthermore, the path diagram states the standard solution, which shows the loading factor and error variance related to the measurement error of the parameter estimate. The structural model is the OHS with three constructs: output influenced by Antecedent and Transaction**.**

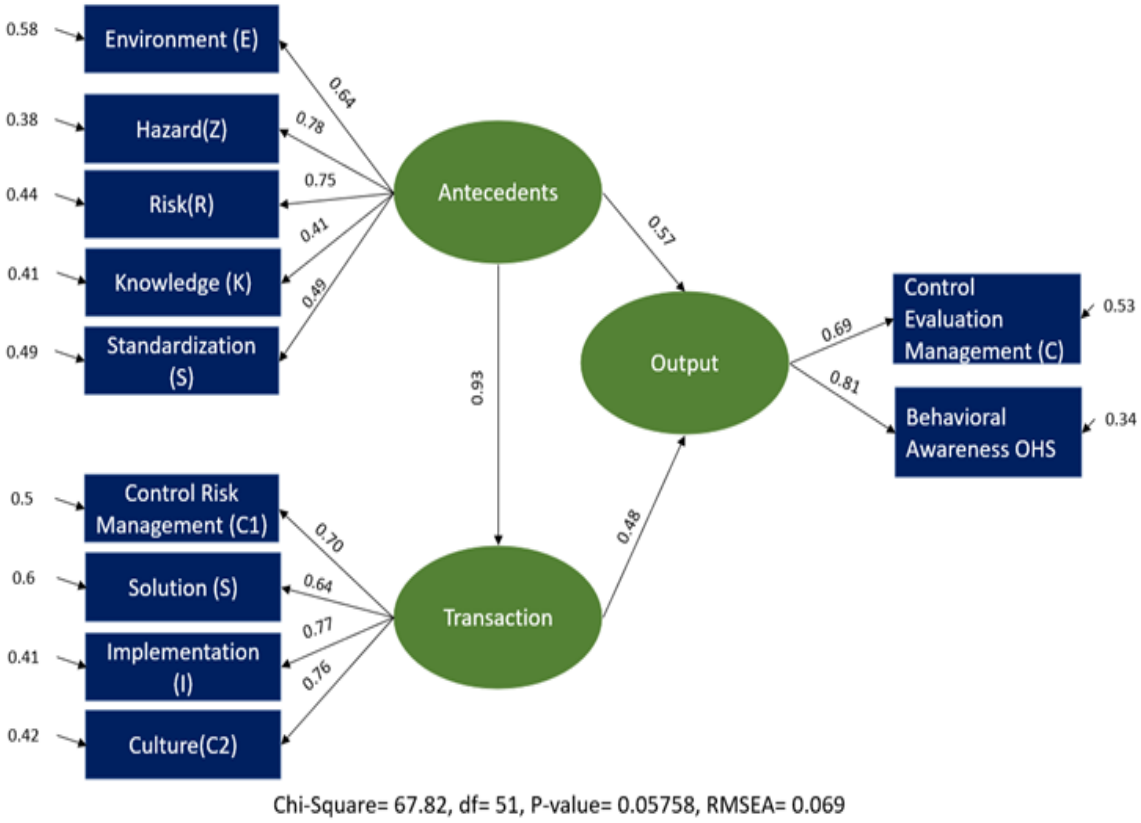

Figure 1. OHS Structural Model

Goodness of Fit Criteria Test

The Goodness of Fit Test of the Theoretical Model Structure with Empirical Data examined the suitability between the theoretical model construction and the data obtained. This test was conducted through the Lisrel program to measure the suitability between the observation input and the predictions of the proposed model. [22] stated that the goodness of fit is evaluated using chi-square ($\chi 2$) ($P > 0.05$), Comparative Fit Index ($CFI > 0.90$), Tucker Lewis Index ($TLI > 0.90$), and Root Mean-Square Error of Approximation ($RMSEA < 0.08$). Furthermore, Cronbach's alpha coefficient, composite reliability (CR), and average variance extracted (AVE) are calculated to ensure instrument reliability (both total and sub-constructs) and split-half correlation. The alpha value in this study is not expected to be high. According to [20], an alpha value of 0.60-0.70 is satisfactory for an exploratory study. Similarly, the CR and the AVE should be more than 0.60 and 0.50 [23].

Table 9. The Goodness of Fit Test Results

The goodness of Fit Index	Cut-off Value	Value	Description
Chi Squares	Expected to be small	67.818	Sufficient
CMIN/DF	≤ 5	0.058	Good
GFI	Expected to close to 1	0.861	Good
AGFI	$\geq 0{,}90$	0.787	Marginal
CFI	$\geq 0{,}90$	0.942	Good
PNFI	0,60 – 0,90	0.658	Good
NNFI	$\geq 0{,}90$	0.924	Good
RMSEA	0,08	0,069	Good

Marginal = close to the value

The Output Fit above showed that the structure of the theoretical model had fulfilled the Goodness of Fit test criteria. More details can be observed from the statistical figures in the table above. Based on Table 3 and the explanation above, the theoretical model has fulfilled the Goodness of Fit criteria on four tests and three criteria close to the desired value. According to [20], a model is considered to have a good fit when it fulfills the Goodness of Fit test in at least three criteria. Based on the Goodness of Fit criteria test results, it can be concluded that the theoretical model fits the empirical data well because it fulfils six criteria. Lisrel software is used to analyze the structure of the theoretical model by entering manifest variables (indicators/constructs) selected for each exogenous or endogenous latent variable through several analytical processes.

Table 10. Hypothesis Test

Variable Relationship	Estimate Coefficient	t-value	R^2
Antecedent $\rightarrow$ Transaction	0,927	11,974	0,719
Antecedent $\rightarrow$ OHS Output	0,480	2,431	0,859
Transaction $\rightarrow$ OHS Output	0,565	2,862	

The SEM model analysis with Lisrel software showed that the coefficient estimate for Antecedent to Transaction is 0.927 with a t-value of 11.974. With a t-value of more than 1.96, it can be stated that the Antecedent has a significant effect on the Transaction supported by an explanatory factor of 71.9% ($R^2 = 0.719$). Furthermore, the coefficient estimate for the Antecedent to the OHS output is 0.480 with a t-value of 2.431. With a t-value of more than 1.96, it can be stated that the Antecedent significantly affects the OHS output. The coefficient estimate for Transaction on OHS output is 0.565 with a t-value of 2.862. With a t-value of more than 1.96, it can be stated that Transaction significantly affects OHS output. Therefore, Antecedent and Transaction can explain the OHS output model of 85.9% ($R^2 = 0.859$).

CONCLUSION

Antecedent Stage Discussion

Based on the questionnaire results, the environmental indicators (work environment conditions) receive perfect criteria according to the teachers, with a mean of 23.57, and suitable criteria for students, with a mean of 22.31. Furthermore, a comfortable working environment is supported by clean water. The absence of proper procurement and management related to water sources can hinder learning, such as students and teachers needing water to clean up after practicum. The procurement of workstations, toilet facilities, and clean water is due to the school's commitment. This can be improved in terms of hygiene aspects to support health conditions. Signs regarding OHS and workshops are available at least

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once in every existing workshop and laboratory. However, the distribution of occupational health and safety posters is not evenly distributed, and when the poster is not held, the student's character in the OHS culture will be reduced. Procurement is recommended, considering the importance of OHS signs and slogans in pursuing zero accidents.

The OSH and APAR posters and the procurement of first aid kits have a similar level of urgency because they indicate that vocational education is aware of the importance of OSH [1]. Additionally, field facts showed that the procurement of fire extinguishers and first aid kits had been conducted. Fire extinguishers were distributed in almost all practice sites, while first aid kits were held and centered at School Health Unit.

Based on the distributed questionnaires, the management of potential hazards through the prevention of physical, chemical, biological, ergonomic, electrical, and psychological hazards is concluded in the criteria of very good and sound according to the teachers and students with a mean of 24.14 and 22.59, respectively. The hazard identification procedure document does not exist based on the observation and documentation results. However, it is briefly and generally stated in the teacher's practicum sheet, workshop/laboratory rules, and orally. According to [24], implementing excellent and well-maintained procedures improves OHS performance. Attention to potential hazards already exists and will increase when an accident occurs. The identification process is conducted, and it does not happen a second time. The facts showed that accidents are infrequent allowing low awareness about preventing potential hazards in workshops and laboratories. When there is no identification and analysis, the potential hazard cannot be controlled and can lead to casualties. Therefore, management ensures compliance with the system through several checking or auditing processes. The effort required by management to ensure compliance with OSH is not always seen as a top priority when more pressing issues arise. Meanwhile, occupational health and safety investigations are only often conducted intensively after an accident or injury [24]. The recommendation offered is the identification of potential hazards using the HIRARC (Hazard Identification Risk Assessment and Risk Control) method [8].

Based on quantitative data, the risk indicator is concluded to have good criteria according to the teachers and students, with a mean of 9.64 and 9.49, respectively. Discussions on occupational risks, such as identification and analysis, were orally conducted between the teachers concerned. The analysis of work risks can impact the progress of OHS management because the results can be used to evaluate the OHS development. Furthermore, implementing HIRARC can be recommended because this method can evaluate, eliminate or reduce risks and potential hazards [8]. According to [25], schools should recognize the need to integrate risk perception failure with welfare improvement.

Based on quantitative data, the knowledge indicator is concluded to obtain good criteria from teachers and students with a mean of 16.21 and 15.81, respectively. OHS knowledge is included in the learning material, and students and teachers can add insight. The implication or impact of being given OSH knowledge is that teachers and students can better understand work hazards [25]. Furthermore, the recommendation offered is to conduct or participate in various activities such as OSH education and training, considering that proper training and protection services should be conducted [8]. According to [25], the OSH training process can be conducted by teaching less experienced teachers or students. The quality of teachers will determine the quality of graduates and [26] stated that training is proven to increase knowledge, attitudes, and self-confidence. The formation of the OHS team provides a curriculum to increase students' awareness [9].

Based on the quantitative data generated by distributing questionnaires, the standardization indicator obtained good criteria from teachers and students with a mean of 15.57 and 16.22, respectively. The Prambanan Muhammadiyah Vocational High School has also implemented ISO 9001:2008 regarding quality management and matters relating to OHS. The implementation within the scope of the Vocational High School was integrated with the Quality Management System.

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Transaction Stage Discussion

The quantitative data showed that the control indicator (risk management control) has good criteria from teachers, with a mean of 12.43, and very good from students, with a mean of 13.00. Discussions on risks, such as the evaluation, were conducted during monthly department and top leader meetings, where the forum discussed issues globally, not only OHS. According to [25], schools should recognize the need to integrate risk perception failure with welfare improvement, and the recommendation is to conduct training. According to [25], training is essential because it increases awareness of work risks through hazard identification and analysis. Furthermore, another recommendation is the procurement and management of SOPs. [25] stated that SOPs are necessary since violations of health and safety rules or procedures are one of the biggest causes of accidents and injuries in the workplace, and good communication can also help teachers and students manage risk [25].

The solution indicator has perfect criteria from teachers and students, with a mean of 19.57 and 19.25, respectively. SOPs and PPE are solutions to OHS problems. The procedures should be established to ensure potentially hazardous equipment remains safe for use and in conditions that will not cause harm to the environment [25]. The recommendation offered is the empowerment to remind students about using PPE. Employers or teachers have the right to raise fear in students. The emergence of this fear makes students comply with procedures and not oppose the teachers [8].

Furthermore, gift-giving can be used as an option other than punishment. An example can be seen in industries, such as providing financial rewards when workers complete a smoking cessation program at work [27]. The gifts offered can be in the form of added value, where students disciplined in implementing regulations in the workplace are given added values that will affect the report cards each semester and at the time of graduation. According to [25], using PPE can reduce a person's perception of work risks. Disaster and emergency response are one of the concerns at this school. In a disaster, it is necessary to take actions different from normal circumstances, such as identifying potential occupational health needs related to disaster response and supporting decision-making in crisis management [28].

The implementation indicator receives perfect criteria from teachers and students with a mean of 16.79 and 15.99, respectively. This implementation stage, based on the KISSS theory, has been conducted from the monthly departmental meeting forum and top leader meeting (along with school leaders). Furthermore, occupational Health and Safety have been implemented and integrated with the Quality Management System.

Based on quantitative data, the work culture indicator obtains perfect criteria from teachers, with a mean of 17.29, and good criteria from students, with a mean of 16.22. The observational results showed that every department at the Prambanan Muhammadiyah Vocational High School is still trying to implement the 5S/5R program. The school should constantly develop a safety culture to assess the reliability of the equipment process [8]. Furthermore, teachers should also provide an example and set OHS as a top priority [25]. According to [4], creating a work culture consistent with the provisions of OHS impacts students' sustainability in conducting practicum.

Output Stage Discussion

The control indicator (management control evaluation) receives good criteria from teachers and students with a mean of 15.50 and 16.10, respectively. Reports on occupational diseases and accidents are conducted between teachers and teachers and students and teachers, which can be further reported at departmental meeting forums or top leader meetings. Documentation of report files is essential, considering that evidence such as reports can be good material for developing OHS programs [27]. The recommendation offered is to hold an annual agenda in the form of a meeting regarding the evaluation of the OHS program or the assessment of the management [29]. According to [3], an annual evaluation of OSH implementation can improve applied principles. The results of this annual meeting can be used as material to determine OHS planning for the following year. Furthermore, [7] stated that the functional

evaluation of the monitoring system is one indication of enforcing the OSH management system. Maintenance and repair of facilities in workshops and laboratories are conducted daily by teachers and students. Meanwhile, supervision/monitoring of OHS is charged to each department, and the head of the department and the expertise program indirectly have more responsibilities in this process. Meanwhile, the recommendation given is that schools can make documents in an effort to supervise because the most significant factor in system failure is supervision [24]. Supervising OHS actions can reduce the causes of work accidents, such as human error and equipment conditions. According to [27], management intervention is essential in overcoming health and safety risks. [8] stated that periodic assessments and reviews of safety procedures and system performance should be conducted.

Based on quantitative data, the OHS behavior awareness indicator receives perfect criteria from teachers and students, with a mean of 26.86 and 26.09, respectively. Observations regarding OHS can be conducted independently and consciously. The recommendation in the form of using the 5W+H analysis method obtained the problems in the work area. The document in question at least contains what hazards may occur or have occurred, those involved and responsible for handling, when the event occurs and when the handling is carried out, why it needs to be handled, the possible place for the intended hazard to occur, and the preferred solutions. Students and teachers can conduct simple risk control, such as not using damaged hand tools because they can endanger themselves and others. The impact is to increase awareness of work risks through hazard identification and risk analysis [25], and the implementation of SOPs in terms of OHS awareness is also considered essential. The recommendation offered is the procurement and management of good SOPs. According to [25], SOPs are considered necessary, considering that violation of health and safety rules or procedures is one of the biggest causes of accidents and injuries in the workplace. Subsequently, schools should continually develop a safety culture and equipment process reliability assessment [8]. [3] stated that creating a work culture with the provisions of OHS impacts students' sustainability in conducting practicum.

Interpretation

The environmental indicator (working environment conditions) receives perfect criteria from the teachers and students, with a mean of 23.57 and 22.3, respectively. The hazard indicator (potential hazard) also receives perfect criteria with a mean of 24.14 and 22.59. Furthermore, the risk indicator (occupational risk) receives good criteria from teachers and students, with a mean of 9.64 and 9.49, respectively. The knowledge indicator (OHS knowledge) also obtains good criteria with a mean of 16.21 and 15.81, respectively. The standardization receives good criteria with a mean of 15.57 and 16.22, respectively.

The control indicator (risk management control) receives good criteria from teachers, with a mean of 12.43, and perfect criteria from students, with a mean of 13.00. Meanwhile, the solution indicator receives perfect criteria from teachers and students, with a mean of 19.57 and 19.25, respectively. The implementation indicator obtains perfect criteria from teachers and students with a mean of 16.79 and 15.99, respectively. Meanwhile, the culture indicator (work culture) receives perfect criteria with a mean of 17.29 and 16.22, respectively. The control indicator (management control evaluation) receives good criteria from teachers and students with a mean of 15.50 and 16.10, respectively. Meanwhile, the OHS behavior awareness indicator obtains perfect criteria from teachers and students, with a mean of 26.86 and 26.09, respectively.

The CFA test results showed that the model's indicators are valid and feasible, and all variables forming indicators have a factor loading greater than 0.5. Furthermore, the structure of the theoretical model has fulfilled the Goodness of Fit criteria because it has six criteria. Antecedent has a significant effect on Transactions with t-value (11.974) > 1.96 supported by an explanatory factor of 71.9% (R^2 = 0.719). Antecedent also has a significant effect on OHS output with a t-value (2.431) > 1.96, while Transaction has a significant effect on OHS Output with a t-value (2.862) > 1.96. Therefore, Antecedent

and Transaction can explain the OHS output model of 85.9% ($R^2 = 0.859$).

The recommendations offered are that the school should 1) add OSH signs and posters in the practice area; 2) equip some equipment in the work environment, such as fire extinguishers and first aid kits; 3) apply identification and analysis of potential hazards and work risks in every workshop or laboratory using HIRARC; 4) implement training to understand better OHS and how it can be instilled in students during learning practicums; as well as 5) conduct and manage SOPs. Furthermore, teachers should 6) provide serious supervision during practicum and take firm action against students that do not use PPE; 7) educate the school members regularly regarding emergency handling; and 8) constantly develop a safety culture and equipment process reliability assessment. Additionally, teachers should 9) provide an example and set Occupational Health and Safety as a top priority; 10) create a special team to provide an OHS curriculum to increase students' OHS awareness; 11) make several documents such as reporting procedures for Occupational Accidents (KAK), Occupational Diseases (PAK), and OHS evaluation/audit documents; 12) hold an annual agenda regarding the evaluation of the OHS program or the assessment of the management; and 13) conduct observation or analysis using the 5W+H method (When, Why, What, Where, Who, and How).

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