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ESTABLISHING AN ORGANISATIONAL SAFETY CULTURE SYSTEM IN THE MALAYSIAN MINING INDUSTRY

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Abstract: Many industries have recognised safety culture as a mechanism to manage and reduce occupational accidents. Mutual understanding between management and employees is key to a successful organisational safety culture that prevents mining accidents. The mining industry in Malaysia has operated for almost 200 years. However, there is a lack of literature discussing the factors that contribute to organisational safety culture. Therefore, the objective of this study is to investigate the contributing factors to establishing an organisational safety culture system in the Malaysian mining industry. This qualitative study was conducted by interviewing ten respondents with extensive experience in the Malaysian mining industry. By applying thematic analysis, 10 organisational factors were identified: (1) Safety policy, (2) safety rules, (3) safety education, (4) safety program, (5) safety competency, (6) safety planning, (7) safety audit, (8) safety signage, (9) a competent SHO/leader, and (10) medical surveillance. In conclusion, safety policies, safety rules, and safety education are the three main factors needed to create an organisational safety culture in the Malaysian mining industry. This study was very helpful, especially to mine owners, mine operators, and enforcers as well as to mine employees, to improve their safety culture practices and reduce mining accidents or disasters in the future.

Keywords: Malaysian mining industry, mining accidents, organisational safety culture, qualitative study, thematic analysis.

Introduction

Malaysia is blessed with abundant mineral resources, such as gold, tin, coal, iron ore, limestone, copper, feldspar, sand, silica sand, kaolin, manganese, and many more, that can be exploited economically. Tin mining is one of the oldest industries in Malaysia. It was started in the 1820s in Perak, followed by Selangor in 1824. Malaysia exported almost 63,000 tons of tin in 1979, contributing to 31% of the world's supply (JMG Annual Report, 2019). There are three main categories of minerals to be mined: Metallic minerals, non-metallic minerals, and energy minerals. Metallic minerals include gold, tin, copper, iron, aluminium, manganese, rare earth minerals, silver, tantalum (niobium) minerals, titanium, and zircon. Non-metallic minerals include aggregates, barytes, bentonites, clays and many more (JMG Annual Report, 2019). Currently, there are 161 mines with 91,000 miners in Malaysia (JMG, 2019). The estimated value of Malaysia's mineral reserves is RM4.11 trillion (JMG Annual Report, 2019).

According to Big Data Analytics: National Occupational Accident and Disease for Statistics Report in year 2021 (https://www.dosm.gov.my), there are 15.06 million employed person, including expatriates and low-skilled foreign

workers in Malaysia with 21,534 occupational injuries reported, or 1.43 occupational injuries per 1,000 workers (DOSM, 2021). In 2021, mining and quarrying was the only sector recorded an increase in its occupational injuries rate at 1.90, against 1.48 in the previous year. Moreover, mining and quarrying recorded an increase in the rate of fatal occupational injuries in 2021 at 10.98 per 100,000 workers against 3.65 per 100,000 workers in 2020 (https://www.dosm.gov.my).

In today's industrial sectors, establishing and practising a good safety culture is critical to reducing workplace accidents and illnesses. According to Reason (2016), *"An occupational accident is an event in the course of work that results in bodily or mental occupational harm"*. Furthermore, the accelerated advancement of science and technology increases the risk of occupational illnesses and accidents (Hughes *et al*., 2016). Engineering, technological and system failure, and human safety behavioural factors are the leading causes of workplace accidents (Bowander, 1987). Moreover, according to Rollenhagen (2010), "*Safety is a dynamic quality that emerges from interactions between components and sub-components of people, technology, and diverse institutional structures"*. The primary goal of safety culture is to prevent accidents by determining what causes them (Jiang *et al*., 2020).

Safety culture should consider work assignments, work planning, individual job descriptions, roles, and personal identities in terms of safety concerns, while making high-level choices for any company, such as investments, resources, and budget allocations. It also incorporates the on-the-spot implementation of duties (Sorensen, 2002; Grote, 2018). Schein (1989) started the movement of "organisational culture". He defines organisational culture as "*A pattern of shared basic assumptions that the group learned as it solved its problems of external adaptation and internal integration, and that has proven to be valid enough to be taught to new members as the correct way to perceive, think about, and feel in relation to those problems"* (Schein, 1992). The impact of poor organisational safety culture leading to mining accidents in various countries was highlighted by previous researchers, as shown in Table 1.

Table 1: Impact of poor organisational safety culture leading to mining accidents in various countries

Country/ Type of mining accidents	**Organisational Safety Culture**					**References**
	Poor Safety Budget	**Poor Working Condition**	**Poor Safety Rules**	**Poor Safety Facilities**	**Poor Safety Training**	
China/ Coal mine	√			√	√	Jiang *et al*., 2020
	√			√	√	Miao *et al*., 2020
		√			√	Zhang *et al*., 2020
		√				Wang *et al*., 2019
Turkey/ Coal mine		√	√	√		Düzgün *et al*., 2018
Kenya/ Gold mine		√				Ajith *et al*., 2019
Sweden/ Gold mine		√	√			Lööw *et al*., 2019

In comparison to other industrialised countries, Malaysia has been slow to address the issue of organisational safety culture in the mining industry (Ismail *et al*., 2021; Noraishah *et al*., 2021). Radiation, manufacturing, electronics, construction, shipping, healthcare, and education are among the businesses and sectors that have generated concerns about safety culture. Table 2 shows the results of safety culture studies on various industries in Malaysia.

Table 2: Safety culture studies on various industries in Malaysia

Industry/Sector	References
Radiation	Mod Ali (2008)
Healthcare	Abdullah (2009); Ismail *et al*. (2015); Jye *et al*. (2019)
Manufacturing	Kumar *et al.* (2012); Amirah *et al.* (2013); Hee (2014); Rohani *et al.* (2016); Amirah *et al.* (2017); Ali *et al.* (2017); Amirah *et al.* (2019)
Construction	Ismail *et al*. (2010); Saifullah *et al*. (2012)
Shipping	Chan *et al*. (2019); Razali *et al*. (2019)
Education	Latti *et al*. (2013); Nor Kamilah *et al*. (2019); Suraya *et al*. (2021); Zulkifli *et al*. (2021)
Electronic	Abdullah *et al*. (2016)

Moreover, to the best of the author's knowledge and a literature review based on Table 1, there was a lack of reported articles on a safety culture studies on the mining industry in Malaysia. (Ismail *et al*., 2021; Noraishah *et al*., 2021). Therefore, the main objective of this research is to investigate the factors that contribute to the establishment of an organisational safety culture system in the Malaysian mining sector.

Methodology

The open-ended questions employed in the study aimed to obtain respondents' thoughts, perceptions, and experiences on the current organisational safety culture practices at mining companies in Malaysia. The invitation letters (UMP.17.04/13.11/1/7) for participation in this study were sent via email to 36 mining experts; however, only 10 voluntarily agreed to share their experience on safety culture in the mining industry. Before starting the interviews, all experts provided their oral consent.

Ten open-ended questions were asked of the respondents. The examples of open-ended questions are:

(1) *What is the current status of safety culture awareness in the mining industry in Malaysia?*

(2) *What are the influencing factors to create a positive safety culture in mining companies?*

(3) *What are the barriers to creating a positive safety culture in the mining industry?*

(4) *What else could the mining company do to improve safety culture?*

The feedback from mining experts was transcribed and analysed using thematic analysis (Nowell *et al*., 2017). To construct themes, six steps were followed in the thematic analysis and were suitable for the qualitative analysis, as proposed by Nowell *et al*. (2017). The steps include:

(1) Familiarising with the data (understanding and analysing the responses from mining experts based on the open-ended interviews)

(2) Generating the initial code (identifying the similarities and differences based on the feedback received)

(3) Creating themes (creating or identifying suitable themes to construct based on the identified similarities and differences)

(4) Reviewing themes (ensuring the proposed themes and subthemes are within the main context)

(5) Defining and naming themes

(6) Producing a report

According to Hallowell and Gambatese (2009), the criteria for determining whether a person qualifies as an expert might be vague. The use of an unbiased sample is one of the most crucial considerations in any study. It also implies that the procedure of panel selection is unbiased. Expert panellists, according to Hallowell and Gambatese (2009), must meet certain criteria or standards. One of these may be a "demonstration of knowledge that members of recognised professions and the general public deem to be of expert quality" (Hallowell & Gambatese, 2009). For instance, the respondents could have at least 10 years of professional experience in the mining industry or be involved in the Occupational Safety and Health field.

The criteria for the selection of mining experts were shown in Table 3. In this study, 10 mining experts agreed and volunteered to be respondents. They were also willing to share their experience in the mining industry. The researchers informed the respondents of the objectives of the study and guaranteed the confidentiality of their detailed personal backgrounds. The possibility of withdrawing from the study at any time was also ensured. The duration of the individual interview was between 30 and 45 minutes, and was held between March and April 2021. The flowchart of a qualitative study involves a few steps, as illustrated in Figure 1.

Table 3: Criteria for selection of mining experts

Criteria	Background of Experts
Working experience	At least 10 years and above for each respective sector
Area of expertise	Mining operation or Mineral development or Mine safety or Mining policy or Mineral R&D
Example of position	Mine owner/Operator Top management (CEO/President/Vice president) Mining consultant Mining manager SHE mine manager Mining safety officer

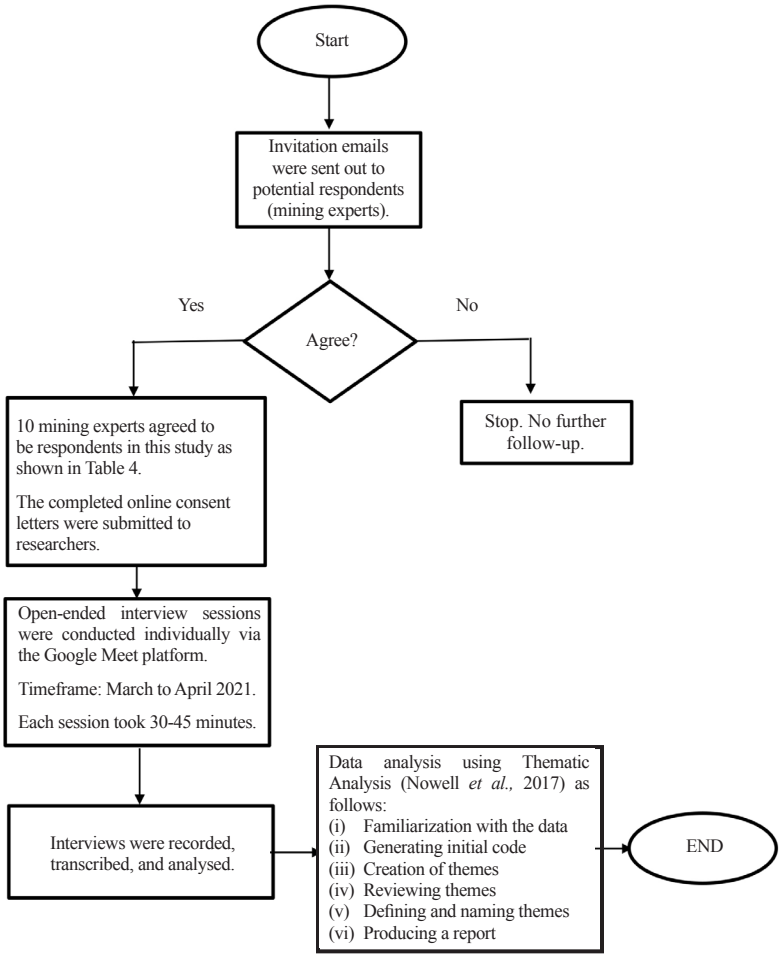

Figure 1: Flowchart of qualitative study

Table 4: Participants characteristics (n = 10)

Participant Code Name	Age (Years)	Gender	Years of Experience	Current Position
R1	55	Male	25	Senior operating mining manager
R2	46	Male	24	HSE manager
R3	65	Male	39	Mining consultant
R4	48	Male	25	Safety manager
R5	39	Male	14	Mining manager
R6	50	Male	30	Vice president business development (Mining)
R7	65	Male	36	Mining consultant
R8	63	Male	36	Mining consultant
R9	60	Male	25	Mine owner
R10	50	Male	26	General mine manager

Results

By applying thematic analysis as described by Nowell *et al*. (2017), 10 organisational factors' subthemes were identified, which are (1) safety policy, (2) safety rules, (3) safety education, (4) safety program, (5) safety competency, (6) safety planning, (7) safety audit, (8) safety signage, (9) a competent SHO/leader, and (10) medical surveillance, as shown in Table 2. The participants considered these organisational factors to be effective in creating a safety culture in the mining industry. The percentage of the agreement refers to the frequency with which mining experts raised the same concerns during the interview session, and the researcher grouped them and put them in the same category known as subthemes.

Based on Table 5, safety policy received the highest percentage of agreement from all mining experts as the main contributing factor to the organisational safety culture, followed by safety education and the safety program, both of which obtained 90%. The details of the perspective and the point of view of each mining expert on each subtheme were highlighted in the next subsections.

Table 5: Thematic analysis on qualitative interview and the percentage of agreement (%)

Subthemes	Code Name										Percentage of Agreement (%)
	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	
1. Safety policy	/	/	/	/	/	/	/	/	/	/	100
2. Safety rules	/	/	/	/	/	/	/	/	/	/	100
3. Safety education	/	/	/	/	/	/	/	/	/	/	100
4. Safety program	/	/	/	/	/	/	/	/	/	/	100
5.Safety competency	/			/	/	/	/	/	/	/	80
6. Safety planning		/		/		/	/	/	/	/	70
7. Safety audit	/		/	/		/	/	/			60
8. Safety signage	/	/	/		/		/			/	60
9. Competent SHO	/	/		/	/				/		50
10. Medical surveillance	/	/					/		/	/	50

Safety Policy

According to the participants, the main factor that contributes to creating an organisational safety culture system is the safety policy, with 100% agreement from all the mining experts. The management must establish a clear Occupational Safety and Health (OSH) policy and OSH objectives for their respective mining company in the first place and must ensure it complies with OSH legal requirements and other requirements made by the government. Moreover, according to Section 16 of the Occupational Safety and Health Act (OSHA) 1994, the employer must formulate a safety and health policy at the workplace. 10 mining experts agreed that a clear safety policy would help mining operations run smoothly because all levels of workers or management would have the same direction to ensure safety as the main priority. Based on Table 5, all mining experts agreed that a clear safety policy could help mining companies foster a good safety culture for their workers. A mining consultant with 36 years of working experience believes (R7):

> *"Making safety part of a worker's key performance indicator or individual annual assessment can motivate the workers to work in a safe manner and inculcate a good safety culture at a mining company. It must be stated in the safety policy of the mining company".*

Moreover, a HSE Manager (R4) with 25 years of experience stated:

> "*The top management has a clear policy that can be implemented in the organisation. It must have a safety system, such as middle management and bottom management, to ensure the safety policy will be followed by all workers. All of these are required to build a safety culture in a mining company.*"

Safety Rules

Safety rules are a reflection or subset of safety policy. A clear OSH policy at a mining company will produce or generate good safety rules that are valuable to the company and followed by all levels of mine workers. For example, the Safe Working Procedure (SWP) as mentioned in the new ISO 18001 can be used as a guideline for management to establish safety rules at a company and is recommended to involve the point of view of the workers for the company's benefit. A safety and health officer (R9) agreed that safety rules are mandatory for all workers. He said:

> "*The issues related to safety rules must be highlighted during the toolbox meeting, safety briefing, and safety meeting. All workers must be informed of any accidents or injuries that occurred in the work area during the meeting. The workers must be reminded of safety rules by having a safety notice board, etc.*"

Safety Education

The second factor in inculcating safety culture in mining companies is safety training and competency courses. 100% of the mining experts agreed that safety training is crucial to ensure workers have adequate knowledge of safety. Top management must provide safety training and competency courses to all workers. They can include safety training as one of the company's key performance indicators, and all workers must undergo the training annually. It will improve and enhance knowledge, safety awareness, and competency and skills among workers. Moreover, most of the mining experts also agreed that safety training is an excellent solution to increase the productivity of workers, avoid injuries or near misses, and reduce mining accidents. All of this would help construct good work ethics among workers, and a safety culture can be achieved. One of the mining consultants with 39 years of working experience said (R3):

> "*Safety training is a key factor in establishing a safety culture. Top management must provide adequate safety training to enhance workers' skills and professional competency.*"

Safety Program

The third factor was the safety program, which is part of safety planning, with 100% total agreement. The awareness needed for a good safety culture can be built by having various safety programs in which all levels of workers must participate. This is part of the safety planning provided by top management. The execution of safety programs such as safety talks, safety inductions, safety briefings, safety weeks, safety meetings, toolbox meetings, and safety promotion, can be included under this factor. Managers and workers are two key components of any company, and both may have a significant impact on the business's safety. Accidents at work occur from either employer negligence or employee carelessness (Robinson *et al*., 2014).

Employers play a critical role in reducing workplace accidents. They must prioritise OSH, implement preventative measures, and ensure that workers have the knowledge, training, and supervision they need to do their tasks safely. Employees should be aware of their environment, keep an eye out for mishaps, and fulfil their responsibilities for workplace safety while on the job (Neal *et al*., 2000). As a result, to improve organisational safety, management

and workers must accomplish their safety-related activities. This was agreed upon by the safety manager (R4). He stated:

> *"To construct a safety culture, mining companies must have relevant safety activities or programs, such as safety induction courses, seminars, and training, to ensure that safety can be understood and implemented for every level of employee."*

Safety Competency

Previous educational background or working experience is part of the safety competency of workers and contributes to a safety culture. 80% of respondents agreed that the previous educational background and working experience of mine workers could help them gain self-awareness and educate themselves on the importance of safety culture while performing their job, as shown in Table 5. The existing culture of safety that was developed from their previous working experience or previous education could benefit existing employers or give them an advantage once they change companies. However, there was a different opinion from the mining expert, where safety culture is not dependent on previous working experience or education. It must be continuously trained by the employer, as pointed out by the mining consultant (R3). He mentioned:

> *"I believe the safety culture of employees can be trained by the employer. The key here is that the employer must provide adequate safety training to the employees."*

Safety Planning

Safety planning refers to brainstorming or ideas from top management for short-term and long-term events or any activities that relate to safety and are beneficial to the company and workers. Based on Table 5, 63.6% agreed that safety planning was one of the important factors in establishing a good safety culture in mining companies. A successful OSH policy can be measured by the good execution of safety planning and the participation of employees of a mining company. Examples of safety planning include safety weeks, safety induction courses, safety training, safety promotions, safety talks, daily or weekly safety meetings, annual medical check-ups, safety communication tools, and workplace audits. Safety planning is a subset of OSH policy. If the mining company has a clear policy, all the safety measures can be planned, including taking into account the budget or allocation that is required to make all the safety planning successful. If all these plans become part of the organisational culture, a safety culture will exist in the respective company.

A general mine manager (R10) highlighted:

> *"There is a huge gap between the safety cultures of small-scale and large-scale mine operations in Malaysia. One of the main constraints for small-scale companies is the financial resources that hinder them from executing their safety planning. This is also due to the management of mining companies itself that are reluctant to prioritise the safety aspects."*

Safety Audit

One of the factors that the experts pointed out was safety auditing. Most of the mining experts mentioned that the lack of a safety audit also contributes to the failure of the safety culture in an organisation. Most workplaces only wait for government-related agencies to execute the safety audit, and do not include safety audits as one of the activities of the safety committee. The government agency must monitor the mining operation to ensure it meets the required standard.

According to HSE manager (R2) who has 24 years of working experience, he stated that:

> *"We follow all the regulations and requirements stated by local authorities and the Malaysian government. For example, we are trying to fulfil all*

the requirements or checklists of the Occupational Safety and Health Work Assessment (OSHWA) required by the Department of Occupational Safety and Health (DOSH). This is to assess and evaluate safety issues at mine sites. One of the criteria is documentation audit and ergonomics related to safety culture. It covers the responsibility of the company to follow all the checklists provided by DOSH and contribute to the formation of a safety culture. We also follow and fulfil the requirements of the Sustainable Development Indicator (SDI) by Mineral Geoscience Malaysia, which was started in 2019. This is to inculcate in the mining company a sense of self-regulation related to the safety performance of the mining company."

Safety Signage

Safety signage is vital to constructing a safety culture in a mining organisation. It includes the safety signage at the mine sites, the administration office, the processing area, and the chemical storage area. The safety signage can remind workers to abide by the rules while performing their job, make it their work ethic, and in so doing, continually become their working culture. However, some of the mining experts said that even though the management provides safety signs, there are problems among miners who prefer to take a shortcut while performing their job, and it could lead to near misses, injuries, or accidents.

Competent SHO and Mine Manager

The next contributing factor to a safety culture is the appointment of competent mine managers and Safety and Health Officers (SHOs) in the mining industry who understand the nature of mining operations. According to a senior operating mining manager (R1) who has 25 years of working experience in the mining industry, he mentioned:

"There is a problem in the mining industry where the mine manager himself does not stress the importance of safety aspects in mining operations, especially for small-scale mining operations. Under Occupational Safety and Health Act (OSHA 1994) and FMA, the mining industry is not required to appoint a safety and health officer (SHO). Therefore, we can see that small-scale mining companies have neglected the safety aspect and have a poor safety culture. It becomes worse because nobody is responsible for the safety issues at the mine site. In contrast, large-scale mining operations have a proper safety policy and had hired a competent mine manager and SHO to ensure safety, which is one of their main concerns. This is because they have financial stability compared to small-scale mining operations."

Moreover, the nature of mining operations is different from that of construction, manufacturing, and other industries. The knowledge and extensive experience of the SHO, who specialises in mining operations, are needed to ensure all the programs, activities, or safety policies suit the nature of mining itself.

Medical Surveillance

Some of the mining experts pointed out the health issues facing mine workers. Some of the mine owners do not acknowledge their workers as their main assets. For example, in small-scale mine operations, workers' health is not a priority due to financial constraints, and the management does not provide annual health check-ups for the workers. According to a safety and health officer (R4):

"It is the responsibility of top management to ensure workers work in a healthy condition, and all health issues must be reported to management. Management also must ensure their workers get health screening or annual

check-ups. It believes a healthy worker will increase the productivity of the company and prevent accidents or unnecessary incidents."

This is agreed upon by most of the mining experts: To construct a safety culture system in a mining organisation, health issues need to be highlighted. A healthy worker will support and follow all the safety rules, perform their work while fit, and be more efficient in performing their job. Moreover, it will also prevent any near misses, injuries, or occupational accidents at the workplace. According to a vice president of business development in mining (R6) with more than 20 years of working experience:

"One of the elements needed to construct a safety culture is a healthy workforce. A healthy worker is our main priority. We, as top management, provide an occupational health doctor to handle health issues among workers, including mental health issues. All mine workers, including the management, are required to undergo an annual medical check-up and health screening."

Discussion

The study successfully investigated the factors that contribute to an organisational safety culture in the Malaysian mining industry. The experiences and points of view of the mining experts have been placed in 10 sub-themes (1) safety policy, (2) safety rules, (3) safety education, (4) safety program, (5) safety competency, (6) safety planning, (7) safety audit, (8) safety signage, (9) a competent SHO/ leader, and (10) medical surveillance. The key findings of the organisational safety culture system in the Malaysian mining industry are illustrated in Figure 2.

Safety culture was built on three main foundations (Schein, 1989), namely: (1) Psychological, people, or person factor; (2) situational, working environment, or organisation factor; and (3) behaviour factor. Thus, it is clear that the situational or working environment factor includes organisational safety culture. In this study, researchers refer to organisational safety culture as part of the foundation of the working environment. It is the responsibility of the top management (the mine owner or mine operator) to ensure a safe working environment and a safety culture among the mine workers. Furthermore, what is most important is that the management must ensure all safety-related activities comply with the government's needs. For example, a poor working environment led to mining accidents, as reported by Komljenovic *et al.* (2017) and Zhang *et al.* (2020).

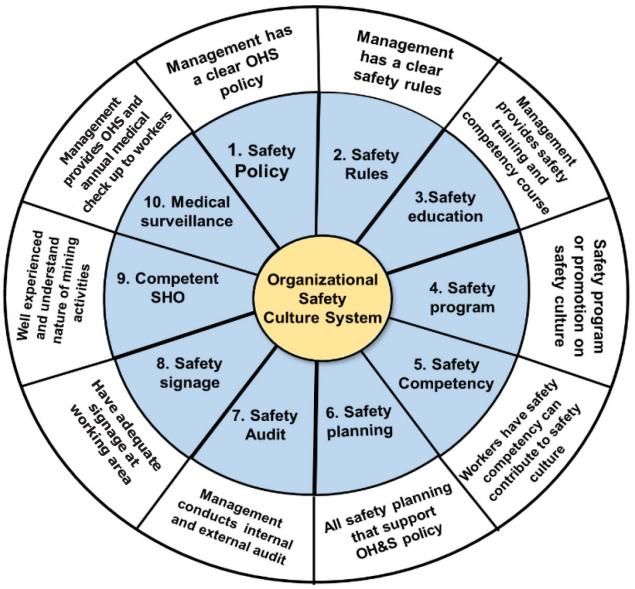

Figure 2: Key findings to establish an organisational safety culture system in the Malaysian mining industry

All the mining experts agreed that a safety policy must be clear at the top management level. The mine owner or top management plays a significant role in initiating a safety culture within their company with the support of their mine workers. The efforts of top management to make safety culture a top priority is crucial, such as having a good safety policy, safety training, and safety program. The management also must set a good example, as it will motivate employees to participate in and support any activities organised by the top management (Zhang *et al*., 2020). In addition, the top management of either small-scale or large-scale mine operations is also required to provide clear OSH and safety rules because they will help the mine workers become more disciplined and form a habit, eventually turning them into responsible mine workers. A large-scale mine operation has many advantages and can create a good safety culture, as required by the government. This is because they have strong financial resources and can provide and organise safety programs for their employees. However, the lack of employee participation may hinder the effectiveness of a safety culture in a mining organisation (Eskandari *et al*., 2017).

Furthermore, one of important factors as shown in Figure 2 was safety program. This factor is important to ensure that safety is their main priority. Various safety programs can be organized by mining companies, such as safety week or safety talks, in order to increase awareness on the importance of safety culture in the organization. One of the interesting findings in this study was the current status of safety culture awareness and practices among mining organizations in Malaysia, as highlighted by an HSE manager (R2). A huge gap in safety culture awareness between small-scale and large-scale mine operations is quite worrying at 30% and up to 80%, respectively. Small-scale mine operations are eager to have a quick rate of returns, which drives them to neglect safety aspects. However, in this case, the gap can be reduced if the owner of a small-scale mine operation is willing to change their mindset and understand that safety is part of their investment.

Although safety culture is vital in a mining organisation, there were some limitations highlighted by the mining experts. It is difficult to merge and standardise the practice of safety culture in a mining company due to the huge

gap between small-and large-scale mine operations in Malaysia. The lack of awareness and understanding of the importance of OSH at the workplace from business and legal perspectives is the major constraint on the implementation of a safety culture in small-scale mine operations. The operator or owner of a small-scale mine operation is eager to get a fast rate of return, and as a result, they leave behind the safety aspect. Some small-scale mine owners inherited their business from ancestors or family. Therefore, they are reluctant to accept changes and prefer to continue their working style and neglect safety aspects. At this point, their previous education and safety training would have given them awareness on the importance of safety culture in an organisation.

In contrast, large-scale mine operations in Malaysia seem more systematic in their management due to proper planning by top management and having strong financial resources; however, the challenges may come from the engagement between employer and employees. Furthermore, according to a mining expert, the lack of enforcement by local authorities and government agencies can also hinder the formation of a safety culture in a mining company. Incompetent leaders such as mine supervisors, safety officers, and mine managers, also contribute to the failure of a safety culture in an organisation. For example, a leader who does not understand the nature of a mining operation, fails to supervise the workers, fails to plan and implement the safety program, and shows a lack of knowledge and competency (Ajith *et al*., 2019). These factors are usually seen in small-scale mining operations in Malaysia.

Limitation and Future Direction

This study has a few limitations such as the small number of mining experts who volunteered to participate. It is beneficial if the number of participants can be increased in the future. Consequently, comprehensive feedback or responses can be achieved. Besides, the backgrounds of respondents could be varied, such as from top management to lower level employee, in gathering their points of view in constructing an organisational safety culture system at a mining workplace.

However, the study offers an opportunity for the Malaysian government to strengthen its enforcement and monitoring, especially for the mining industry. The promotion of safety culture awareness in the mining industry at the state or national level is also important in creating a safety culture in a mining company. The government can also provide a guideline, blueprint, or framework, or organize safety training on how to create an organizational safety culture in the mining industry. Furthermore, it is recommended that the government make occupational safety and health coordinators a requirement for small-scale mining. For example, the government agencies that control mining activities, such as the Land and Mineral Office (PTG), the Department of Minerals and Geosciences Malaysia (JMG), the Department of Environment (DOE), and the Department of Occupational Safety and Health (DOSH), need to regulate laws and regulations for both large- and small-scale mining. This is some sort of effort to standardize the safety culture practices between small-scale and large-scale mine operations in the mining industry in Malaysia and close the gap between them. This is because the knowledge of safety culture must first be well understood before being implemented and becoming part of culture.

Conclusion

The study successfully investigated the factors that contribute to establishing an organisational safety culture in the Malaysian mining industry. The mining industry will benefit from these insights to make sure that a safety culture can be established at their mining company. In conclusion, a well-established safety culture system is a must for any mining company in Malaysia to create a safety culture in their organisation, increase employee productivity, provide a safe working environment, and also act as a mechanism to prevent any injuries or mining accidents in the future.

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