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ORIGINAL ARTICLE

Employees' Internal Factors Leading to Rule-breaking Acts at the Workplace

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ABSTRACT

Introduction: The 2022 National Occupational Health and Safety (OHS) Profile in Indonesia shows that the human factor in safety is a factor that influences the risk of workplace accidents. The mining accidents statistical data in Indonesia, in which there was a 100% increase of workplace accidents in 2022, have given this industry an urgency to get a special attention to study risk-taking behavior at the workplace. At the organizational level, PT. XYZ (a mining contractor company in Indonesia) has internally measured its safety maturity level and is currently in calculative level, which indicates that the OHS management system has been implemented but the number of unsafe behaviors and unsafe conditions on site is still high. This paper explores quantitative results from research which aims to obtain an overview of employees' internal factors leading to rule-breaking acts at the workplace. **Methods:** This paper uses cross-sectional design research with quantitative approach. Using stratified random sampling, a sample of 283 employees of PT. XYZ Site A participated in this study, ranging from managers, supervisors, and workers. Data were collected through a questionnaire with open-ended questions referring to a study from Safe Work Australia and analyzed quantitatively using statistical Chi-Square statistical test. **Results:** From the results of the Chi-Square test, the independent variables that have a value of Asymp. Sig. (2-sided) below 0.05 (95% CI) and lead to rule-breaking act at workplace are risk-taking behavior acceptance (0.018), normalizing minor accidents (0.002), and decision to take risk (0.000). **Conclusion:** Employees' internal factors of risk-taking behavior acceptance, normalizing minor accidents, and decision to take risk have positive and significant effect on rule-breaking acts at the workplace. It is recommended that organizations implement a proper risk management with ALARP principle, safety empowering leadership, and safe behavior trainings to minimize rule-breaking acts at the workplace.

Keywords: human factors in occupational safety, risk taking, rule breaking

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INTRODUCTION

The Indonesian Ministry of Manpower has published the 2022 National Occupational Health and Safety (OHS) Profile in Indonesia (2022) which illustrates factors influencing the risk of workplace accidents closely related to human factors in safety. In the mining industry, the 100% increase of workplace accidents based on Indonesian national data reported by the Directorate General of Mineral and Coal (2022) as well as the data from Minerba One Data (2024) have given this industry an urgency to afford special attention to study risk-taking behavior that leads to rule-breaking acts at the workplace. This paper aims to explore employee perceptions on risk-taking behavior at the workplace.

Several studies on risk-taking and rule-breaking behavior have been conducted in many contexts. Hill *et al*. (cited in Low *et al*., 2019) define risk-taking as an unsafe behavior which includes decision-making with possible failure/success outcome and its severity. Jung, Kang and Choi (2020), meanwhile, define such behavior as the proactive behavior of individuals on taking potential risks.

Rule-breaking behavior, according to Desai (cited in Ghosh and Shum, 2019), refers to violating behavior on formal workplace rules, regulations, and standards.

This research puts a focus on risk-taking behavior that leads to rule-breaking acts at the workplace. In this case, this is about a decision to take risk in a form of breaking the rules. In comparison, this definition has a different perspective

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from taking risk when the total risk has been reduced into acceptable residual risk.

Safe Work Australia (2014) explored employees' perceptions on risk-taking and rule-breaking behavior at different workplaces in many industries throughout Australia. In their study, they found that large-scale companies admit that their workers ignore safety rules to finish work as per target and that they will take shortcuts in the works that involve little or no risks.

In other research, Pfister *et al*. (2019) find that individuals are experiencing a continuous cognitive conflict exactly prior to the rule-breaking act. This indicates that there is a risk calculation processing within each individual's mind regarding the result of the rule-breaking behavior that they are about to perform.

Meanwhile, Ghosh and Shum (2019) define five types of causes that trigger rule-breaking behavior at the workplace, i.e. 1) self-interest, 2) accidental situation, 3) helping colleague, 4) improving efficiency, and 5) promoting client services. This categorization indicates that other individuals can have influence toward an individual to break the rules at the workplace. Furthermore, Ghosh and Shum (2019) also explain Pro-social Rule Breaking theory, which refers to a conceptualization of behavior as an ethical sacrifice and assessment to break rules due to indirect compulsion because of the need to be accepted in a certain community or group.

Breivik, Sand and Sookermany (2019) elaborate that risk-taking behavior is generated by five causes, i.e. 1) sensation seeking, 2) safety skepticism, 3) leadership promoting risk-taking, 4) difference in gender, age, team cohesion, and 5) strategic and situational factors.

Low *et al*. (2019) in their study stated that risk-taking behavior is strongly influenced by individuals' understanding on risks. Individuals that have made risk calculation will have the courage to take risk. This indicates that risk understanding also triggers a complacency mindset which eventually creates a comfort zone for individuals to take risk. Breuer *et al*. (2020) explain that individuals take risk because of their trust to the team and the willingness to protect their team. Individuals that have this team trust may take risk or even break rules for the benefit of their team.

In the context of global crisis, Bu *et al*. (2020) explain that individuals' past experiences have influence in risk-taking behavior. Individuals who have incident experience in the past will have less tendency to take risk. This makes them perform very carefully at work. However, this does not mean that individuals have to experience an incident first in order to work safely afterwards. They can use other people's incidents as a lesson-learned to work safely with a hope that any similar incidents do not occur to them.

Jung, Kang and Choi (2020) conducted research on empowering leadership that can influence risk-taking behavior. In this case, individuals who are given power from their organizational leaders will have a strong psychological condition to take risk without any fear regarding negative consequences. Other research (Qureshi, Saleem and Ahmed, 2021) finds that, within a work context, there is an indirect relationship between rule-breaking behavior with performance expectation from organizational leadership. This finding needs to be carefully interpreted. It does not mean that the leaders ask their workers to break the rules. Workers perceive that the target from the leaders given to them are rationally hard to achieve. This situation triggers them to break the rules in order to achieve the target.

Meanwhile, Wang *et al*. (2021) explain that rule-breaking behavior is triggered by high performance expectation given from direct supervisors to their workers. In this case, workers tend to break the rules when they find difficulties in fulfilling such high-performance expectation. Furthermore, work stress experienced by individuals also plays an important role in motivating them to break the rules.

Cruwys *et al*. (2021) conducted research focusing on risk perception. From their research, it can be learned that, when a risk appears at the workplace but an individual does not perceive it as a risk, he/she will have a tendency to perform risky works. Therefore, the likelihood of an incident to occur becomes higher.

Rowe *et al*. (2022) in their research on road safety, found that risk-taking behavior, such as speeding, is caused by an inner motivation from individuals to look cool and impress their passengers. This indicates that those individuals perceive risk-taking as a prestige. Furthermore, they do not realize that such behavior can endanger themselves and other people.

From the above studies, it can be learned that both internal and external factors play important roles in activating risk-taking behavior that leads to rule-breaking acts. Overall, the organization's ability

to identify factors influencing these behaviors can contribute to decreasing the risks in every work. Indirectly, this identification is also an important step in organizational risk management.

Risk management is closely related to the As Low As Reasonably Practicable (ALARP) principle, which has been a focus in several recent research. In order to assist decision-makers regarding the right level of risk controls, Langdalen, Abrahamsen and Selvik (2020) propose a concept of systems thinking. This concept refers to a way of seeing the whole and interactions that have ALARP implications for managing risk in terms of giving how much weight of risk reductions and uncertainties, meanwhile, Pike, Khan and Amyotte (2020) emphasize that the ALARP principle can assist in understanding and minimizing the likelihood and the severity of the occurrence of workplace accidents. Their study shows the final objective of risk controls, i.e., preventing workplace accidents.

Furthermore, the ALARP principle has to consider human factors in safety, which is now directed toward achieving a concept of human as a safety hero at the workplace. Ünal *et al*. (2021) found that safety commitment from organizational managers has a positive effect on employees, awareness, competence, involvement, and reporting culture in safety. This indicates an important role for managers as positive influencers for their employees to improve their safety performance. Fabiano *et al*. (2022) argue that human as a hero in safety must be utilized in conducting risk controls on potential accidents as well as in promoting safety culture. Organizational management needs to maximize its employees who perform well in safety to influence other employees in improving the organization's safety performance as a whole.

METHODS

The research was conducted in July to December 2023 at PT. XYZ Site A, a mining contractor company in South Kalimantan Province, Indonesia. It obtained an Ethical Approval issued by the Research and Community Engagement Ethical Committee, Faculty of Public Health Universitas Indonesia, Number: Ket- 624/UN2. F10.D11/PPM.00.02/2023. The research utilized a questionnaire with open-ended questions on risk-taking behavior at the workplace. Due to the wide range of the research results, this paper explored a partial scope of the research results, i.e. the seven descriptors of risk-taking behavior referring to the study from Safe Work Australia (2014), which was analyzed using cross-sectional design with quantitative approach (Saha and Paul, 2021).

Seven descriptors from the study conducted by Safe Work Australia (2014) were used as variables in this research, with the details as follows: 1) Dependent variable: rule-breaking act (two categories: Yes / No); 2) Independent variables, which all used three categories (Yes / No / Neutral): a) dangerous behavior acceptance; b) risk-taking behavior acceptance; c) feeling of not worried about injuries; d) normalizing minor accidents; e) assumption that risk is unavoidable, and f) decision to take risk.

As the questionnaire was in the form of open-ended questions, the categorization of all variables utilized qualitative coding scheme as follows: 1) Responses that expressed positive stance, affirmation, or agreement toward the question were categorized into "Yes" answer; 2) Responses indicating negative stance, denial, or disagreement toward the question were categorized into "No" answer; 3) Responses that were neither strongly agree nor disagree, ambiguous, or uncertain were categorized into "Neutral" answer.

This research used stratified random sampling technique (Saha and Paul, 2021). From the population, the distribution of the number of managers, supervisors, and workers was identified. The percentage of each group was then determined. Referring to Slovin formula (Susanti *et al*., 2019; Zach, 2023).

$$n = \frac{N}{1 + N(e)^2}$$

n = sample size
N = population size
e = margin of error

for a population of 848 employees of PT. XYZ Site A, and margin of error 5%, the necessary sample size for this research was 272.

There were 283 employees of PT. XYZ Site A, ranging from managers, supervisors, and workers, who participated in this study. In total, this number exceeded the minimum necessary sample size of 272. In terms of group percentage distribution, there were more participating samples from managers and workers than the minimum necessary samples, while the participating samples from supervisors were lower than the minimum necessary samples due to

Table 1. Sample Distribution

Study Group	Population		Minimum Necessary Sample*	Participating Sample
	N	%	N	N
Managers	22	2.6	7	17
Supervisors	160	18.9	51	47
Workers	666	78.5	214	219
Total	848	100	272	283

*Based on Slovin Formula and Population Percentage

several supervisors were on night shift or on leave during the study. Table 1 gives an overview on how the participating samples were distributed among three groups of employees.

Afterwards, Chi-Square statistical test was conducted to identify the association between independent variables and rule-breaking act, i.e., the values of Asymp. Sig. (2-sided). Meanwhile, the values of Odds Ratio (OR) and 95% Confidence Interval (CI) were determined from the "Yes" and "No" answers in the questionnaire in order to comply with statistical 2x2-table calculation between each independent variables with the dependent variable.

RESULT

Univariate Analysis

Based on Table 2, the majority of participants from managers, supervisors, and workers state that they never break the safety rules. However, 13.1% of the participants admit that they break safety rules to finish their job on time. Meanwhile, for independent variables, the majority of the participants reject the aspects related to risk-taking behavior at the workplace. There is one variable, however, that has a close gap of percentage on the answers, i.e. assumption that risk is unavoidable.

Around 6.7% of the participants accept dangerous behavior, while accepting risk-taking behavior has twice more than that, i.e. 15.9%. Furthermore, 17.3% of the participants are not worried about injuries. They consider that their workplace is not a place for people who are too worried about injuries. Meanwhile, minor accidents are considered a normal thing at work by 15.5% of the participants. Moreover, 9.5% of participants will dare to take risk if in the future they have a very tight schedule.

Table 2. Frequency Distribution of All Variables

Variables	Total of Respondents	
	n	%
Dependent Variable		
Rule-breaking Act		
Yes	37	13.1
No	246	86.9
Independent Variable		
Accept dangerous behavior		
Yes	19	6.7
No	262	92.6
Neutral	2	0.7
Accept risk-taking behavior		
Yes	45	15.9
No	231	81.6
Neutral	7	2.5
Not worried with injuries		
Yes	49	17.3
No	229	80.9
Neutral	5	1.8
Normalizing minor accidents		
Yes	44	15.5
No	239	84.5
Neutral	0	0.0
Assume risk is unavoidable		
Yes	123	43.5
No	155	54.8
Neutral	5	1.8
Decision to take risk		
Yes	27	9.5
No	254	89.8
Neutral	2	0.7

The variable of assumption that risk is unavoidable has a quite small gap in the answers' frequency percentages, i.e. 43.5% (yes) and 54.8% (no). This shows that there is a difference of point of view or perception regarding risk at the workplace. This difference occurs throughout all levels of employees (managers, supervisors, and workers).

Bivariate Analysis

The association between independent variables and rule-breaking act is illustrated in Table 3. It can be seen from the table that the independent variables that have the value of Asymp. Sig. (2-sided) below 0.05 are risk-taking behavior acceptance (0.018), normalizing minor accidents (0.02), and decision

to take risk (0.000). Therefore, these three variables have positive and significant association with rule-breaking act. Meanwhile, other variables (dangerous behavior acceptance, feeling of not worried about injuries, and assumption that risk is unavoidable) do not have such positive and significant association with rule-breaking act.

The value of OR for risk-taking behavior acceptance is 2.790 (95% CI = 1.253-6.213), which means that employees that accept risk-taking behavior will have a 2.790 times higher risk to break the rules than the ones who do not accept it. Furthermore, the value of OR for variable of normalizing minor accidents is 3.210 (95% CI = 1.468-7.018). This indicates that employees who consider minor accidents are a normal thing will have a risk of 3.210 times higher than those who do not consider it. Meanwhile, the OR value for variable of decision to take risk is 6.029 (95% CI = 2.530-14.366). Therefore, employees who will take risk if they have a tight work schedule will have a risk of 6.029 times higher than those who will not perform such behavior.

DISCUSSION

Research Comparison

Perceptions on risk-taking behavior and rule-breaking behavior at workplace has been studied by Safe Work Australia (2014), in which its several descriptors are referred to in this research. However, this research cannot be regarded as an equal "apple to apple" research because there are specific characteristics contexts that make both researches differ. This research uses micro approach in the context of one company in one industry, while the research from Safe Work Australia (2014) uses a macro approach in the context of many companies in multi-industries. This research, therefore, can

Table 3. The Association between Independent Variables and Rule-breaking Act

Variables	Rule-breaking Act				Total	%	Asymp. Sig. (2-sided)	OR (95% CI)
	Yes		No					
	n	%	n	%				
Accept dangerous behavior								
Yes	4	10.8	15	6.1	19	6.7	0.492	1.851 (0.579-5.913)
No	33	89.2	229	93.1	262	92.6		
Neutral	0	0.0	2	0.8	2	0.7		
Accept risk-taking behavior								
Yes	11	29.7	34	13.8	45	15.9	0.018*	2.790 (1.253-6.213)
No	24	64.9	207	84.1	231	81.6		
Neutral	2	5.4	5	2.0	7	2.5		
Not worried with injuries								
Yes	5	13.5	44	17.9	49	17.3	0.530	0.700 (0.258-1.897)
No	32	86.5	197	80.1	229	80.9		
Neutral	0	0.0	5	2.0	5	1.8		
Normalizing minor accidents								
Yes	12	32.4	32	13.0	44	15.5	0.002*	3.210 (1.468-7.018)
No	25	67.6	214	87.0	239	84.5		
Neutral	0	0.0	0	0.0	0	0.0		
Assume risk is unavoidable								
Yes	19	51.4	104	42.3	123	43.4	0.490	1.483 (0.735-2.993)
No	17	45.9	138	56.1	155	54.8		
Neutral	1	2.7	4	1.6	5	1.8		
Decision to take risk								
Yes	11	29.7	16	6.5	27	9.5	0.000*	6.029 (2.530-14.366)
No	26	70.3	228	92.7	254	89.8		
Neutral	0	0.0	2	0.8	2	0.7		

be perceived as an additional reference regarding employees' perceptions on risk-taking behavior.

This research also has different findings compared to other research, in which there is no evidence that a rule-breaking act is a result of internal individual factors, such as self-interest (as found in Ghosh and Shum, 2019), sensation seeking (as found in Breivik, Sand and Sookermany, 2019), or motivation to look cool and impress client (as found in Rowe *et al*., 2022).

This is because the context and work environment studied by the three researches are non-industrial, in which health and safety management system is not highlighted strongly, such as hospitality (Ghosh and Shum, 2019), military (Breivik, Sand and Sookermany, 2019), and road driving (Rowe *et al*., 2022).

Industrial organizations need to be aware that there are other non-industrial organizations that have an opposite approach, in which they support risk-taking behavior as an innovative process. According to Elsayed *et al*. (2023), an employee's willingness to take risk to creatively improve products, services, and processes is highly valued by an organization, rather than not trying something new. Kim and Zhan (2023), meanwhile, argue that rule-breaking can be beneficial to the organization if it is pro-customer rule-breaking. In this case, rules are broken for the benefit of a client. Hodgson (2024) even defines rule-breaking as a misbehavior which is considered as a flexible approach to the significance of social rules. Meanwhile, Ahmed and Khan (2024) reveal that there is a positive relationship between ethical leadership and employees' pro-social rule-breaking behavior within organizational settings.

Considering the four researches above, it will be another significant risk for industrial organization when they have employees coming from organizational cultures that have an opposite approach on risk-taking or rule-breaking. Intensive education and training need to be conducted for this group of employees.

Differences in Risk Perception

This research has shown that there is a significant difference of point of view among employees regarding risk at the workplace whether it is avoidable or unavoidable. With the As Low As Reasonably Practicable (ALARP) principle (Pike, Khan and Amyotte, 2020), risks have to be controlled toward acceptable residual risks to enable the commencement of any works. However, several big questions arise regarding this, i.e., to what extent is a risk acceptable? How low can a risk be pressed down or how high can a risk still be permitted? Whose point of view is used to consider acceptable risk? Which risk is prioritized, production or safety risk?

We can learn from this research that employees have several internal factors that lead them to break the rules at the workplace. Even though the majority of the employees never break safety rules, the minority who have done a rule-breaking act appear to be another risk that needs to be controlled by the organization.

Job safety analysis (JSA) development is sometimes performed by one department, for example, the engineering, production, or safety department. This creates a specific risk because each department's point of view on risk is different. Therefore, all departments related to the works must be involved in this process so that there is a collective agreement in assessing the likelihood and the severity of the incidents that potentially occur.

However, job safety analysis does not stop at the point of view from the developers only. It also needs to be cross-referenced with the points of view from supervisors and workers. If the residual risk is assessed as a low risk, will it create a comfort zone and complacency (as indicated in Low *et al*., 2019) for supervisors and workers to take shortcut and break the rules? If this has been the case, this situation is similar to what has been found in the research by Safe Work Australia (2014), in which workers will take shortcuts when the works are assessed to have little or no risks. The solution for that situation is to put the risk value higher so that supervisors and workers can be more vigilant in doing the works. From this analysis, it can be seen that risk perception plays an important role in risk-taking behavior at the workplace.

Risk Ownership and Decision to Take Risks

Another highlight to be considered by an organization is risk ownership, i.e., a perception to see whether a risk belongs to each employee or the organization as a whole. If the risk is perceived to belong to the employees, they tend to ignore what the organization says about the risk. One clear example is found in this research, in which individuals who consider minor accidents as a normal thing will have a strong tendency to break the rules at the workplace. If this perception occurs in many employees, it will become a hazard to the organization. This is because the company does

not consider minor accidents as a normal thing. Furthermore, all accidents, be it minor or major, must be handled seriously by finding the root causes to prevent recurrence in the future. All employees must understand that the risks in all works are owned collectively by everyone in the organization. They also have to understand that every risk they take can have impacts to the organization.

From this research, it can also be learned that a tight work schedule can strongly trigger individuals' decision to take risk. Even though there is an external force from the work schedule, there is an internal risk self-assessment in individuals' minds that stimulates the risk-taking decision. This indicates that they will do whatever they need to do to finish their works. This is in line with the findings from research conducted by Safe Work Australia (2014), Qureshi, Saleem and Ahmed (2021) and Wang *et al*. (2021) that, because of performance expectation from the organization that needs to be delivered by employees, they decide to take risk. Referring to the study from Breivik, Sand and Sookermany (2019), this is an example of strategic and situational factors that individuals are facing, which leave them no other choice but to take risk to finish their works.

Employees' decision to take risk may have gone through a psychological process in their mind. According to Pfister *et al*. (2019), prior to risk-taking behavior, there is a cognitive conflict occurring in employees' minds whether or not to take risk at work. However, according to employees' assessment, the priority of finishing work on time is higher than their own safety. We argue that there is an ethical sacrifice made by employees when making risk-taking decision, as stated by Ghosh and Shum (2019). This is because in the employees' deepest mind, they know that safety is also a priority.

Reducing Rule-breaking through Leadership and the ALARP Principle

Safety performance cannot be a task for employees only; they need safety support from their leaders. Thus, instead of risk-taking empowering leadership, as indicated by Jung, Kang and Choi (2020), organizations must implement safety empowering leadership. By having this safety leadership, employees can decide to work safely rather than to take risk at work. They also have to be guaranteed that they will get support from the organization when they stop their work due to safety reasons. This concept of safety leadership, therefore, can support the notion of human as hero in safety, as indicated (Ünal *et al*., 2021; Fabiano *et al*., 2022).

In regard to the ALARP principle, the findings in this research, i.e., the positive and significant association of employees' perception on risk-taking behavior acceptance, normalizing minor accidents, and decision to take risk toward a rule-breaking act, have to be an important ingredient for organizations to manage risk at the workplace using systems thinking in the ALARP principle as proposed (Langdalen, Abrahamsen and Selvik, 2020). In this case, risk management considers not only the points of view from the organization, but also the views from the employees. Therefore, organizations can achieve workplace accidents prevention as the final objective of risk controls, as suggested (Pike, Khan and Amyotte 2020).

CONCLUSION

Employees have different perceptions on risk-taking behavior. While the majority of employees reject such behavior, a careful safety approach is needed to be implemented by organizations because risk-taking behavior acceptance, considering minor accidents as a normal thing, and decision to take risk when having a tight work schedule have positive and significant association with rule-breaking acts at the workplace.

Risk controls with the As Low As Reasonably Practicable (ALARP) principle must be able to reduce the existing risks toward acceptable residual risks. However, the residual risks must not create a comfort zone or complacency for the workers to be less vigilant in their works. Furthermore, the stated residual risks have to be understood and perceived as group risks that need to be controlled collectively by all individuals to achieve a safe place and a safe system of work. When this goal is achieved, risk-taking behavior can be minimized or even removed.

To prevent the perceptions of risk-taking behavior acceptance, normalizing minor accidents, and decision to take risk, organizations need to make several efforts as follows: 1) Educating through trainings for all employees that risk-taking behavior that leads to breaking the rules at work is prohibited. Safe behavior, furthermore, needs to be promoted; 2) Reinforcing visible and empowering leadership to share the same values that all accidents, be it major or minor, are events that need to be addressed appropriately and promptly to prevent recurrence

in the future; 3) Formulating work schedules that consider safety factors to avoid rule-breaking due to production target pressure; 4) Most importantly, the value of "lead by example" has to be shown by managers and supervisors in performing safe behavior at the workplace.

CONFLICT OF INTEREST

The authors declare that there is no significant competing financial, professional, or personal interests that might have affected the performance.

AUTHOR CONTRIBUTION

The following is the contribution of each author of this article:

RI: Conceptualization, Methodology, Data Collection, Data Analysis, Research Reporting, and Article Writing.

ZD: Research Supervisory, Review, and Approval.

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